FLORIDA POWER CORPORATION

SUPPLEMENTAL SITE CERTIFICATION APPLICATION

HINES ENERGY COMPLEX POWER BLOCK 2

JANUARY 1999

Florida Power
CORPORATION

VOLUME 1

Florida Power
CORPORATION

W. Jeffrey Pardue, C. E. P.
Director
Environmental Services Department

January 6, 1999

Hamilton S. Oven, P.E., Administrator
Office of Siting Coordination
Department of Environmental Protection
2600 Blair Stone Road, MS 48
Tallahassee, Florida 32399-2400

Dear Mr. Oven:

RE: Florida Power Corporation;
Hines Energy Complex
Power Block 2;
Application for Site Certification;
Polk County, Florida
Supplemental to PA 92-33

Florida Power Corporation (FPC) is pleased to submit to the Department FPC's Supplemental Site Certification Application for the Hines Power Block 2 to be located at FPC's Hines Energy Complex in Polk County.

This supplemental application is being submitted pursuant to Section 403.517, F.S., of the Florida Electrical Power Plant Siting Act, Chapter 403, Part II, F.S., and is for certification of a 500 MW (nominal) combined cycle facility fired by natural gas and backup fuel oil. Ultimate site capacity of 3000 MW was approved for the Hines Energy Complex in 1994 (DEP Case No. PA 92-33). This ultimate site certification was subsequently modified in August 1997 (PA 92-33B) and again in December 1997 (PA 92-33C).

Enclosed is FPC Check #2030988 payable to the Department in the amount of $25,000.00 pursuant to Rule 62-17.293 (1)(d), F.A.C., for the supplemental certification of a combined cycle facility fueled by gas or distillate oil.

This application for supplemental certification addresses the environmental and socioeconomic impacts and benefits of Hines Power Block 2 by providing information in accordance with the Department's "Instruction Guide for Certification Applications: Electrical Power Plant Site, Associated Facilities, and Associated Transmission Lines", DER Form 17-1.211(1), F.A.C. Since the Hines Energy Complex site has been previously certified for an ultimate site capacity of 3,000 MW, this application focuses on the impacts and benefits associated with the construction and operation of the next phase at this site. The Siting Board has previously determined FPC's Hines Energy Complex site is consistent and in compliance with the land use

plans and zoning regulations of Polk County. Accordingly, it is unnecessary to submit with this application a separate compilation on land use and zoning approvals for the site.

FPC looks forward to working with the Department and the other agencies participating in the certification process. It is FPC's desire to work with you and those agencies to pursue a timely and expedited review process for this application. Should you, your staff, or any agency representatives have any questions concerning this application or FPC's Project, please do not hesitate to contact either Manitia Moultrie (727/826-4267) or me (727/826-4301).

Sincerely,

W. Jeffrey Pardue
Director
Environmental Services Department

Enclosure

FLORIDA POWER CORPORATION

SUPPLEMENTAL SITE CERTIFICATION APPLICATION

HINES ENERGY COMPLEX

JANUARY 1999

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VOLUME 1

SUPPLEMENTAL SITE CERTIFICATION APPLICATION

FOR

FLORIDA POWER CORPORATION

HINES ENERGY COMPLEX

POWER BLOCK 2

JANUARY 1999

APPLICANT INFORMATION

Applicant's Official Name **Florida Power Corporation**

Address **P.O. Box 14042, St. Petersburg, FL 33733**

Address of Official Headquarters **Same**

Business Entity (corporation, partnership, co-operative) **Corporation**

Names, owners, etc. **Florida Power Corporation**

Name and Title of Chief Executive Officer **Mr. Joseph H. Richardson**
President and Chief Executive Officer

Name, Address, and Phone Number of Official Representative responsible for obtaining certification **Mr. W. Jeffrey Pardue, CEP**
Florida Power Corporation
P.O. Box 14042, MAC BB1A, St. Petersburg, FL 33733
(813) 826-4301

Site Location (county) **Polk**

Nearest Incorporated City **Fort Meade**

Latitude and Longitude **Latitude 27 47 15" Longitude 81 52 21"**

UTM's Northerly **1,255,200**

Easterly **541,600**

Section, Township, Range **S13, T31S, R24E**

Location of any directly associated transmission facilities (counties) **Not Applicable**

Name Plate Generating Capacity **nominal 500 MW**

Capacity of Proposed Additions and Ultimate Site Capacity (where applicable)

Remarks: (Additional information that will help identify the applicant)
Supplemental Certification Application to PA 92-33

FLORIDA POWER CORPORATION

HINES ENERGY COMPLEX
POWER BLOCK 2

SUPPLEMENTAL SITE CERTIFICATION APPLICATION
PA 92-33

Kennard F. Kosky 1/6/98

SEAL

Kennard F. Kosky, P.E., Principal
Florida Professional Engineer Registration No. 14996
Certification as to Sections 2.3.7, 2.3.8, 3.4, 4.5, 4.6.3, 5.6, 5.7 and Appendix 10.1.5.

Golder Associates, Inc.
6241 N.W. 23rd Street, Suite 500
Gainesville, Florida 32653-1500
Phone: (352)336-5600

FLORIDA POWER CORPORATION

HINES ENERGY COMPLEX
POWER BLOCK 2

SUPPLEMENTAL SITE CERTIFICATION APPLICATION
PA 92-33

Kenneth Ray Weiss
Florida No. 30272

Black & Veatch, LLP
11401 Lamar Avenue
Overland Park, Kansas 66211



As to Sections 3.2, 3.5 and 3.6 of this Application

LIST OF ORGANIZATIONS THAT PARTICIPATED IN THE PREPARATION OF THE SCA

Florida Power Corporation
St. Petersburg, Florida
- Overall Management and Direction

Foster Wheeler Environmental Services, Inc.
Stuart, Florida
- Ecology and Wildlife

Black & Veatch
Kansas City, Missouri
- Engineering Contractor

Dames & Moore
Tampa, Florida
- Site Civil and Geotechnical Engineering
- Geohydrology

Golder and Associates
Gainesville, Florida
- PSD Permit Application

Colinas Group
Lakeland, Florida
- Geology and Hydrogeology

Hopping Green Sams & Smith
Tallahassee, Florida
- Environmental Attorneys for FPC

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LIST OF ACRONYMS AND ABBREVIATIONS

1992 SCA	1992 Site Certification Application
ACOE	U.S. Army Corps of Engineers
BACT	Best Available Control Technology
BEBR	Bureau of Economic and Business Research
BOCC	Board of County Commissioners
CAA	Clean Air Act
CFR	Code of Federal Regulations
CR	County Road
CT	Combustion Turbine
CUP	Conditional Use Permit
CWA	Clean Water Act
DACS	Florida Department of Agriculture and Consumer Services
dBA	Decibel (A-weighted level)
DCA	Florida Department of Community Affairs
DEP	Florida Department of Environmental Protection
DHR	Florida Department of State, Division of Historical Resources
DHRS	Florida Department of Health and Rehabilitative Services
EPA	U.S. Environmental Protection Agency
EPRI	Electric Power Research Institute
FAA	Federal Aviation Administration
FAAQS	Florida Ambient Air Quality Standards
F.A.C.	Florida Administrative Code
FDLES	Florida Department of Labor and Employment Security
FDNR	Florida Department of Natural Resources
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FGFWFC	Florida Game and Fresh Water Fish Commission
FGT	Florida Gas Transmission Company

FIPR	Florida Institute for Phosphate Research
FLUCCS	Florida Land Use, Cover and Forms Classification System
FPC	Florida Power Corporation
F.S.	Florida Statutes
FWS	U.S. Fish and Wildlife Service
GPD	Gallons Per Day
HRSG	Heat Recovery Steam Generator
IMC	International Minerals & Chemical Corporation-Agrico
L_{eq}	Equivalent Noise Level
LOS	Level of Service
MGD	Million Gallons Per Day
MOR	Monthly Operating Reports
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
Pb	Lead
ppm	Parts Per Million
PPSA	Florida Electrical Power Plant Siting Act
PSC	Florida Public Service Commission
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation Recovery Act
SCA	Supplemental Site Certification Application
SO_2	Sulfur Dioxide
SR	State Road
ST	Steam Turbine
SWFWMD	Southwest Florida Water Management District
USAC	U.S. Agri-Chemical Company
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator

PREFACE

Florida Power Corporation (FPC) is an investor-owned utility, which supplies electricity to about 4.4 million people in 32 Florida counties. FPC's headquarters are in St. Petersburg, Florida. The corporate goal of FPC, now and for the past 100 years, is to provide reliable, reasonably-priced power to our customers.

In February, 1992, the Public Service Commission (PSC) determined the need existed for FPC to develop natural gas-fired combined-cycle generating capacity at FPC's Hines Energy Complex, an 8,200-acre site in southwest Polk County. The PSC found the need existed for the electricity to be provided by an initial power plant at that site.

Also in 1992, the Polk County Board of County Commissioners found the Hines Energy Complex Site (formerly referred to by FPC as the "Polk County Site") to be consistent and in compliance with the County's land use plans and zoning ordinances. The Siting Board entered a final order in February, 1993, confirming that the Hines Energy Complex is consistent and in compliance with the land use plans and zoning requirements of Polk County for that site. Since the site boundaries will not be increased by this application, land use and zoning issues are not at issue in this supplemental application, as provided by section 403.517(3), Florida Statutes.

In 1994, the Governor and Cabinet, sitting as the Siting Board, granted certification to FPC, to construct and operate Power Block 1 and for 3000 megawatts (MW) of ultimate site capacity at the Hines Energy Complex. (A copy of the 1994 Final Order Approving Certification, which includes the Conditions of Certification, is in Appendix 10.4.1. Appendix 10.4.2 and 10.4.3 contain the Final Orders Modifying Conditions of Certification rendered in August and December, 1997, respectively. These three orders are referred to throughout this

application as the 1994 Certification). Over a period of 20 years, generating units will be brought on line sequentially to meet needs for electricity up to the ultimate site capacity of 3000 MW.

In the 1994 Certification, the Siting Board made a determination that the Hines Energy Complex site has the ultimate site capacity to support 3000 megawatts of electrical generating facilities, fired by either natural gas or coal gasification. The original proceeding that culminated in that 1994 Certification included extensive evaluations of the worst case capacity constraints and maximum potential environmental effects of the operation of the expected 3000 MW of capacity. These evaluations included assessments of air quality impacts, water quality and wildlife impacts, water use and noise impacts, socioeconomic impacts and benefits, traffic impacts from construction and operation, and other impacts of the entire planned capacity of 3000 MW. This evaluation was undertaken to ensure that the time and expense for processing supplemental applications for additional generating units at the Hines Energy Complex would be significantly reduced, and to allow FPC to respond more quickly to changes in the growth in demand for new electrical generating facilities. Also as the Siting Board's 1994 Certification finds, the ultimate site capacity determination provides FPC with assurances that this site has adequate air, water and land resources to accommodate additional electrical generating units like those proposed in this application.

As recognized in the 1994 Certification, the Hines Energy Complex Site was selected by FPC for additional generating capacity after an extensive site selection process, conducted with the assistance of an Environmental Advisory Group. This interdisciplinary group selected a site which achieved the best balance of siting criteria including location near power needs, minimal environmental impact, and cost. Development of the Hines Energy Complex site takes advantage of utilizing an already disturbed phosphate mine site for current

and future power needs. Many of the environmental impacts associated with power development on new sites are not at issue here, since the site has been previously altered and disturbed by prior mining activity. The site has the further advantages of being close to FPC's load center and being served by electric transmission and rail and highway transportation facilities, which minimizes ancillary impacts.

FPC recently began operation of Power Block 1 at the Hines Energy Complex. By this application, FPC is seeking supplemental certification for the construction and operation of Power Block 2, an additional 500 MW (nominal) of generation, under the Florida Electrical Power Plant Siting Act (PPSA), Chapter 403, Part II, Florida Statutes (F.S.).

To the extent the Siting Board's previous ultimate site capacity determination has already addressed the ultimate impacts and benefits of the development of 3000 MW of electrical generating capacity at the Hines Energy Complex site, they are not addressed in detail in this application. Instead, each area of potential impact and benefit addressed in the 1994 Certification is explained for informational purposes. Those areas of impact and benefit which were not addressed in the 1994 Certification due to a lack of detailed knowledge of the design of future generating units, are addressed consistent with the requirements of DEP Form 17-1.211(1) for proposed Power Block 2.

This Supplemental Certification Application (SCA) is being filed pursuant to the requirements of the PPSA and Chapter 62-17, F.A.C. The SCA addresses the environmental and socioeconomic aspects of the additional generating unit at the Hines Energy Complex by presenting information on the existing natural and human environments, the additional generating facilities proposed to be constructed and operated, and the impacts of those additional facilities on those environments. Much of the information contained in this SCA is updated

information from the Site Certification Application filed in 1992 (the 1992 SCA) for Power Block 1 and ultimate site certification for the Hines Energy Complex, with a focus on the environmental impacts of the construction and operation of Power Block 2. Similar to Power Block 1, Power Block 2 will consist of two combustion turbines (CTs), each equipped with one heat recovery steam generator (HRSG), and a single steam turbine electrical generator (ST). Infrastructure, including fuel delivery and storage facilities, electrical transmission lines, potable water, wastewater treatment/disposal and transportation facilities are currently permitted and in place at the Hines Energy Complex and are adequate for the operation of Power Blocks 1 and 2.

The project continues to represent a beneficial reuse of an environmentally impacted mined-out phosphate area. Phased construction of numerous generating facilities over a number of years at a single site will enable FPC to meet the state's growing need for power with a minimum of environmental impact. The addition of Power Block 2 capacity at the Hines Energy Complex will be accomplished using the most efficient generating technology consistent with protection of the environment.

CHAPTER 1

NEED FOR POWER AND PROPOSED FACILITIES

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CHAPTER 1

NEED FOR POWER AND PROPOSED FACILITIES

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1.1 NEED SUMMARY

By the petition filed in August 1991 in Docket No. 910759-EI, Florida Power Corporation (Florida Power or FPC) requested that the Florida Public Service Commission (PSC, or the Commission) determine the need for four 235-megawatt, natural gas-fired combined-cycle (CC) generating units at FPC's Hines Energy Complex in Polk County, which were then referred to as Polk County Units 1 through 4. By Order No. 25805, issued February 25, 1992, the Commission approved the need for Polk County Units 1 and 2 (now combined into Hines Power Block 1), but deferred a decision on Units 3 and 4 (combined into Hines Power Block 2), because of several uncertainties regarding the timing of the need for Power Block 2. The order allowed Florida Power to return to the Commission when the timing of additional needs beyond that satisfied by the approved units became clearer.

In October 1998, FPC announced plans to build the Hines Power Block 2, a 500-megawatt (nominal) natural gas-fired combined-cycle generating unit. The unit, which has an in-service date of the summer of 2001, will address recent issues regarding the adequacy of FPC's generating reserve margin including its reliance on dispatchable demand side management. The 1998 extreme summer weather experience brought into sharper focus FPC's need for additional generation for flexibility in responding to unanticipated events and conditions which increase capacity requirements. The addition of Power Block 2 will improve the balance of total capacity resources between Company-owned generation and purchased power. As a result, FPC initiated the required regulatory process for determination of need to construct a generating unit by petitioning the Commission for waiver of Rule 25-22.082, F.A.C., (the Bid Rule). Upon approval of the waiver, FPC will then petition the Commission for the determination of need to construct Hines Power Block 2 at the Hines Energy Complex.

In addition to satisfying FPC's need for additional capacity, the unique characteristics of Hines Power Block 2 provide Florida Power with the means to address this need in the most expeditious and cost-effective manner possible. As an initial matter, it should be noted that Hines Power Block 2 had been originally scheduled for completion in the 1999-2000 time frame when submitted to the Commission for need approval in 1991. As a result, the unit has the advantage of considerable advance planning and design, as well as the scheduling and cost advantages of previously secured equipment and construction options. Even more important to the unit's ability to be placed in service quickly is the availability of an existing plant site, selected because of its minimal environmental impact, with an infrastructure capable of accommodating Hines 2 with only minor additions. The infrastructure already in place at the Hines Energy Complex includes extensive site development (access roads, cooling pond, water treatment facilities, transmission facilities, etc.) that will support the two-unit operations at the site. Finally, Florida Power has committed to not initiate any proceedings to increase base rates which includes the capital costs and non-fuel operating and maintenance expenses associated with Hines Power Block 2 for a period of five years from the unit's commercial operation date.

Based on the cost, scheduling, site, environmental, and utility control advantages of the proposed new plant, coupled with FPC's commitment to absorb the additional non-fuel related costs of the plant in its existing base rates until at least 2006, FPC is currently undertaking the appropriate regulatory steps for approval of the Power Block 2 unit.

1.2 PSC ORDER ON NEED

As stated in Section 1.1, the required regulatory process is underway. FPC expects to complete the regulatory approval process for building the Power Block 2 unit by mid-year 1999.

A copy of FPC's Petition for Need Determination will be submitted to the Department of Environmental Protection and other agency recipients of this SCA when the Petition is filed with the PSC. FPC expects to file the Petition with the PSC by early February 1999. Upon receipt of the PSC final order determining the need for Hines Power Block 2, copies will be filed with the Division of Administrative Hearings' Administrative Law Judge assigned to the certification proceeding for Power Block 2 and distributed to the agencies receiving this SCA.

1.3 SITE SELECTION PROCESS

In January 1989, recognizing that its forecasts indicated a need for additional generation capacity, FPC began the comprehensive process of locating a suitable site for a large new generation facility. A large site is desirable in order to maximize the economies of development and long-term operation.

Specifically, the objective of the site selection program was to determine a primary and alternate site that would be:

- Multi-unit and clean coal capable
- Technology- and fuel-flexible
- Cost effective
- Fully compatible with FPC's commitment to environmental protection
- In compliance with all government regulations
- Consistent with state and local land use policies

FPC used a systematic site selection approach to ensure that all of the above concerns were fully addressed. The process involved the following five phases, each with a specific objective:

Phase I

The first phase, **Area Screening**, began by screening the entire state of Florida. This phase screened out or eliminated areas that were either environmentally protected or clearly unsuited for development of the proposed facility. Phase I concluded by defining 172 large potential areas suitable for the project.

Phase II

The next phase, **Area Ranking**, ranked the 172 potential areas using criteria that evaluated environmental, socioeconomic and engineering issues. Phase II concluded by defining the top 60 candidate areas.

Phase III

The third phase, **Site Identification**, identified specific sites among the 60 candidate areas by conducting another screening process on a more refined geographic basis. Phase III concluded by defining 22 potential "semifinalist" sites.

Phase IV

The fourth phase, **Site Ranking**, ranked the 22 semifinalist sites using advanced criteria that further evaluated environmental, socioeconomic and engineering issues. Phase IV concluded by defining the top five candidate sites.

Phase V

The final phase, **Site Selection**, confirmed the Phase IV site ranking with additional field data and/or analytical evaluation. Phase V concluded in October 1990 by identifying the preferred and alternate sites.

Throughout this lengthy and careful process, FPC was assisted by an independent group of environmentalists, educators, and community leaders. This Environmental Advisory Group provided advice on matters of public concern, with their major function being to review plans for each of the five phases of the siting process and suggest changes in the evaluation process. FPC also systematically elicited the preferences of this independent panel for use in the development of ranking criteria used in the evaluation process. In addition to the input received from the Environmental Advisory Group, FPC consulted with various regulatory agencies at specific points in the process to obtain their perspective on siting criteria.

As a result of this extensive statewide search, FPC selected a location in Polk County as the primary site of its next generating units and an alternative site in Hardee County. Both locations met FPC's goal for a large site capable of handling staged development of various generation and fuel options. The 1994 Certification found that the Hines Energy Complex site is capable of supporting 3,000 MW of total generation.

1.4 TECHNOLOGY SELECTION

1.4.1 Generation Alternatives

FPC's need for additional generation is based upon specific system reliability criteria. A system optimization tool was used to generate a significant number of potential generation expansion alternatives which would satisfy FPC's system reliability criteria. These alternatives were examined and compared to quantify the costs and benefits of a variety of generation expansion technologies, plant sizes, and construction options.

In developing these expansion alternatives, FPC considered four major constraints. First, the technologies used in alternative plans must meet FPC's criteria for technical feasibility, reliability, and potential cost effectiveness. Second, the alternative plans must result in a system that meets or exceeds FPC's reliability criteria during each year of the plan. Third, the alternative plan must be consistent with FPC's commitment to environmental protection, and in particular must permit FPC to comply with the revised Clean Air Act limitations on sulfur dioxide emissions. Finally, the alternative must represent a plan that is well integrated with the present operation and configuration of the FPC system.

The generation alternatives that were evaluated included combinations of pulverized coal (PC) units, combustion turbines (CTs), CCs, fluidized bed, gasification plants, and existing plant repowering operations. Each of the alternatives included generation units modeled to come into service between 2001 and 2008.

FPC's economic evaluation of these alternatives included cumulative present worth revenue requirement comparisons. In addition, FPC evaluated several uncertainties for each alternative based on the high, medium and low demand and energy forecasts; and the high, medium, and low fuel forecasts. The final result of this decision analysis was a

comparison of cumulative present worth revenue requirements of each of the alternatives on FPC's system.

A second combined cycle unit at the Hines Energy Complex emerged from all of these calculations as the most cost-effective alternative. In other words, these units are expected to lead to the lowest cost of service and the lowest rates, when viewed on a present value or present worth basis. The units also do not pose any unusual risks in the event that some of the key planning assumptions used by FPC turn out to vary according to their expected probability distribution.

1.4.2 Combined Cycle Design

The technology selected for the initial phases of the Hines Energy Complex is based on the use of modern, high efficiency gas-fired CTs and steam turbines (STs) configured in a "combined cycle" (CC). Generating stations are referred to as CC when they have two sequential electrical generating stages. The first stage of a CC plant is a CT, much like a utility peaking plant. In the second stage of the process, the hot gas from the CT is passed through a heat recovery steam generator (HRSG), where steam is produced and directed to the ST. The CT and ST can be designed to drive individual electrical generators or to drive a single generator.

The approximate average annual electrical output measured in MW for these CCs is expressed as the "nominal" output. Both Power Blocks 1 and 2 have a nominal output of 500 MW. The actual output of either unit can vary seasonally above and below the nominal output.

In sum, because CC plants make excellent use of the energy in their input fuel, they have an extremely low heat rate. The modern CC power plant is one of the most efficient power cycles available today.

1.5 SITE STRATEGIC ASSESSMENT

1.5.1 Schedule Flexibility

Development of the Hines Energy Complex has provided FPC with the flexibility to add incremental capacity to approximate anticipated load growth. It is expected that additional generating units planned for the Hines Energy Complex will have a relatively short construction lead time, thus delaying decisions on future additions as long as possible. For example, this supplemental site certification application for the second 500 MW (nominal) block of CC units is being filed in 1999 in order to meet FPC's scheduled in-service dates of mid-2001 for those additional units.

1.5.2 Fuel Flexibility

The proposed new CC units at the Hines Energy Complex will be capable of burning natural gas or distillate fuel oil. Natural gas, the primary fuel, is considered one of the cleanest fuels and will be a major factor in meeting future environmental regulations. The Hines Energy Complex site provides FPC with the flexibility to convert to coal gasification capacity in the future should circumstances warrant. Not only is the site an excellent one for receiving and handling coal fuel, but also the CC units are very adaptable to coal-derived gas.

1.5.3 Clean Air Act Requirements

The requirements of the 1990 amendments to the federal Clean Air Act make it essential for FPC to have a generation expansion plan that not only meets the expected number of sulfur dioxide allowances FPC will receive, but also has the operational flexibility to meet environmental regulations under unexpected circumstances such as longer than expected

unit outages. An extended outage of a major base load plant may require that other units be run off of economic dispatch in order to comply with the FPC emissions limit. The CC units can be run at high capacity factors in order to reduce the total system emissions. In addition to their high efficiency, the proposed new Power Block 2 CC units are being designed to have relatively low environmental impact. Airborne emissions will be limited by the use of a clean fuel and the application of best available control technologies.

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2.1 SITE AND ASSOCIATED FACILITIES DELINEATION

The Hines Energy Complex is located in southwest Polk County, Florida, approximately 3 miles northwest of Fort Meade, 3.5 miles south of Bartow, and about 40 miles east of Tampa (Figure 2.1.1-1). The nearest unincorporated community, Homeland, lies about 1 mile to the northeast of the site boundary. The site is bounded on the north by County Road (CR) 640, and the south by U.S. Agri-Chemicals Corporation (USAC) property. CR 555 runs through the site.

2.1.1 Description of the Site and Surrounding Area

The Hines Energy Complex site encompasses approximately 8,200 acres, over 900 acres of which will be occupied ultimately by generating and related facilities. The portion of the site on which the combustion turbines, associated HSRGs, and steam turbine will be located is referred to as the Plant Island. The site lies in a region of the state dominated by phosphate mining operations including mines, settling ponds, sand tailings piles, gypsum stacks, and chemical and beneficiation plants. The adjacent land uses consist almost entirely of active phosphate mining, or mined and reclaimed lands. The adjacent phosphate mine owners are USAC; IMC-Agrico (IMC); Estech Inc. and Mobil Mining and Minerals. From the standpoint of land use compatibility, the availability of transportation facilities, the lack of noise and visual impacts during construction and operation activities, the Siting Board has already determined the site location to be suitable for power plant facilities. A discussion of land use in the area of the Hines Energy Complex site is presented in Section 2.2 of this SCA.

2.1.2 Site Delineation

Figures 2.1.2-1 and 2.1.2-2 show the facilities which will be located at the Hines Energy Complex during operation of Power Blocks 1 and 2. Ultimate site buildout facilities are shown in Appendix 10.4.1-2. During operation of Power Blocks 1 and 2, the Hines Energy Complex site and facilities will be subdivided into six key project components as follows:

- Plant Island 704 acres
- Cooling Pond 722 acres
- Brine Pond 311 acres
- Buffer/Mitigation Area 1916 acres
- Water Crop Areas 3672 acres
- McCullough Creek Watershed 470 acres

No portion of the Hines Energy Complex is within the 100-year floodplain of any surface water body in the area. The site is located entirely within the Peace River basin.

2.1.3 References

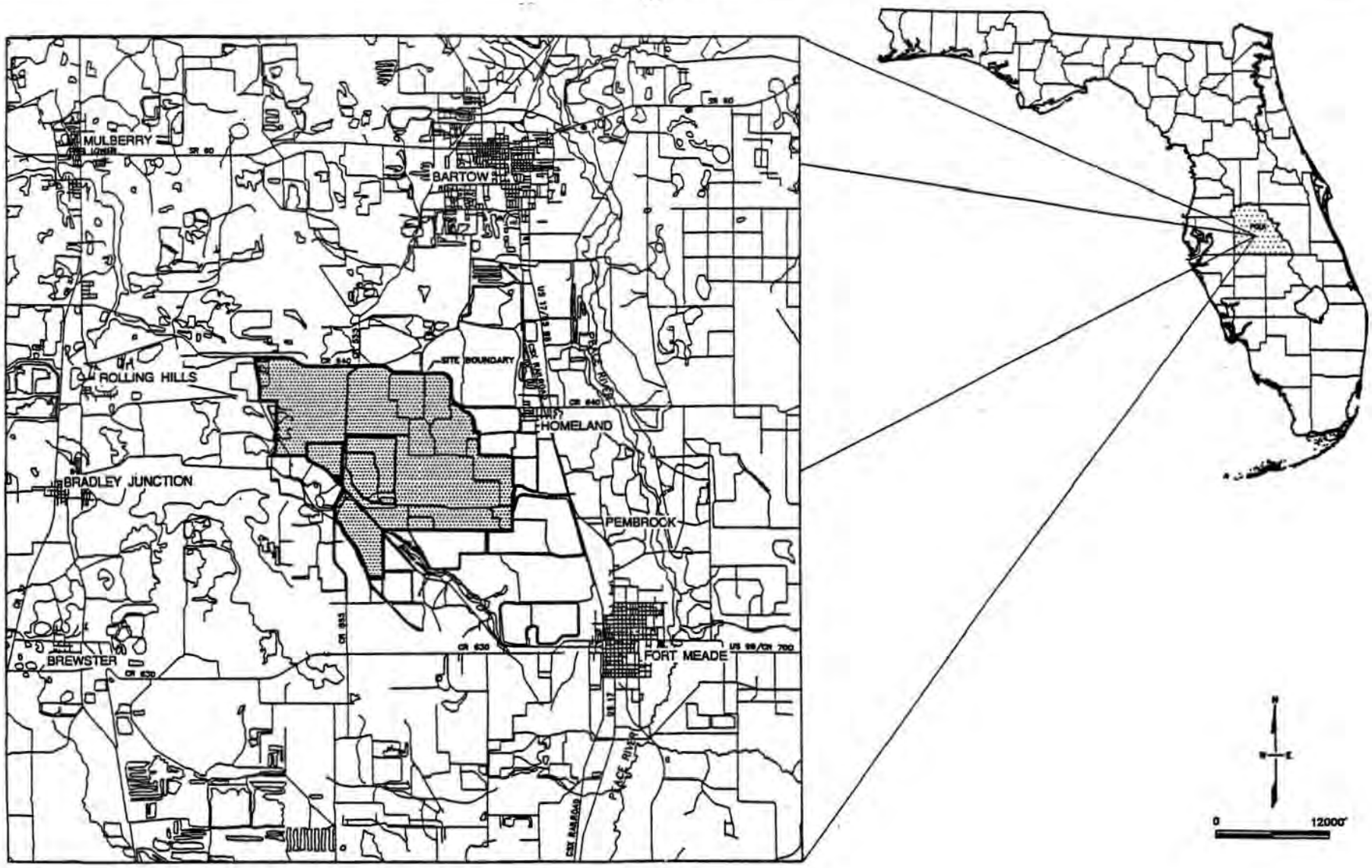
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CE: 1992 SCA

Florida Power CORPORATION

Energy Complex

FIGURE 2.1.1-1
SITE LOCATION MAP

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2.2 SOCIOPOLITICAL ENVIRONMENT

2.2.1 Governmental Jurisdictions

The project site is located in an unincorporated area in southwest Polk County approximately 3.5 miles south of Bartow, 3 miles northwest of the city of Fort Meade, and 1 mile southwest of Homeland, an unincorporated community. As Figure 2.2.1-1 indicates, the city of Fort Meade is the only governmental jurisdiction within a five mile radius of the Plant Island.

The following areas are not found within 5 miles of the Plant Island:

- National Parks
- National Forests
- National Seashores
- National Wildlife Refuges
- National Wilderness Areas
- National Memorials or Monuments
- National Marine and Estuarine Sanctuaries
- Roadless Area Review and Evaluation Areas
- National Wild and Scenic Rivers
- Critical Habitat of Endangered Species
- State Parks
- State Forests
- Areas of Critical State Concern
- Conservation and Recreation Lands
- State Archaeological Landmarks or Landmark Zones
- Save Our Rivers Lands

- State Aquatic Preserves
- Outstanding Florida Waters
- Scenic and Wild Rivers
- Special Management Area
- Indian Reservations
- Military Lands

Figures 2.2.1-1 and 2.2.1-2 show the governmental jurisdictions and parks within a 5-mile radius from the center of the Plant Island. There are no special areas identified within a 1-mile radius of the Plant Island.

2.2.2 Zoning and Land Use Plans

The Hines Energy Complex has been determined to be consistent and in compliance with the Polk County zoning standards and land use plans. In April 1991, Polk County adopted a Comprehensive Plan in accordance with the Local Government Comprehensive Plan and Land Development Regulation Act, Chapter 163, Part II, F.S. Appendix 10.3 provides further details regarding the Comprehensive Plan.

The Polk County Board of County Commissioners approved a conditional use permit (CUP) for the Hines Energy Complex on June 2, 1992. On December 3, 1993, the Siting Board entered its order finding the Hines Energy Complex site to be consistent and in compliance with the Polk County land use plans and zoning standards. In accordance with section 403.517(3), F.S., land use and zoning issues are not an issue in this proceeding. The site boundaries will not be expanded and the additional capacity will be within the approved ultimate site capacity. A copy of the Siting Board's Final Order on land use and zoning and a copy of the Polk County CUP are included in Appendices 10.4.4 and 10.4.5, respectively.

The planned development of Power Block 2 is consistent with the approved final order and CUP.

2.2.3 Demography and Ongoing Land Use

Two municipalities, Bartow and Fort Meade, are located within 5 miles of the Hines Energy Complex site boundries. The city of Bartow, with a population of 14,716 according to the 1990 census, is the county seat and the third largest city in Polk County. The city of Fort Meade had a 1990 population of 4,976. Unincorporated communities in southwest Polk County include Homeland, located about one mile northeast of the project boundaries; Bradley Junction, located about 5 miles west of the Hines Energy Complex site; and Rolling Hills, located about 5 miles northwest of the Hines Energy Complex site.

The rate of population growth in Florida and Polk County is illustrated on Figure 2.2.3-1. Florida's population increased 32.7 percent from 1980 to 1990. Polk County's population growth has changed from 40.8 percent growth in the 1970s, to 26 percent growth in the 1980s. Although Polk County's population increased 26 percent from the 1980 census to the 1990 census, most of the growth occurred in the northern part of the County. The 1990 census shows a decline in population in most areas in the southern portion of the County, including population decreases in both Bartow and Fort Meade. Bartow's population decreased 1 percent from 14,789 in 1980 to 14,716 in 1990; while Fort Meade lost 10 percent of its population, dropping from 5,546 to 4,993. The two census tracts south and west of the site (160 and 161.98) lost population between 1980 and 1990 (Figure 2.2.3-2). Other census tracts in the area grew at a rate of 0 to 21 percent, except for the census tract which includes the majority of the proposed site, tract 159. The population in tract 159 increased almost 29 percent from 1,346 in 1980 to 1,730 in 1990. Although the population in this tract increased by 384 persons, there was no significant increase in population in the direct vicinity of the site. The overall population decrease in southern Polk County has been

attributed to the loss of jobs in the area resulting from the migration of citrus and mining jobs to areas south of Polk County (Rufty, 1991).

The 1990 census calculated the Polk County population at 405,382, which made Polk County the eighth largest county in the state. Polk County experienced a 26% growth increase from 1980 to 1990. The University of Florida Bureau of Economic and Business Research estimates that Polk County's population is projected to reach 481,401 by 2000 and 516,002 by 2005. Polk County's Comprehensive Plan projects population in Polk County to reach 546,700 in the year 2000, with 57 percent of the population, or 311,164, living in the unincorporated area (Figure 2.2.3-3).

The Hines Energy Complex site is located in southwestern Polk County in an area which has been dominated by phosphate mining operations, including mines, clay settling ponds, sand tailings piles, gypsum stacks, and chemical and beneficiation plants. Most of the area within a 5-mile radius of the Plant Island consists of lands being actively mined, unreclaimed mining land, and lands in various stages of reclamation. Most of the reclaimed lands revert to pastureland or land-and-lakes after reclamation. Other land uses found within a 5-mile area include pastureland, citrus groves, and limited residential, commercial and industrial uses. Land uses within the 5-mile radius of the Plant Island are mapped on Figures 2.2.3-4A and 2.2.3-4B.

2.2.4 Easements, Title, Agency Works

County Road (CR) 555 runs through the Hines Energy Complex and CR 640 borders the site on the north. No other easements, title, or agency works crossing approvals are required for development of Power Block 2.

2.2.5 Regional Scenic, Cultural and Natural Landmarks

The Hines Energy Complex is located in an area which has previously been dominated by phosphate mining operations for decades. There are no regional scenic, cultural, or natural landmarks within 5 miles of the Hines Energy Complex site.

2.2.6 Archaeological and Historic Sites

According to a letter from the Florida Department of State, Division of Historical Resources (DHR), dated January 30, 1992, the Hines Energy Complex is in an area which has been dominated by phosphate mining operations for several decades. There are no known archaeologically and historically significant sites within five miles of the site. This letter is included in Appendix 10.4.10.

2.2.7 Socioeconomic and Public Services

2.2.7.1 Socioeconomic

EMPLOYMENT AND INCOME

Polk County's civilian labor force was 201,556 in 1997. Out of this total, 185,885 were employed, resulting in an unemployment rate of 6.4 percent. Major industries in terms of employment were retail trade (22 percent), services (23 percent), manufacturing (12 percent), and government employment (federal, state and local), which accounted for 15 percent of total employment. Mining employment accounted for 2 percent of total employment (Figure 2.2.7-1). The average wages for these industries in 1997 were $17,080 for retail, $23,584 for services, $31,880 for manufacturing, and $27,040 for all government employees. (Table 2.2.7-1).

Employment in Polk County is projected to increase to 226,203 by the year 2005, according to the Florida Department of Labor and Employment Security's publication on Industry and Occupational Employment Projections. The per capita personal income for Polk County was $19,905 in 1996, or 68 percent of the Florida average and 61 percent of the national average per capita income. The 1996 per capita income for Polk County represented a 4 percent increase over the 1995 per capita income of $19,126 (Table 2.2.7-2).

HOUSING

According to the draft Polk County Evaluation and Appraisal Reports, conventional single family units make up 69 percent of all housing units, mobile homes make up 22 percent, and multi-family units made up 9 percent. Census data from 1990 indicate that detached single-family units have decreased to 53 percent of total units, mobile homes have decreased to 29 percent of total units and multi-family units have increased and now account for 18 percent of all units.

The 1990 Census reported that the percentage of units occupied by renters was 25 percent, while units occupied by owners was 59 percent. Vacant units accounted for 16 percent of all units in the county. Housing cost data from the 1990 Census indicate that 92 percent of the rental units in the county rented for less than $500 per month, with a median monthly rent of $300. The monthly cost of home ownership was not available for 1990. However, the Census showed that the median value of owner-occupied units was $61,000. The majority of these units (84 percent) had a value less than $150,000 while 34 percent of these units were valued at less than $50,000.

Table 2.2.7-3 illustrates the trend in building permits issued in Polk County between 1990 and 1995. The total value of building permits in Polk County rose from $314,891,000 in 1990 to $379,671,000 in 1995.

LOCAL GOVERNMENT REVENUES AND EXPENDITURES

Polk County's revenue sources include taxes, licenses and permits, intergovernmental revenues, charges for services, fines and forfeitures, miscellaneous revenues, and enterprise revenues. Polk County's total revenues were $404,617,775 in 1996-1997, and are projected to be $559,175,524 in fiscal year 1998 -1999, according to the Polk County Budget.

Polk County's expenditure categories include court related services, government services, public safety, physical environment, transportation, economic environment, human services, culture and recreation and internal services. Total expenditures for 1996 -1997 were $338,527,794, and are projected to be $559,175,524 in fiscal year 1998-1999. Table 2.2.7-4 and 2.2.7-5 provides additional information on revenue and expenditures.

2.2.7.2 Public Services

PARKS AND RECREATION

Polk County's Parks and Recreation Division maintains parks covering more than 2,300 acres and providing facilities for camping, fishing, water sports, ball games, and equestrian events. Two county parks are located within 5 miles of the Plant Island. The IMC Peace River Park is located just outside a 5-mile radius of the Plant Island. The IMC Peace River Park is a 640-acre regional park consisting of reclaimed phosphate lands. The partially developed park includes picnic facilities and a boardwalk in a 30-acre area along the

Peace River. Bartow and Fort Meade also provide recreation facilities. Recreational facilities located in Bartow include a civic center, parks, ball fields, picnic areas, a recreation center, and a community center. Recreational facilities located in Fort Meade include parks, boat ramps, picnic areas, ball fields, and a community center.

EDUCATIONAL SERVICES

Several colleges and technical schools are located in Polk County, including Florida Southern College and Polk Community College. The University of South Florida is located in Tampa, 30 miles west of Polk County. There are 107 schools in the county, including 63 elementary schools, 18 secondary schools, and 26 other schools including vocational centers and exceptional student centers. Four elementary schools, a middle school, a junior high school, and a high school are located in Bartow. Fort Meade contains two elementary schools, a middle school, and a junior/senior high school. There are nine public libraries and one private library within the county, including public libraries in Bartow and Fort Meade.

PUBLIC SAFETY

Polk County provides public safety services for the entire county. The County's Public Safety offices are located at the Bartow Airbase on Highway 17 between Bartow and Eagle Lake. These offices include the Emergency Management Division, Fire Services, and Emergency Medical Services. The County's Fire Services Division provides fire protection throughout the county through county fire stations and volunteer fire stations. There are 150 full-time firefighters in the county and 350 volunteers. There is also a volunteer fire department located in Fort Meade staffed with 25 volunteers. In addition, there are two fire departments located in the city of Bartow: the Bartow Fire Department, staffed with 15 paid personnel and 35 volunteers; and the Bradley Junction Fire Department (located 8 miles

from the Hines Energy Complex) staffed with 2 paid personnel and 10 volunteers. The County has a Hazardous Materials Team of 12 persons per shift who are especially trained to handle chemicals and industrial incidents. This team is located in the city of Eagle Lake and throughout the County.

The County Emergency Medical Services has ambulances located at approximately 24 locations throughout the County, including one located in Bartow and one in Fort Meade. There are five hospitals in Polk County, with one major trauma hospital located in Lakeland.

Law enforcement is provided by the Polk County Sheriff's Office located in downtown Bartow, the Highway Patrol, and the cities of Bartow and Fort Meade each have a municipal police force.

UTILITY SERVICES

Central water and wastewater services are not currently available at the proposed site. The closest public water and wastewater systems are in the City of Fort Meade, approximately 4 miles southeast of the Plant Island. The Fort Meade Water Treatment Facility has a capacity of 1.44 million gallons per day (MGD) with current usage at 0.83 MGD or 58% of capacity. The Fort Meade wastewater treatment facility has a capacity of 1.0 MGD and a current usage of 0.68 MGD or 68% of capacity. According to the Fort Meade Comprehensive Plan, the wastewater facility is expected to provide sufficient capacity for the city through the year 2010.

SOLID WASTE SERVICES

Solid waste disposal in Polk County is handled by the County. The County operates three regional landfills which are used by municipalities and unincorporated areas of the County.

In addition to the County's landfills, the cities of Lakeland and Fort Meade operate city-owned incinerator facilities. These incinerators are not used by the County.

The County's North Central Landfill, located on SR 540 between Lakeland and Winter Haven serves the project site. The North Central Landfill serves 67 percent of the County's population. The landfill began operation in 1980 and consists of 120 acres, 17 acres of which have been filled. The level of service provided by the landfill was 6.3 pounds per capita per day in 1996 and is projected to increase to 6.63 pounds per capita per day by 2010. The landfill is expected to have excess capacity through the year 2020.

TRANSPORTATION

Traffic conditions in the vicinity of the project were quantified in the 1992 SCA. See Appendix 10.5.1. As part of the development of Hines Power Block 1, traffic studies and roadway improvements were completed which addressed and mitigated the total transportation impacts for ultimate site capacity buildout (3000 MW).

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Table 2.2.7-1
Polk County
Wages by Industry

Industry	Annual Wage
Total All Industries	24,432
Agriculture, Forestry and Fishing	16,200
Mining	40,784
Construction	26,024
Manufacturing	31,880
Trans. Comm. & Public Utilities	29,660
Wholesale Trade	29,164
Retail Trade	17,080
Services	23,584
All Government	27,040

Source: Florida Department of Labor and Employment Security, 1997

Table 2.2.7-2

Per Capita Income Growth Rates

1985 – 1996

LOCATION	1985	1993	1994	1995	1996
United States	$15,140	$21,223	$22,044	$23,195	$24,436
Florida	$15,169	$21,153	$21,777	$23,031	$24,226
Polk	$11,834	$16,972	$17,930	$19,126	$19,905

Source: Central Development Council

Table 2.2.7-3

Polk County Building Permits Issued

(Value in Thousands of Dollars)

YEAR	TOTAL VALUE	VALUE OF ALL RESIDENTAL	# OF ONE FAMILY HOUSES	#OF MULTI-FAMILY BUILDINGS	VALUE OF ALL NON-RESIDENTIAL	VALUE OF ADDITIONS AND ALTERATIONS
1990	$314,891	$212,268	1,775	319	$60,373	$34,048
1991	$228,936	$139,550	1,991	598	$47,482	$41,903
1992	$278,411	$142,772	2,258	91	$83,634	$52,005
1993	$518,263	$174,463	2,587	68	$290,549	$53,252
1994	$499,585	$183,686	2,572	111	$253,396	$62,503
1995	$379,671	$161,592	2,187	179	$143,362	$71,057

Source: Central Florida Development Council, 1997

Table 2.2.7-4
Revenues by Character and Object

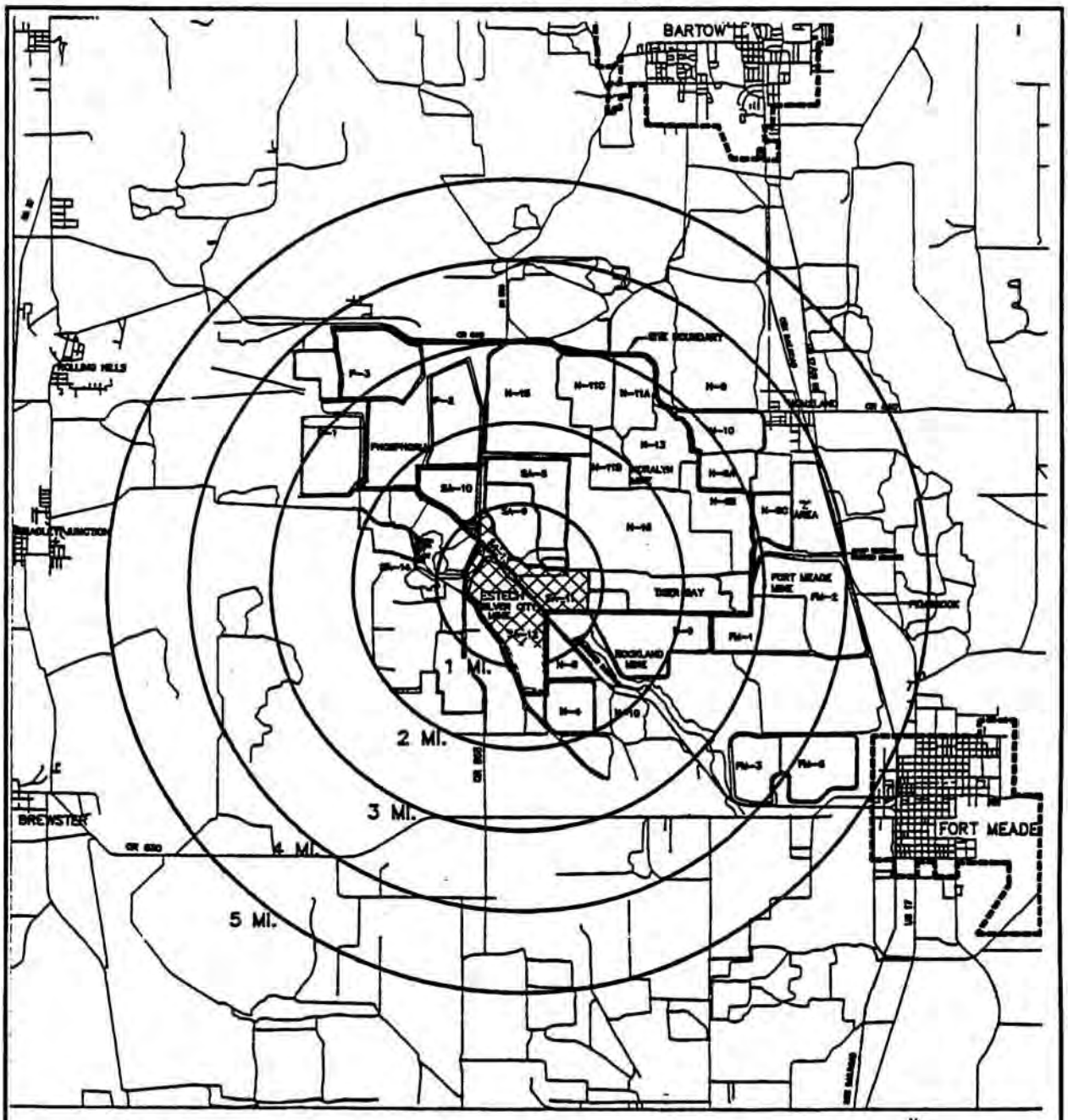
Description	Actual 1996– 97	Budget 1997 – 98	Adopted 1998 - 99
Taxes	$113,60,660	$118,741,752	$123,063,122
Licenses and Permits	3,844919	3,261,108	2,123,250
Intergovernment	57,962,036	62,308,291	67,610,182
Charges for Services	13,565,681	12,045,277	12,342,423
Fines and Forfeitures	4,317,572	4,745,500	4,634,472
Miscellaneous Revenue	73,625,787	28,255,524	32,890,114
Non-Revenues	85,010,069	232,578,025	258,324,834
Internal Service Funds	14,579,713	15,274,585	16,475,742
Enterprise Funds	38,031,338	37,896,044	41,711,385
Grand Total	**$404,617,775**	**$515,106,106**	**$559,175,524**

Source: Polk County Board of County Commissioners – Public Record

Table 2.2.7-5
Expenditures by Function and Program

Description	Actual 1996 – 97	Budget 1997 – 98	Adopted 1998 - 99
Court-Related	$9,476,643	$10,036,099	$10,478,916
General Government Services	72,447,173	62,345,923	65,829,964
Public Safety	88,229,198	112,989,958	116,370,200
Physical Environment	56,917,108	91,893,312	104,690,752
Transportation	47,335,260	47,399,690	43,018,126
Economic Environment	11,288,782	19,002,778	18,511,029
Human Services	21,738,678	31,151,385	26,241,418
Culture and Recreation	4,328,462	9,748,201	11,891,054
Internal Services	3,287,839	3,180,144	3,434,223
Grand Total	**$338,527,794**	**$515,106,106**	**$559,175,524**

Source: Polk County Board of County Commissioners – Public Record



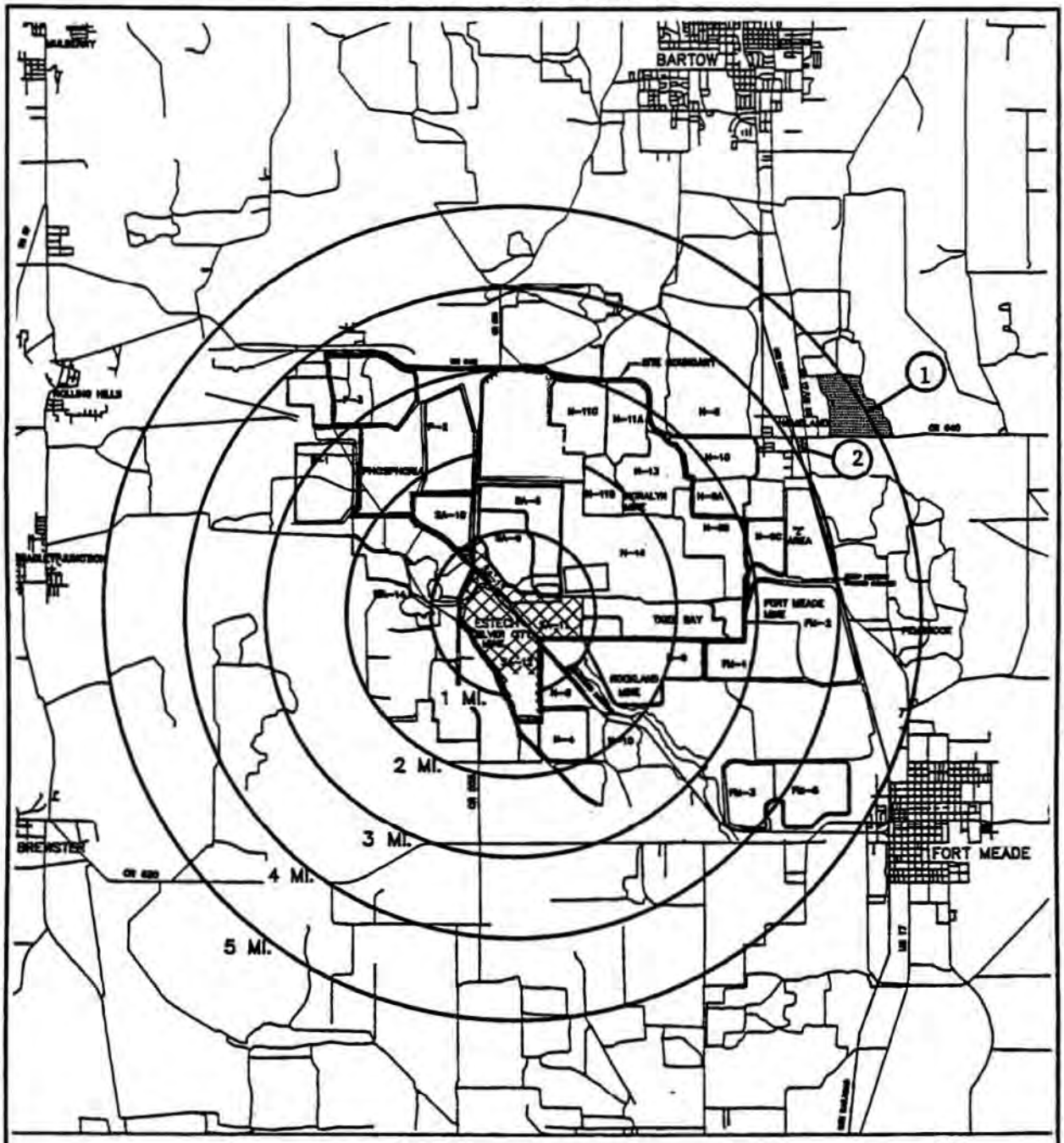
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.2.1-1 GOVERNMENTAL JURISDICTIONS WITHIN FIVE MILES OF THE PLANT ISLAND

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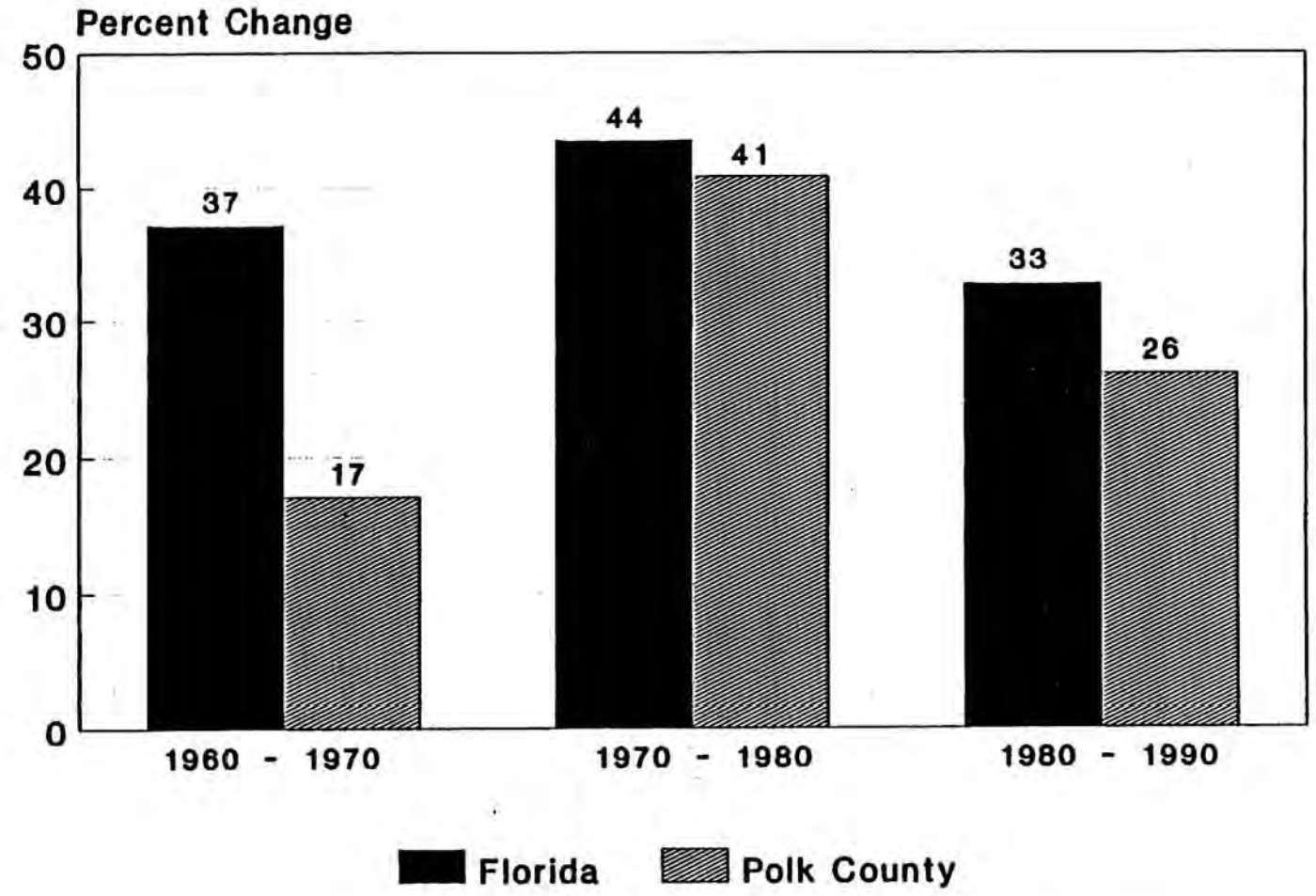
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.2.1-2
PARKS AND RECREATION AREAS WITHIN FIVE MILES OF THE PLANT ISLAND

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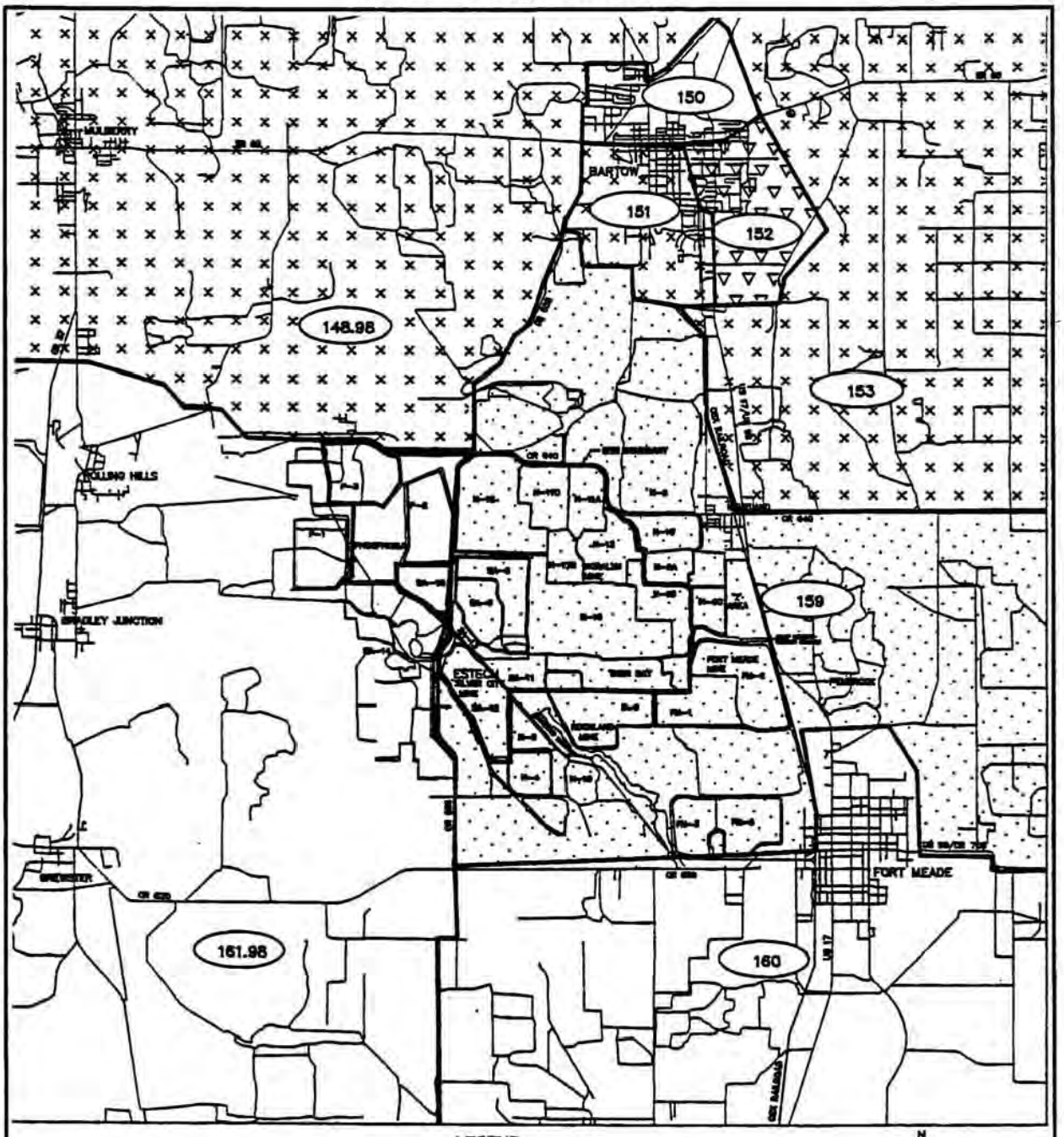


SOURCE: 1992 SCA

Florida Power CORPORATION
Hines Energy Complex

FIGURE 2.2.3-1
POPULATION GROWTH 1960-1990
FLORIDA AND POLK COUNTY

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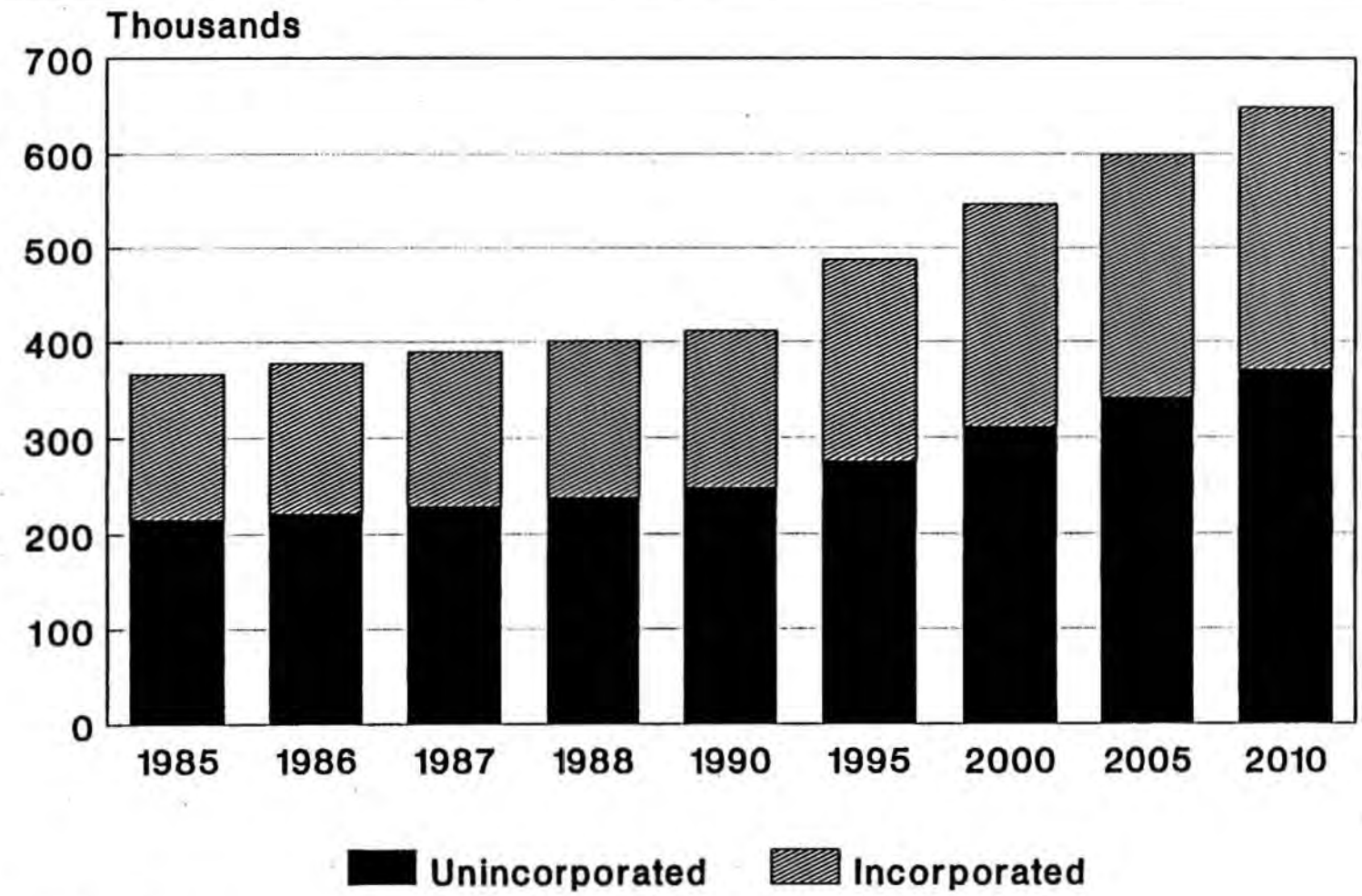
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.2.3-2 POPULATION GROWTH BY CENSUS TRACT

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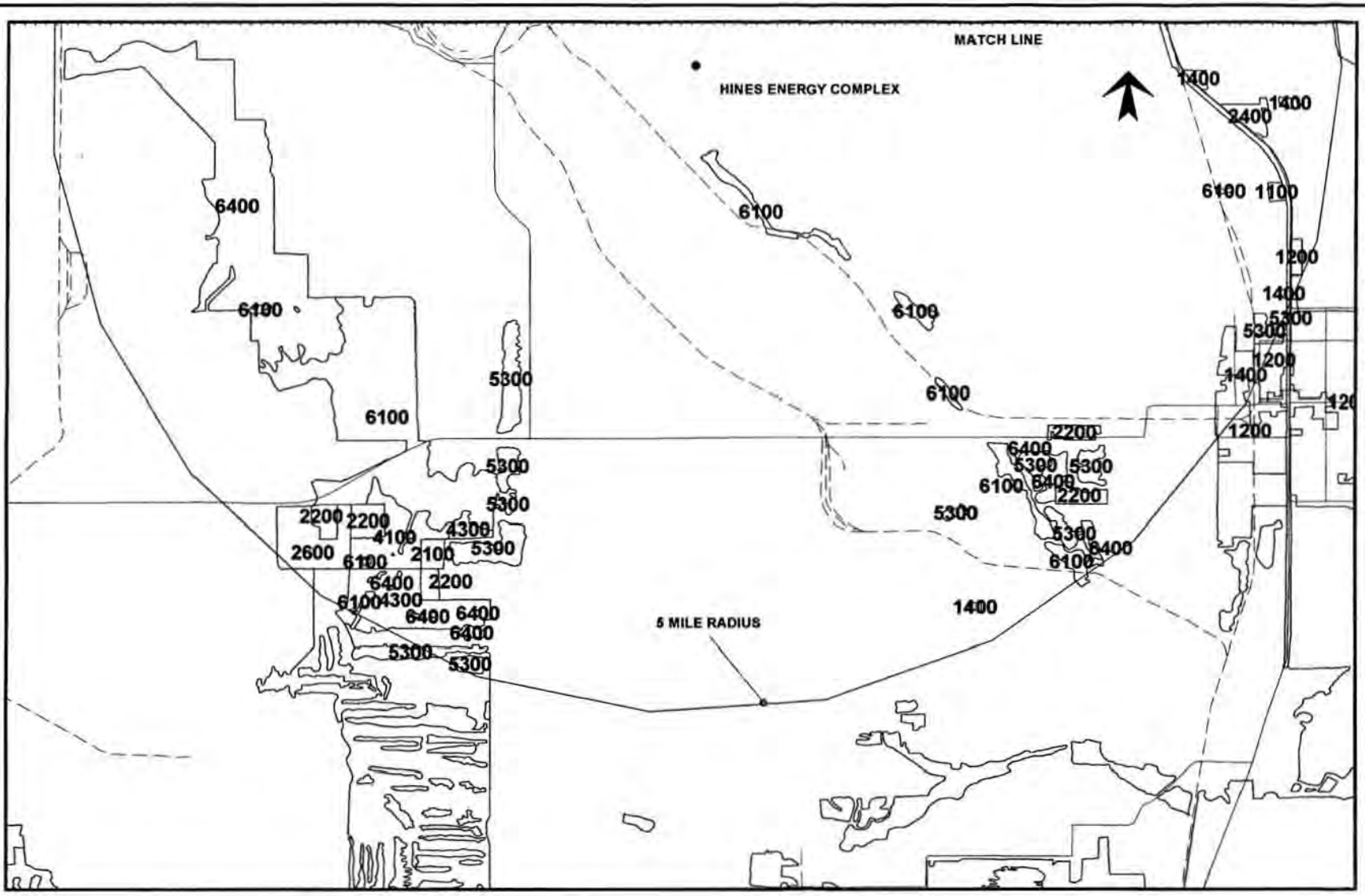


SOURCE: 1992 SCA

Florida Power CORPORATION
Hines Energy Complex

FIGURE 2.2.3-3
POLK COUNTY POPULATION ESTIMATES AND PROJECTIONS

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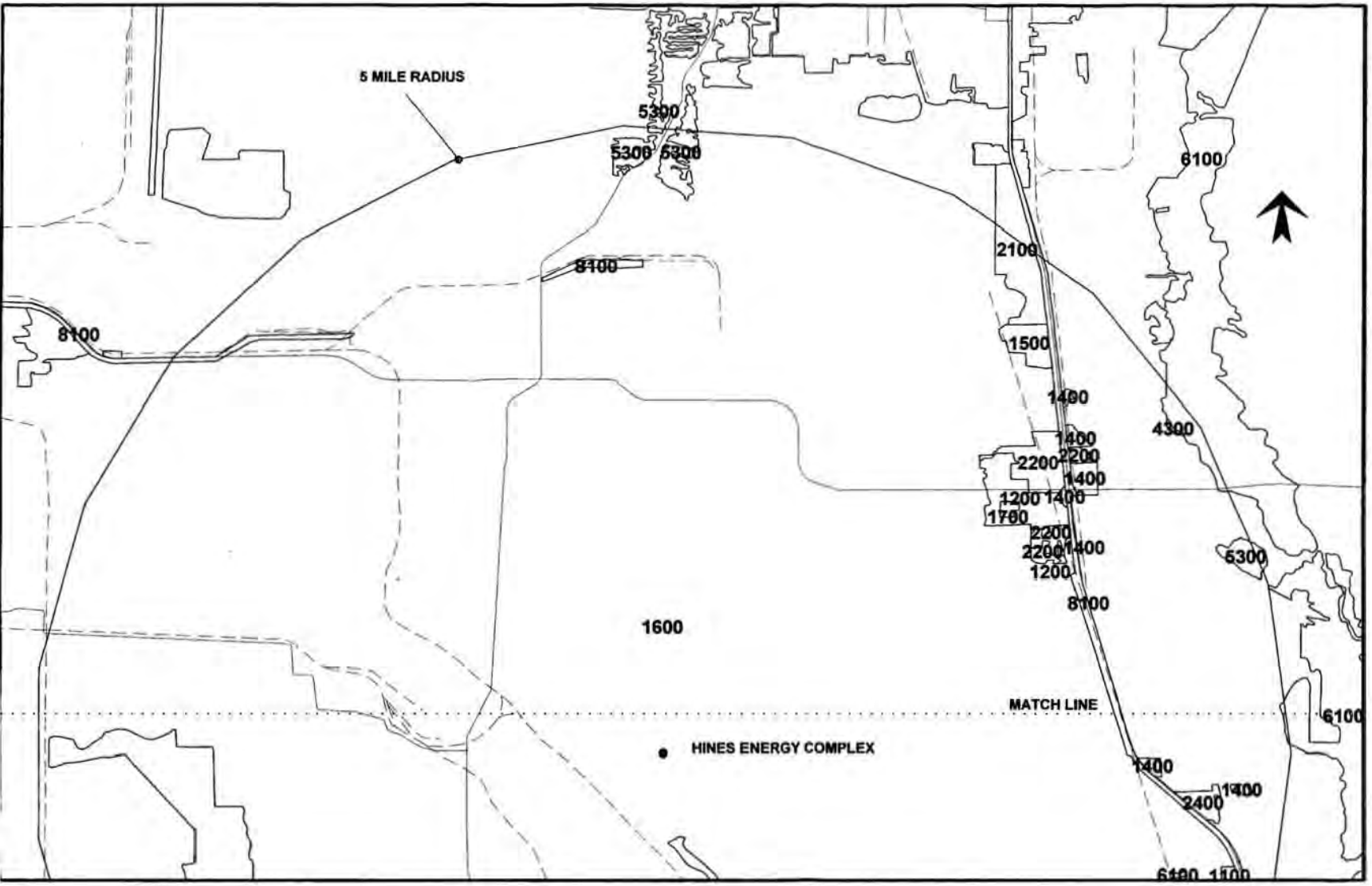


Florida Power CORPORATION

HINES ENERGY COMPLEX

FIGURE 2.2.3 - 4B
EXISTING LAND USE WITHIN 5 MILES OF THE PLANT

Sources: 1998 Florida Geographic Data Library, Florida Land Use Cover and Forms Classification System



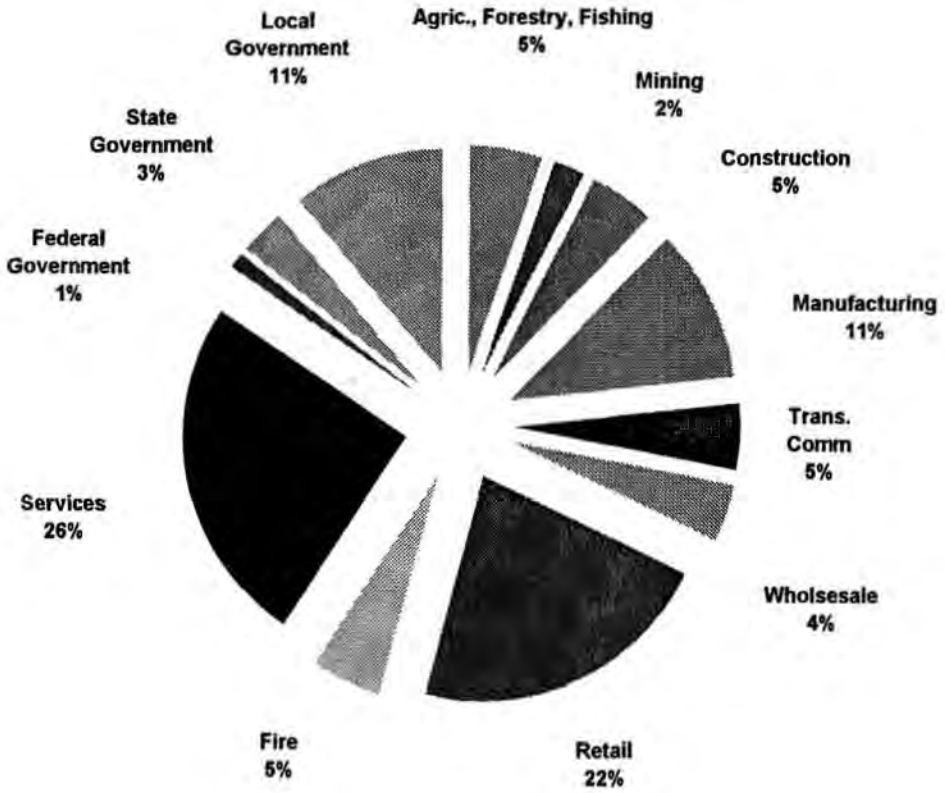
Florida Power
CORPORATION

HINES ENERGY COMPLEX

FIGURE 2.2.3 - 4A
EXISTING LAND USE WITHIN 5 MILES OF THE PLANT

Sources: 1998 Florida Geographic Data Library, Florida Land Use Cover and Forms Classification System

Figure 2.2.7-1
Polk County
Annual Average Employment



Source: Florida Department of Labor and Employment Security, 1996

2.3 BIOPHYSICAL ENVIRONMENT

Following are descriptions of the general geohydrology, surface and subsurface hydrology, water budget and area uses, vegetation/land use, ecology, meteorology, ambient air quality, noise, and other environmental features that exist at or near the Hines Energy Complex site for the proposed Power Block 2.

2.3.1 General Geohydrology

This section describes the major geohydrologic aspects of the Hines Energy Complex site and discusses these geohydrology features on a regional setting.

2.3.1.1 Geologic Description of the Site-Area

Polk County is divided into nine major physiographic provinces: the Lakeland Ridge, Winter Haven Ridge, Lake Henry Ridge, Lake Wales Ridge, Bombing Range Ridge, Lake Upland, Polk Upland, Osceola Plain, and Western Valley (SWFWMD, 1988). These areas and their topographic relief and sediments were formed when sea levels were much higher than today.

The Hines Energy Complex site is located within the southern reaches of the Lakeland Ridge, which runs north to south in western Polk County from about 10 miles northwest of Lakeland to the vicinity of Fort Meade. The Ridge ranges in elevation from 150 to 270 ft MSL.

REGIONAL GEOLOGY

Surface and near-surface sediments in Polk County consist of quartz sand, silt, clay, phosphate and limestone. A simplified stratigraphic sequence, from top to bottom, includes unnamed Holocene deposits (predominantly sand), Pleistocene and Pliocene marine sands (some containing phosphate) overlying clays, sandy clays, and phosphatic limestone of the Miocene Hawthorn Group. These overlie a thick sequence of limestone, including the Miocene Tampa Member of the Hawthorn Group, Oligocene Suwannee Limestone, Eocene Ocala Group and Avon Park Formation (SWFWMD, 1988).

Figure 2.3.1-1 shows the generalized lithostratigraphic units and hydrogeologic framework underlying the site area. Figures 2.3.1-2 and 2.3.1-3 show the distribution of these sediments throughout Polk County in two geologic cross-sections.

POST-MIOCENE SURFACE SEDIMENTS

The surface sediments in Polk County consist of post-Miocene deposits of unlithified coastal sand, shell, silts, sand, gravelly sand, and beach and dune sands. In general, the surficial sediments are thinnest in the southwest portion of Polk County, and are thicker to the north and east, and beneath ridges. The thickness of the undifferentiated surficial deposits ranges from less than 10 feet to more than 120 feet. At the Hines Energy Complex site, most of the surficial deposits were removed by mining operations and were typically 20 feet thick.

MIOCENE HAWTHORN GROUP

The Miocene Hawthorn Group in South Florida includes the Peace River Formation that overlies the Arcadia Formation. The Bone Valley Member, located in the upper portions of the Peace River Formation, is considered to be the top of the Hawthorn Group. The lower portion of the Hawthorn Group consists of silts, clays and limestone of the Arcadia Formation (Scott, 1988). The Peace River Formation is present throughout Polk County with the exception of the northernmost part of the County. The Arcadia Formation ranges in thickness from 0 feet in the north to approximately 300 feet in the southwest corner of the County. In general, these formations dip to the south and southeast. The Peace River Formation includes the Bone Valley Member that consists of yellowish gray to light olive-green interbedded sands, clays and dolomite with variable phosphate content. The Bone Valley Member is defined as phosphorite pebble or gravel matrix beds with sand-sized phosphorite in a sandy to clayey matrix. At the Hines Energy Complex site, the Bone Valley Member comprises most of the Peace River Formation. The Bone Valley member directly overlies the Arcadia Formation that consists of white to yellowish gray quartz, sandy phosphates and clayey dolomites and clay beds. The thickness of the Hawthorn Group is approximately 260 feet in the site vicinity.

OLIGOCENE SUWANNEE LIMESTONE

The Oligocene Suwannee Limestone is present throughout the western portion of Polk County. The Suwannee consists of a white, creamy, tan, variably textured calcarenite to calcilutite, fossiliferous, poor to well indurated to variably recrystallized limestone. The top of the Suwannee Limestone is reported to range from elevation 70 to 80 ft MSL in the north areas of Lakeland to -250 to -300 ft MSL and range in thickness from 100 to 150 feet in the western portions of Polk County (SWFWMD, 1988).

EOCENE OCALA GROUP

Below the Suwannee Limestone lies the Eocene series of the Ocala Group, the Avon Park Formation and the Oldsmar Formation. The Ocala Group underlies essentially all of Polk County. The Ocala Group (consisting of the Crystal River, Williston, and Inglis Formations) ranges in thickness from 75 to 335 feet throughout the County. The top of the Ocala Group is near the surface in the northern portion of the County and dips southward.

The Avon Park Formation is present below the Ocala Group. It is highly fractured, consists of finely crystalline dolomite with some fossiliferous limestone, and ranges up to 700 feet thick. Underlying the Avon Park Formation is the Oldsmar Formation containing gypsum and anhydrite, which degrades the overall water quality.

2.3.1.2 Detailed Site Lithologic Descriptions

A description of the drilling of boreholes, collection of samples for lithologic description, and results of downhole geophysical logging performed during the 1991 aquifer pump test program is provided in Appendix 10.5.8 of the 1992 SCA. In addition, hydrogeologic cross-sections were developed from lithology encountered in three 300-foot deep boreholes (SH-1, SH-2, and SH-3) at the site. Generally, the site-specific data obtained during the field activities can be correlated to the overall geologic framework as described for Polk County. Figure 2.3.1-4 shows the hydrogeologic framework of the Hines Energy Complex site as encountered during the field activities. Figure 2.3.1-5 is the cross-section location map for the Hines Energy Complex site. Figures 2.3.1-6 and 2.3.1-7 are hydrogeologic cross-sections underlying the Hines Energy Complex site in relation to the site lithologic data.

As shown in the hydrogeologic cross-sections, the majority of the post-Miocene undifferentiated sands and the Bone Valley Member of the Peace River Formation (the top of the Hawthorn Group) have been removed or disturbed by mining operations. The surficial deposits (overburden) above the Bone Valley Member are typically 15 to 25 feet thick. The Bone Valley Member, typically 15 to 25 feet thick, has been mined to an elevation of approximately 120 to 130 ft MSL.

The Miocene Hawthorne Group below the mined areas consists of clays, silts, sand, and limestone of the Arcadian Formation. The Hawthorn Group, to the bottom of the Arcadian, is approximately 260 feet thick at the adjacent Estech Plant site with a base elevation of approximately -110 ft MSL. The bottom of the Hawthorn Group dips downward to the south.

The sandy limestone encountered below the gray silts at the bottom of the Arcadian Formation is most likely the Oligocene age Suwannee Limestone. Limestone of the Early Miocene Tampa Member could not be differentiated, and may or may not be present. The top of the Suwannee Limestone ranges from an elevation of -85 ft MSL to the north at boring SH-1, to an elevation of -110 ft MSL toward the south and southwest.

Below the Suwannee Limestone are the carbonates of the Eocene Ocala Group. The contact between these two could not be identified during the field investigations. However, literature by Ryder (1985) implies the bottom of the Suwannee Limestone is located at about 200 ft MSL in the site area, with a thickness of about 100 feet.

To the extent of the field activities performed, the limestones of the Ocala Group were encountered to the termination depth of well SC-1, which logged lithology to an elevation of -650 ft MSL.

PLANT ISLAND LITHOLOGY

Prior to development of the Hines Energy Complex, the Plant Island areas SA-11, SA-12N and SA-13 were mine pits undergoing reclamation. The Plant Island areas consisted of partially leveled, loose overburden placed on the undisturbed mine pit bottom. Overburden thickness ranged from 22 to 30 feet and typically extended down to elevation 130 to 133 ft MSL in SA-11, and 120 to 130 ft MSL in SA-12N with elevations trending lower to the south. As presented in the 1992 SCA, typically, the overburden soils were classified as either silty or clayey sand (SM or SC). These soils have been leveled in-place and covered with engineered fill as described on the As-Built Drawings for Earthwork Construction filed previously with the Florida Department of Enviornmental Protection (DEP).

The underlying undisturbed ground to the termination depth of the Plant Island area borings typically consist of silty to clayey calcareous sands (SM) to clayey, sandy calcareous silts (MH). These soils are typically dense to very dense with occasional limestone fragments.

2.3.1.3 Geologic Maps

The geologic map of southwest Polk County adapted from Campell (1992) is shown on Figure 2.3.1-8.

2.3.1.4 Bearing Strength

Other than the incidental improvements needed to the on-site stormwater management system for implementation of water cropping (See section 3.8.5.1), all Power Block 2 facilities will be constructed within the Plant Island in previous mine areas SA-11 and

SA-13. The Plant Island area was developed as approved by the 1994 Certification, by filling the mined areas with overburden obtained from N-16W. Existing overburden piles in the structural power block area were leveled to elevation +154 feet NGVD, and the valleys between piles were filled with loose bulldozed fill after mudwaving and excavation of soft bottom sediments. Engineered fill was subsequently placed above elevation +154 feet NGVD in a controlled manner. Engineered fill was placed in one foot maximum compacted lift thicknesses and nominally compacted to in excess of 90% compaction per standard proctor density (ASTM D698). Upon completion of filling, a 10 foot high surcharge was rolled across designated areas of the power block for the purpose of preloading and consolidating the underlying fill and overburden piles. The entire Power Block 2 area has been surcharged in this fashion. The surcharging was applied to allow lightly loaded plant facilities such as one story administration buildings, small tanks and other miscellaneous foundations, to be placed on shallow foundations in lieu of deep foundations. For lightly loaded structures and miscellaneous small foundations constructed in surcharged areas, such structures can be placed on shallow footing or mat foundations at a maximum allowable bearing pressure of 1,000 PSF.

Due to the loose nature of the overburden piles and nominally compacted fill, the support of moderately to heavily loaded power plant structures requires that piles be installed down through the fill and seated well into the underlying dense carbonate silts and clays of the Intermediate aquifer. For Power Block 1, 12-inch square, driven precast concrete piles, were utilized. These piles were typically 45 feet long with a design capacity of 60 tons. For Power Block 2, similar driven piles or augered cast in place piles are anticipated to be installed for most structures.

The fuel oil storage tank was the only exception to the above criteria. For the heavily loaded tank, the footprint area was surcharged with a 25 foot height of fill placed to a

diameter 10 feet larger than the diameter of the tank. Bearing pressures for the tank ring foundation were set at 2500 psf.

The Plant Island, formerly referred to as mining areas SA-11, SA-12N and SA-13, consisted of partially reclaimed mined-out pits with large amounts of loose overburden material. No phosphatic clays have been deposited in these areas. Fine clean sand tailings occupied a large portion of the north section of SA-13 and a smaller area in the north corner of SA-12N. Soil in these areas has been leveled in place and covered with engineered fill as described in the As-Built Drawings for Earthwork Construction filed previously with DEP.

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

2.3.1.5 References

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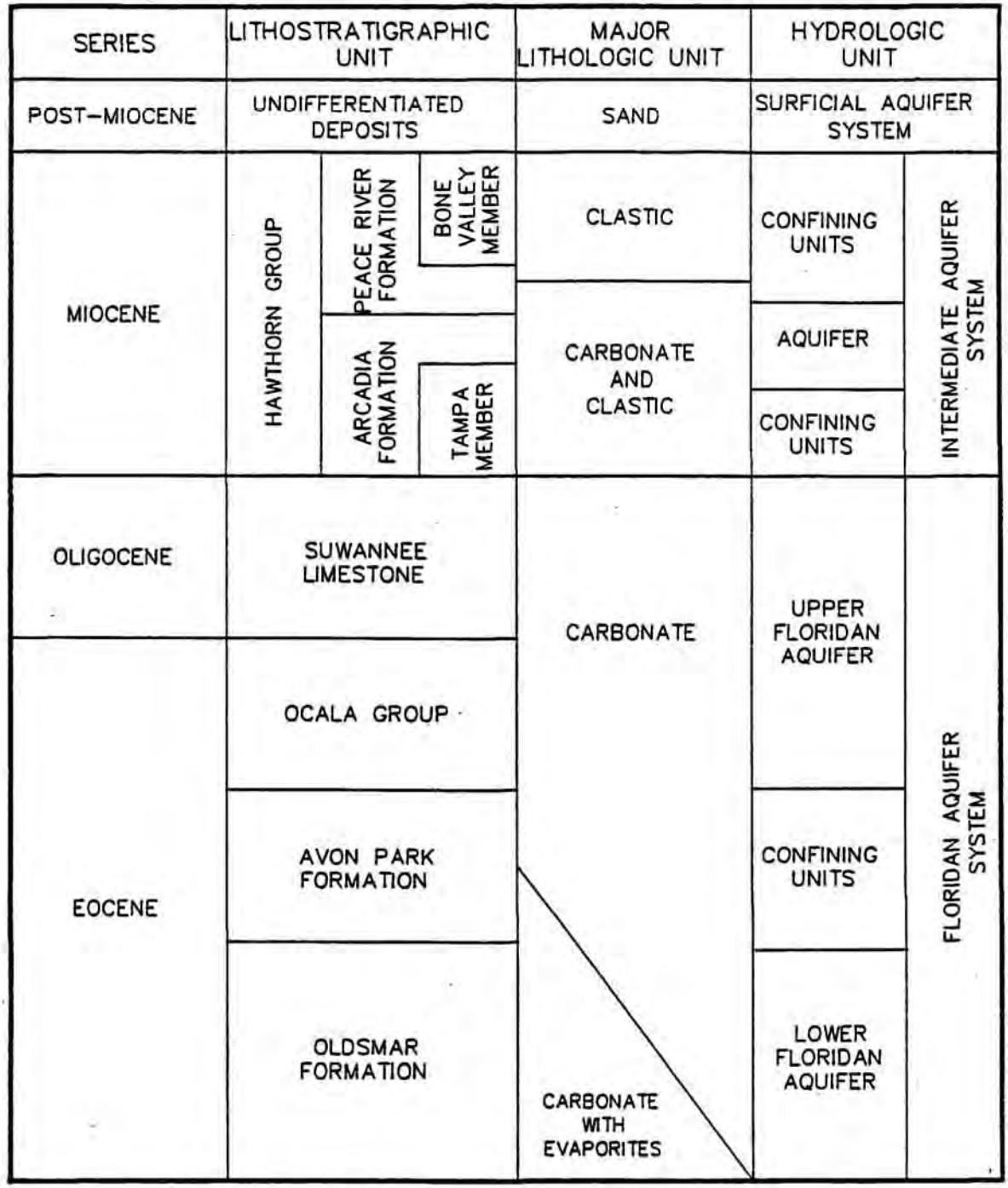
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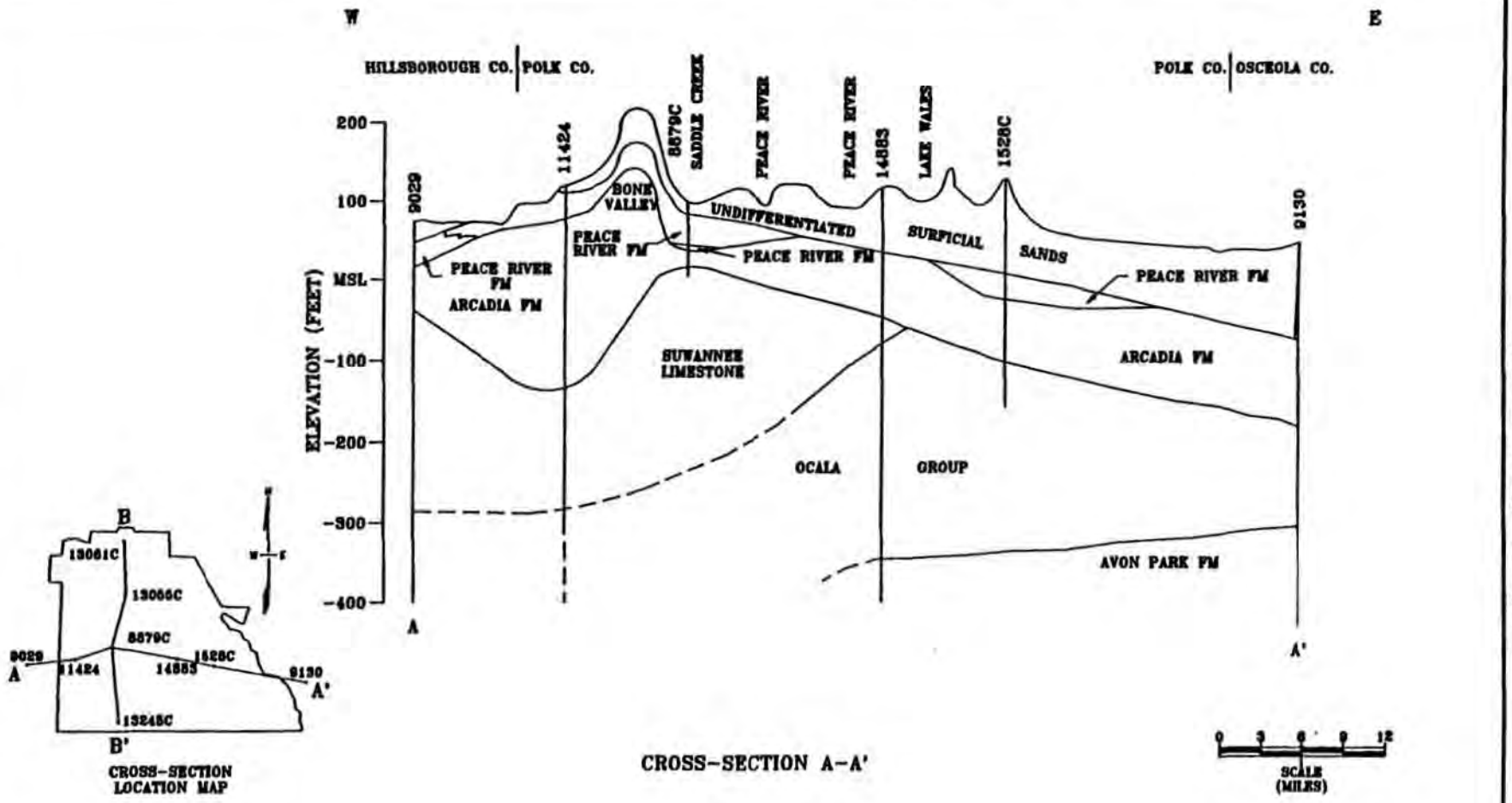
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.1-1 GENERALIZED LITHOSTRATIGRAPHIC AND HYDROGEOLOGIC FRAMEWORK POLK COUNTY AREA

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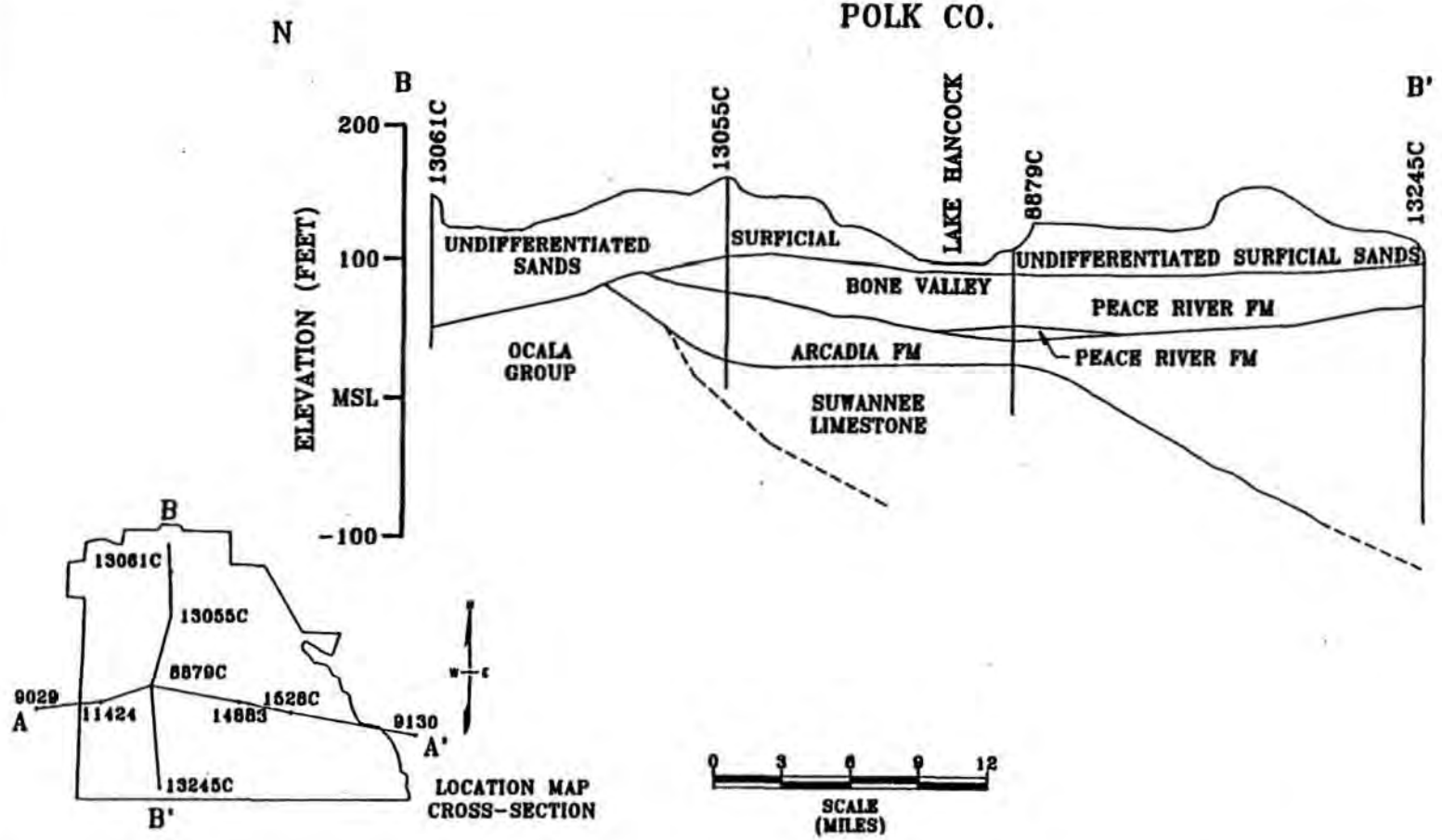
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.1-2
GENERALIZED GEOLOGICAL SECTION OF POLK COUNTY (EAST-WEST)

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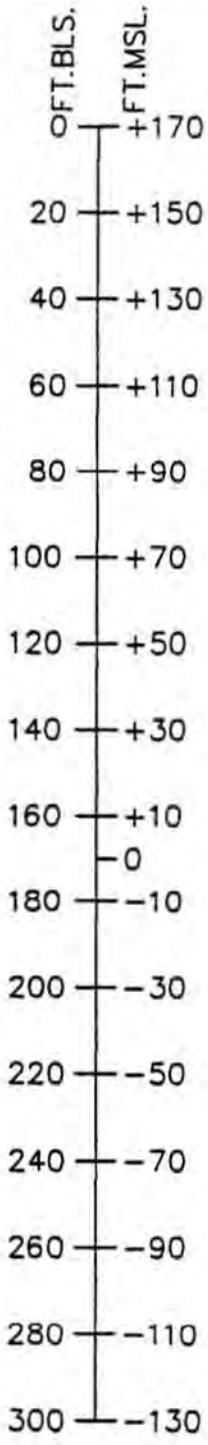
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.1-3
GENERALIZED GEOLOGICAL SECTION OF POLK COUNTY (NORTH-SOUTH)

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SERIES	LITHOSTRATIGRAPHIC UNIT		HYDRO–STRATIGRAPHIC UNIT
POST–MIOCENE	UNDIFFERENTIATED CLASTICS (ALTERED)		SURFICIAL AQUIFER SYSTEM
MIOCENE	HAWTHORN GROUP	PEACE RIVER FORMATION / BONE VALLEY MEMBER	ALTERED
		ARCADIA FORMATION	INTERMEDIATE AQUIFER SYSTEM AND CONFINING UNITS: UPPER CONFINING UNITS
			CLAYEY LS
			SILTY CLAY CLAYEY SILT
			LS AQUIFER
			CLAYEY SILTS
			LS AQUIFER
			LOWER CONFINING UNITS
OLIGOCENE	SUWANEE LIMESTONE		UPPER FLORIDAN AQUIFER

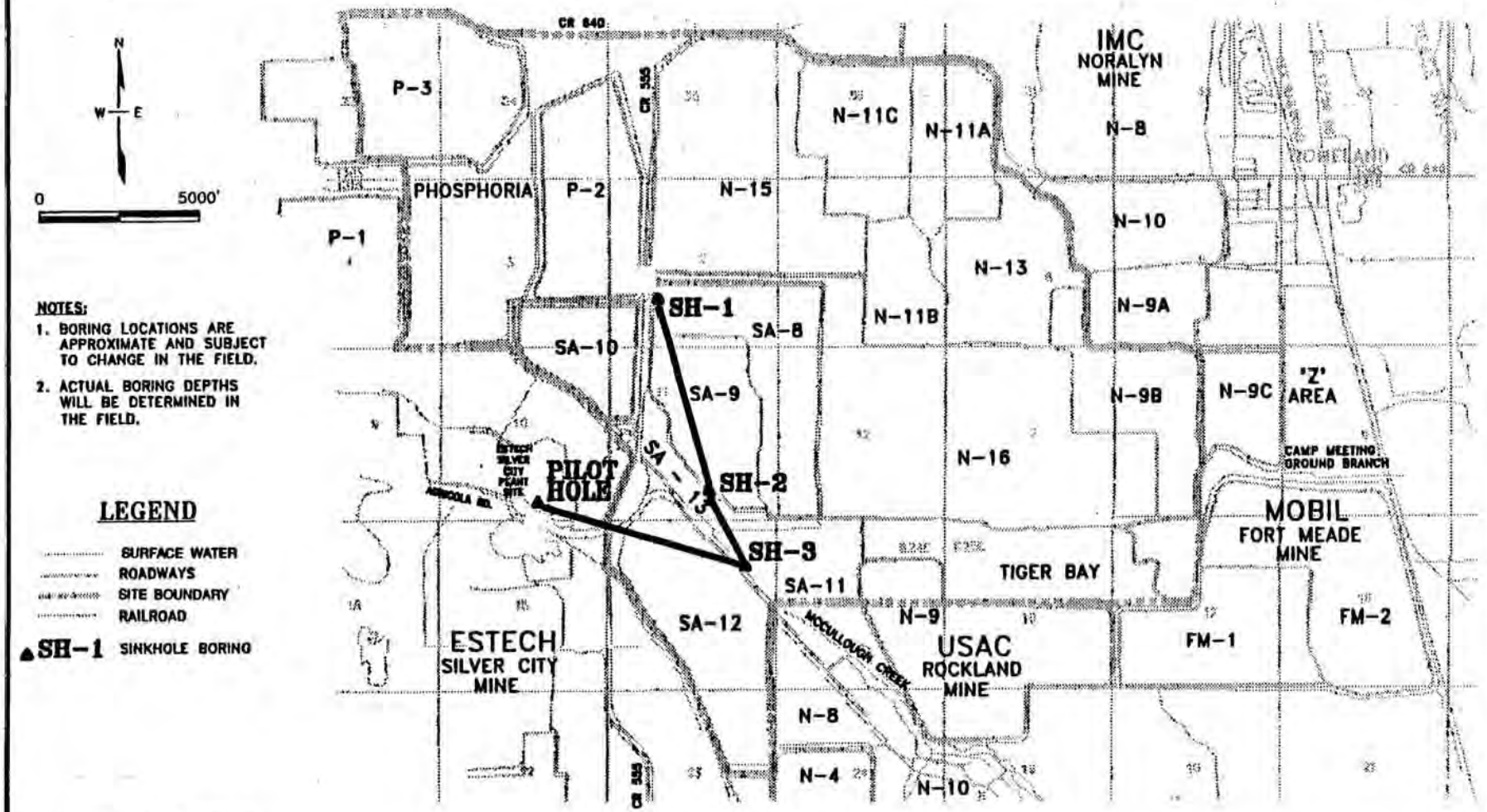
LEGEND:
FT. BLS: FEET BELOW LAND SURFACE
FT. MSL: FEET MEAN SEA LEVEL

SOURCE: 1992 SCA

Florida Power CORPORATION
Hines Energy Complex

FIGURE 2.3.1-4
HYDROGEOLOGIC FRAMEWORK
FPC SITE AREA

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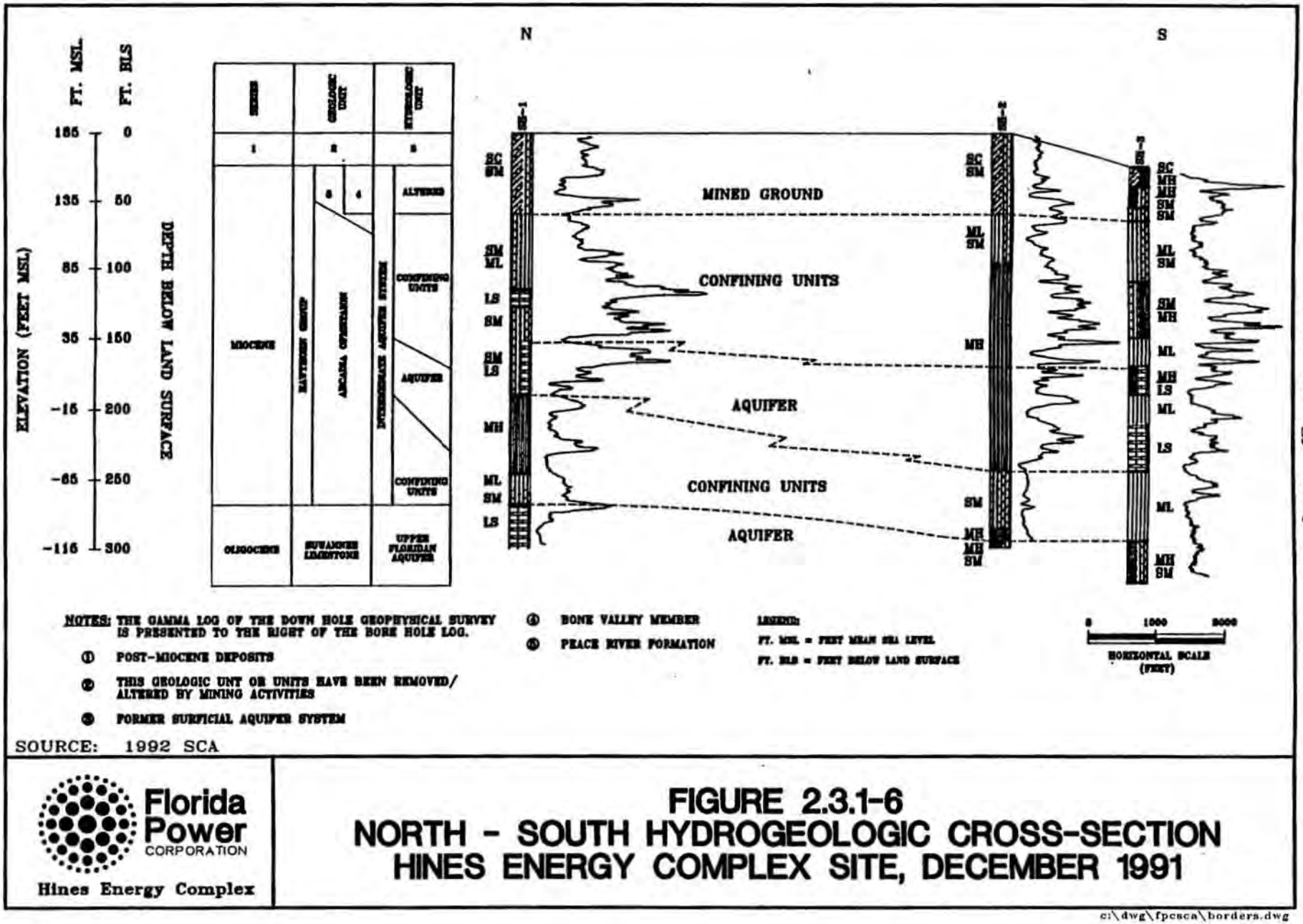
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.1-5
HYDROGEOLOGIC CROSS-SECTION LOCATION MAP
HINES ENERGY COMPLEX SITE AREA

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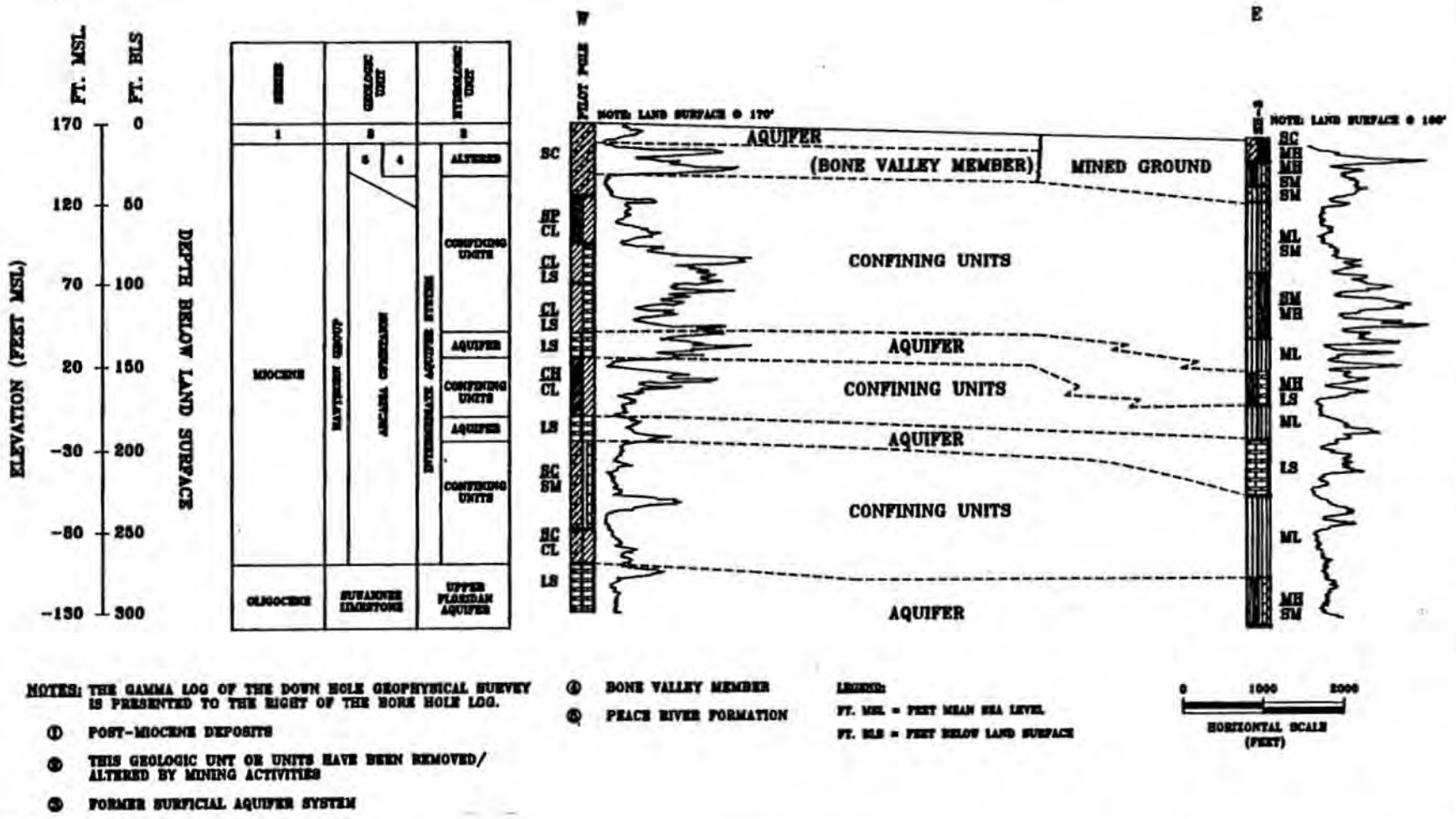
SOURCE: 1992 SCA

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Hines Energy Complex

FIGURE 2.3.1-6
NORTH - SOUTH HYDROGEOLOGIC CROSS-SECTION
HINES ENERGY COMPLEX SITE, DECEMBER 1991

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SOURCE: 1992 SCA

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FIGURE 2.3.1-7
EAST - WEST HYDROGEOLOGIC CROSS-SECTION
HINES ENERGY COMPLEX SITE, DECEMBER 1991

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2.3.2 Subsurface Hydrology

2.3.2.1 Subsurface Hydrological Data for Site Area

Generally, three hydrostratigraphic units underlie the Hines Energy Complex site area: the Surficial aquifer (removed/altered); the Intermediate aquifer that includes upper and lower confining units; and the Floridan aquifer. This section provides background water quality data for each unit, aquifer characteristics, historical water level contour maps, and unit thicknesses. The discussion of aquifer definitions and the relationship of aquifers to geologic units are referenced to the publications by SWFWMD (1988) and Ryder (1985).

Background water quality data for the Surficial, Intermediate, and Upper Floridan aquifers were presented in the 1992 SCA as tabulated from the U.S. Geological Survey (USGS) Water Quality Data Printout dated May 29, 1991. Additional water quality data for the Surficial aquifer were obtained from Hutchinson (1978). Hines Energy Complex site-specific water quality data were obtained from FPC's ground water monitoring program.

Historical water level data used to develop contour maps for the Surficial aquifer, as referenced from Hutchinson (1978), were presented in the 1992 SCA. Also presented were potentiometric contour maps for the Intermediate and Upper Floridan aquifers referenced from USGS water resources data reports (USGS, 1980-91). Additional water level data was obtained from FPC's construction dewatering ground water level monitoring program conducted between May 1994 and March 1998.

SURFICIAL AQUIFER SYSTEM

Most of the materials that comprise the Surficial aquifer at the Hines Energy Complex site have been altered, or removed, due to mining activities by prior property owners. Where it occurs naturally and before being removed by mining at the Hines Energy Complex site, the Surficial aquifer system typically consists of clastic deposits of sands, silty sands, and clays of eolian and marine origins. In Polk County, the Surficial aquifer is used primarily for domestic and low volume irrigation uses. The Surficial aquifer thickness ranges from a few inches in lowlands to 250 feet in ridge areas. As defined by SWFWMD (1988), the base of the Surficial aquifer system is the clayey, less permeable beds of the Hawthorn Group. As previously discussed in the 1992 SCA, the top of the Hawthorn Group (the Bone Valley Member of the Peace River Formation) is laterally continuous across the Hines Energy Complex site at an elevation of approximately 150 ft NGVD. The bottom of the Surficial aquifer, to an elevation of about 150 ft NGVD, has been removed/altered during mining operations.

The elevation of the land surface, at boring locations SH-1, SH-2 and SH-3 and at the adjacent Estech Plant site, ranged from 185 to 160 ft NGVD. Where it exists, such as at the Estech Plant site and beneath county roads, the Surficial aquifer ranges in thickness from about 10 to 35 feet.

During the field activities at the Estech Plant site in November and December 1991, the elevation of the water table of the Surficial aquifer in an adjacent unmined area was measured to range from 153 to 163 ft NGVD. As reported in the Aquifer Characteristics Program (ACP) Summary Report (Appendix 10.5.8 of the 1992 SCA), the ground water flow direction at the Estech Plant site is to the southwest. Water level measurements were not collected at the Hines Energy Complex site itself, because of the lack of aquifer thickness or continuity. However, published data by Hutchinson (1978)

provided water table elevations for the Surficial aquifer in September 1975. Figure 2.3.2-1 is a generalized water table contour map of the Surficial aquifer in the Hines Energy Complex site area before mining. These data show water level elevations of 150 ft NGVD near the Hines Energy Complex site with a ground water flow direction to the east along the east half of the site and to the southwest along the west half of the site. However, it is noted that these water levels are no longer indicative of present day flow conditions due to the extensive mining operations in the Hines Energy Complex site area. This information is provided solely as historical data on pre-mining ground water flow and elevation.

The hydraulic properties of the Surficial aquifer were not measured. However, as reported by Hutchinson (1978), the Surficial aquifer, where it exists and has been tested, has an average transmissivity of 1,900 ft^2/day and a specific yield of 0.29.

Hines Energy Complex site construction activities and mine reclamation activities have, in places, reconstructed the Surficial aquifer. Cast overburden placed during mining operations was excavated for construction of the Cooling Pond area. The Surficial aquifer framework at the Cooling Pond has therefore been removed. Cast overburden from the Cooling Pond excavation was placed as engineered fill within the Plant Island. The Surficial aquifer at the Plant Island is, therefore, engineered (compacted) fill. The engineered fill is described in the As-Built Drawings for Earthwork Construction on file with the DEP. Elsewhere on the property, the Surficial aquifer has been either reconstructed with recontoured overburden as part of the mine reclamation activities or replaced with waste clay in the waste clay settling areas.

Surficial aquifer ground water levels at the Hines Energy Complex site were monitored from April 1, 1993 through March 16, 1998. Ground water level monitoring was conducted as required under Condition XXVI.A.24.e of the Conditions of Certification

for Power Block 1. The levels were monitored in 15 upper Surficial aquifer monitor wells and six lower Surficial aquifer monitor wells. The well designations and monitoring results are shown on Appendix 10.5.2. Except during construction dewatering, the monitor wells constructed in the upper portion of the Surficial aquifer had ground water levels generally ranging from 145 to 165 feet NGVD. Monitor wells constructed in the lower portion of the Surficial aquifer had ground water levels typically one to three feet lower than the water levels in the shallower wells.

The background water quality of the Surficial aquifer system near the Hines Energy Complex site is tabulated from published data by the USGS (1991). The Surficial aquifer baseline water quality data sampling locations are shown on Figure 2.3.2-2. Water quality data at nine sampling locations near the Hines Energy Complex site are provided in Table 10.5.3-3 of the 1992 SCA. The minimum, maximum, and mean Surficial aquifer water quality data are presented in Table 10.5.3-4 of the 1992 SCA.

INTERMEDIATE AQUIFER SYSTEM

As shown on Figures 2.3.1-1 through 4, the Intermediate aquifer system is present in the Arcadia and Peace River Formations of the Miocene Age Hawthorn Group. The Intermediate aquifer system includes all water bearing units and confining units between the overlying Surficial aquifer system and the underlying Upper Floridan aquifer system (SWFWMD, 1988). The Intermediate aquifer system includes the upper confining units below the Surficial aquifer, the middle unit of limestone and clayey silts, and the lower confining units above the Suwannee Limestone, which corresponds to the upper sections of the Upper Floridan aquifer. Water withdrawals from the middle units of the Intermediate aquifer system are used primarily for domestic supply in Polk

County. Large diameter wells (6 inches or larger) open to the Intermediate aquifer system generally can provide yields of 200 gpm or more. The aquifer is most productive in the central and southern parts of Polk County.

The upper confining layers of the Intermediate aquifer system consist of the clayey and silty sediments of the Bone Valley Member of the Peace River Formation. Mining activities have removed/altered the sediments of the Bone Valley Member, which were typically 15 to 25 feet thick. The geophysical logs taken at the Hines Energy Complex site in 1991 (FPC, 1992), show the bottom of the Bone Valley Member to be approximately 130 ft NGVD. Therefore, the remaining upper confining units of the Arcadia Formation are about 100 feet thick, beginning at approximately 130 ft NGVD and extending downward to the first production zones, consisting of limestone at an elevation of 30 ft NGVD. The lithologic data obtained from a 300-foot deep pilot hole at the adjacent Estech Plant site and the three 300-foot deep borings near the Plant Island area at the Hines Energy Complex show two limestone aquifer zones in the Arcadia Formation. As shown in the hydrogeologic cross-section and framework, the aquifer zones of the Intermediate aquifer range in elevation from 30 ft NGVD at the top to about -30 ft NGVD at the bottom. The units appear to be laterally extensive throughout the Hines Energy Complex site area as extrapolated from the boring locations.

The lower confining units of the Intermediate aquifer consist of grey clayey silts of the Arcadia Formation. The lower confining units are approximately 75 feet thick with the bottom at an elevation ranging from -110 ft NGVD at the Estech pilot hole, to -85 ft NGVD at SH-1, and to -115 ft NGVD at SH-3. (See Figures 2.3.1-6 and 2.3.1-7.)

Hutchinson (1978) discusses the hydraulic properties of the Intermediate aquifer system. The transmissivity for the Intermediate aquifer averaged 5,185 ft^2/day for six

tests conducted in Polk County, and storage coefficients ranged between 1.0×10^{-4} and 4.2×10^{-5} for seven tests. One leakance coefficient value of 2×10^{-4} feet per day per foot (ft/day/ft) was reported (SWFWMD, 1988). Model-derived leakance values of the lowermost intermediate confining beds are estimated to range from 3×10^{-5} to 7×10^{-5} ft/day/ft (Ryder, 1985). A leakance value for the lower confining units evaluated from data generated during the aquifer performance testing at the adjacent Estech Plant site (Appendix 10.5.8 of the 1992 SCA) was calculated to be 2.4×10^{-4} gallons per day per cubic foot (gpd/ft^3). The leakance values are greatly affected by the variability in thickness of the confining beds, which is most likely the main reason for the observed differences.

Historical potentiometric surface contour maps of the Intermediate aquifer during wet and dry seasons were developed from USGS data files, as shown on Figures 2.3.2-3 through 2.3.2-8 during the months of May and September, for the years 1989, 1990 and 1991. The potentiometric maps suggest variable flow directions influenced by pumping from water wells in Bartow, Fort Meade, and Homeland. The potentiometric level in the Hines Energy Complex site area ranged from approximately 60 ft NGVD to 75 ft NGVD during the May measurements with ground water flow to the southeast and east, and 75 ft NGVD to 90 ft NGVD during the September measurements with ground water flow to the east. During October to December 1991, the potentiometric surface of this aquifer ranged from 79 ft NGVD at the south of the Hines Energy Complex site to 75 ft NGVD to the north at the Estech Plant site. As shown in Appendix 10.5.8 of the 1992 SCA, the potentiometric surface contours suggest a northwest ground water flow direction. Metz and Stelman (1995) reported potentiometric levels in the Hines Energy Complex site area to be between 90 and 110 feet NGVD in May 1995 with ground water flow direction ranging from northwest to northeast. In September 1995, Metz, Swenson, and Stelman (1996) reported potentiometric levels between 80 and 110 feet NGVD with ground water flow directions generally northeast.

Intermediate aquifer potentiometric levels at the Hines Energy Complex site were monitored from April 1, 1993 through March 16, 1998. The monitoring was conducted as required under Condition XXVI.A.24.e of the Conditions of Certification for Power Block 1. The levels were monitored in two Intermediate aquifer monitor wells DMWP-1D and DMWP-6D. The well locations and the results of the monitoring are shown in Appendix 10.5.2. The Intermediate aquifer potentiometric levels generally ranged from 70 to 92 feet NGVD.

The background water quality of the Intermediate aquifer is provided by data published by the USGS. The Intermediate aquifer baseline water quality data sampling locations are shown on Figure 2.3.2-9. Water quality data at six locations near the Hines Energy Complex are provided in Table 10.5.3-5 of the 1992 SCA. The minimum, maximum, and mean values of the water quality data are presented in Table 10.5.3-6 of the 1992 SCA. Overall, the water quality of the Intermediate aquifer system in Polk County is within FDEP primary and secondary drinking water standards (SWFWMD, 1988).

FPC completed the first round of ground water sampling and analysis as part of the ground water monitoring program required by the 1994 certification. Six Intermediate aquifer monitor wells (IMW1, IMW-2, IMW-3, IMW-4, IMW-5, and IMW-6) were sampled on September 23, 1998. The locations of these wells are shown in Appendix 10.5.2. The samples were analyzed for Primary Drinking Water Standard parameters (inorganics and volatile organic compounds), Secondary Drinking Water Standard parameters, purgeable halocarbons, purgeable aromatics, phenols, phthalate esters, and PCB's. The results of these analyses are also shown in Appendix 10.5.2. The water quality of the Intermediate aquifer system at the Hines Energy Complex is within FDEP primary and secondary drinking water standards. In addition, purgeable halocarbons, purgeable aromatics, phenols, phthalate esters, and PCB's were not

present in detectable concentrations in any of the samples except one sample where cis-1,2-Dichloroethene was detected at a concentration fifty times lower than the drinking water standard contained in Chapter 62-550, F.A.C.

FLORIDAN AQUIFER SYSTEM

As shown in the generalized lithostratographic and hydrogeologic framework (Figure 2.3.1-1), the Floridan aquifer system near the Hines Energy Complex site consists of vertically persistent permeable carbonates of the Avon Park Formation, the Ocala Group, and the Suwannee Limestone.

As shown on Figure 2.3.1-4, the Upper Floridan aquifer begins at the encounter of the sandy carbonates of the Suwannee Limestone, followed by the limestones of the Ocala Group and consists of units below the bottom of the clayey silts of the Arcadia Formation of the Hawthorn Group, from which most of the potable water supplies are provided. The contact between the Suwannee Limestone and the Ocala Group could not be identified from the field activities performed at the Estech Plant site; however, the bottom of the Suwannee is estimated to be at approximately -200 ft NGVD (Ryder, 1985).

The 300-foot deep pilot hole at the Estech Plant site and the three 300-foot borings (SH-1, 2, and 3) at the FPC Hines Energy Complex show the top of the Upper Floridan aquifer to range from -85 ft NGVD (SH-1) to -115 ft NGVD (SH-3). (See Figures 2.3.1-6 and 2.3.1-7.) Estimates of the aquifer's base elevation range from higher than -1,000 ft NGVD in central Polk County to deeper than -1,200 ft NGVD in southern Polk County (SWFWMD, 1988). The deepest well from which downhole geophysical data were obtained on the Estech Plant site was SC-1, to a bottom elevation of approximately -650 ft NGVD.

During the field activities at the Estech Plant site, between October and December 1991, the potentiometric level of the Upper Floridan ranged in elevation from +57 ft NGVD to +58 ft NGVD as shown in the ACP Summary Report contained in Appendix 10.5.8 of the 1992 SCA.

Historical water level data from USGS files led to the potentiometric surface contour maps for the Upper Floridan during the wet and dry seasons shown on Figures 2.3.2-10 through 2.3.2-15 during the months of May and September for the years 1989, 1990, and 1991. In the Hines Energy Complex site area, the potentiometric levels ranged from 40 ft NGVD to 50 ft NGVD during the May measurements, and 55 ft NGVD to 65 ft NGVD during the September measurements. Based on USGS data, the ground water flow direction of the Upper Floridan aquifer is toward the southwest.

The hydraulic properties of the Upper Floridan aquifer are documented throughout Polk County. The areal variation in the Upper Floridan transmissivity is controlled primarily by the occurrence of solution features and fractures. The aquifer storage coefficient is controlled by thickness, and confining bed lithology and thickness control leakance (SWFWMD, 1988). Transmissivity values from four aquifer performance tests performed near the Hines Energy Complex ranged from 119,000 gpd/ft to 69,800,000 gpd/ft as shown on Table 1 of ACP Summary Report contained in Appendix 10.5.8 of the 1992 SCA. The upper range was reported for a well that most probably encountered a fracture system (SWFWMD, 1987). Storage coefficients ranged from 1.0×10^{-4} to 4.4×10^{-4}. An average transmissivity value of 552,000 gpd/ft was measured during the aquifer performance test performed on well SC-1 at the adjacent Estech Plant site. The average storage coefficient was 7.92×10^{-3} for the test at the adjacent Estech Plant site.

Background water quality data of the Upper Floridan aquifer was provided by the USGS. The Upper Floridan aquifer baseline water quality data sampling locations are shown on Figure 2.3.2-16. Water quality data for thirteen locations near the FPC Hines Energy Complex are provided in Table 10.5.3-7 of the 1992 SCA. The minimum, maximum, and mean values of the water quality data are presented in Table 10.5.3-8 of the 1992 SCA.

FPC recently completed the first round of ground water sampling and analysis as part of the ground water monitoring program required by the 1994 certification. One Floridan Aquifer monitor well (FMW-1) was sampled on September 23, 1998. The location of monitor well FMW-1 is shown in Appendix 10.5.2. The sample was analyzed for Primary Drinking Water Standard parameters (inorganics and volatile organic compounds), Secondary Drinking Water Standard parameters, purgeable halocarbons, purgeable aromatics, phenols, phthalate esters, and PCB's. The results of these analyses are also contained in Appendix 10.5.2. The water quality of the Floridan aquifer system underlying the Hines Energy Complex is within DEP primary and secondary drinking water standards. In addition, purgeable halocarbons, purgeable aromatics, phenols, phthalate esters, and PCB's were not present in detectable concentrations.

RECHARGE TO AQUIFER SYSTEMS

Primarily vertical hydraulic conductivity and thickness of confining units control the recharge and discharge to the Upper Floridan aquifer in Polk County. These variables have been used to calculate recharge rates to the Upper Floridan aquifer. Stewart (1980) reports that no recharge occurs along the Kissimmee River area of eastern Polk

County. Areas of very low recharge (0 to 2 inches) occur in the southwest portions of the County. Very low to moderate areas of recharge (less than 2 inches to as much as 10 inches per year) are found in the northern Green Swamp area of Polk County.

The highest value of recharge occurs in a linear band directly associated with the upland sandy ridge areas, where recharge rates are estimated between 10 and 20 inches per year (SWFWMD, 1988). Estimates of recharge by SWFWMD (1988), Ryder (1985), and Stewart (1980), near the Hines Energy Complex area range from no recharge to 2 inches, 3 to 6 inches, and 0 to 2 inches per year, respectively.

Recharge rates to the Intermediate aquifer system were evaluated by SWFWMD (1988). This publication indicates a very low to moderate recharge rate to the Intermediate aquifer for September 1986 and May 1987, ranging from 0 to 10 inches per year in the Hines Energy Complex site area.

2.3.2.2 Karst Hydrogeology

The karst hydrogeology review and Hines Energy Complex site sinkhole evaluation was presented in the 1992 SCA. The review and evaluation included the following:

1) A study of topographic maps and aerial photographs (both pre-mining and post-mining) of the Hines Energy Complex site and vicinity;
2) a review of the available literature on the geology of the region of Polk County;
3) a review of USGS and Florida Geological Survey (FGS) documents related to sinkhole occurrences as reported by the Florida Sinkhole Research Institute (FSRI) and SWFWMD;

4) a review of available newspaper articles regarding reported sinkholes in the Polk County area;
5) a surficial lineament analysis to evaluate the regional potential for sinkhole solution activity; and,
6) a field investigation program consisting of deep borings in three depressed areas identified on pre-mining aerial photographs.

The results of this study on sinkhole potential can be summarized as follows:

- The overall assessment of sinkhole potential at the Hines Energy Complex site is that the occurrence of a catastrophic sinkhole is highly unlikely. See Figure 2.3.2-17.

- No evidence of historic sinkholes at the Hines Energy Complex site exists, and no reported incidents of sinkhole problems during mining operations nor during Hines Energy Complex site development activities.

A sinkhole occurred approximately eight miles to the west of the Hines Energy Complex in 1996 beneath the IMC gypsum stack at the New Wales facility. The facility is located just south of County Road 640 near the Polk and Hillsborough County line. Due to the distance (approximately 8 miles) between the IMC sinkhole site and the Hines Energy Complex, this sinkhole activity does not impact the Hines Energy Complex site.

The Florida Geological Survey maintains records of sinkholes reported to the Florida Department of Community Affairs and the Florida Geological Survey. A review of the sinkhole files of the Florida Geological Survey reveals that no sinkholes in the vicinity of the Hines Energy Complex were reported since the submittal of the 1992 SCA.

2.3.2.3 References

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IMAGE QUALITY

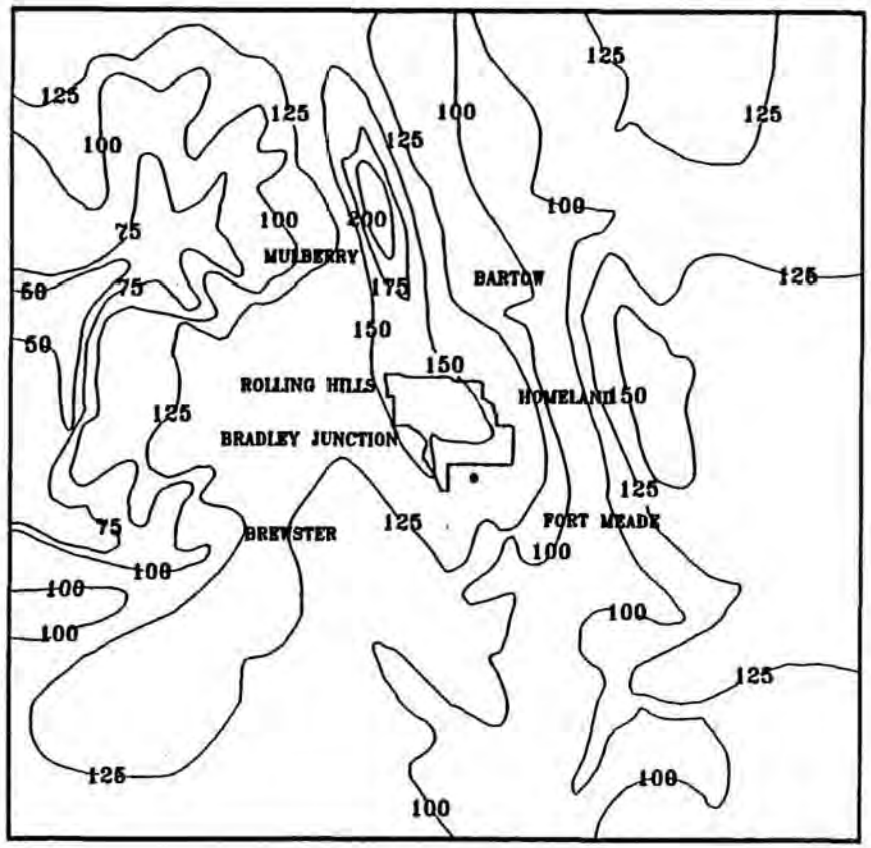
AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

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CONTOUR INTERVAL = 25 FEET (NGVD)

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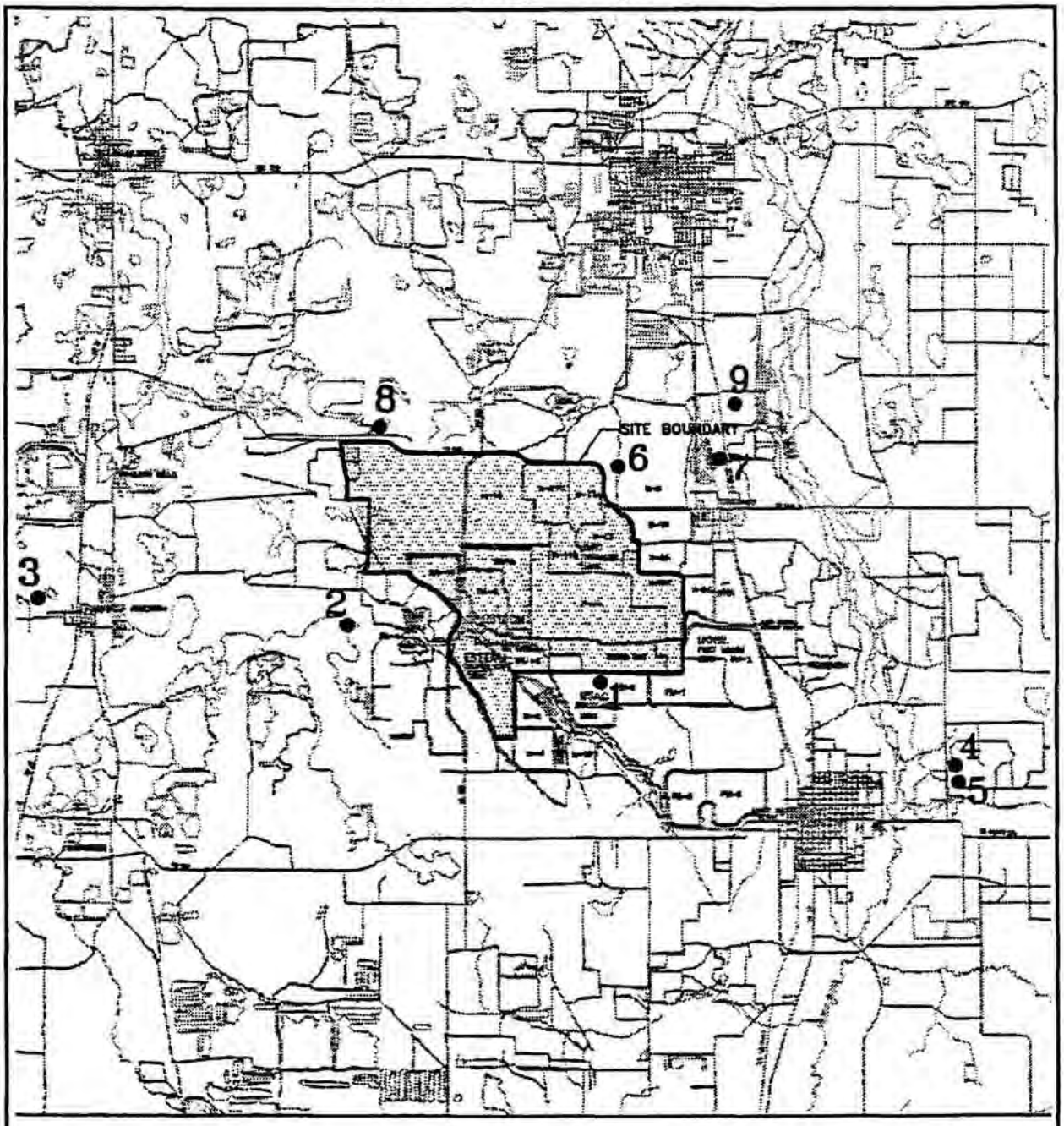
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SOURCE: 1992 SCA

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FIGURE 2.3.2-1
GENERALIZED WATER TABLE CONTOUR MAP
SURFICIAL AQUIFER
SEPTEMBER 1975

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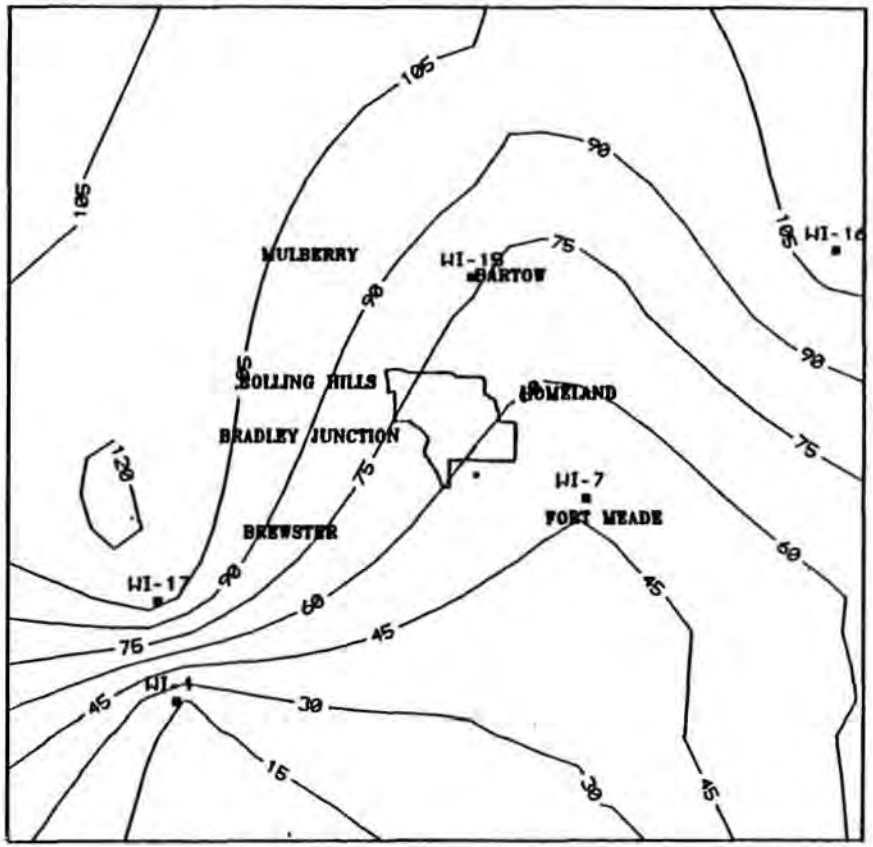
SOURCE: 1992 SCA

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FIGURE 2.3.2-2
SURFICIAL AQUIFER BASELINE WATER QUALITY DATA SAMPLING LOCATION MAP

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CONTOUR INTERVAL = 15 FEET (NGVD)

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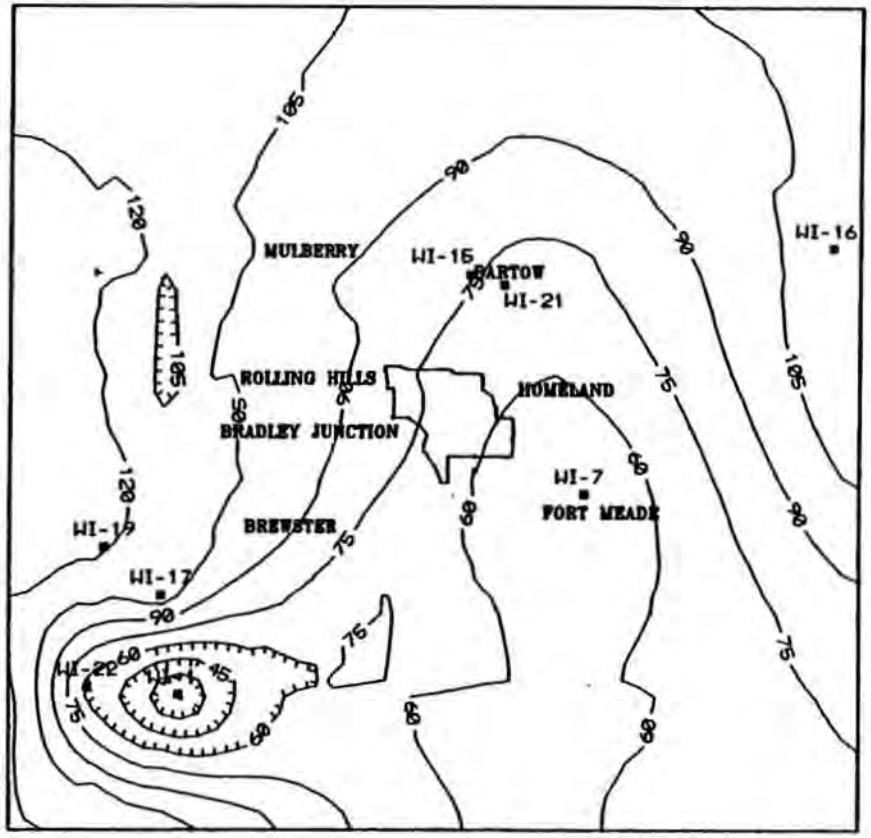
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(APPROXIMATE SCALE)

SOURCE: 1992 SCA

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FIGURE 2.3.2-3
POTENTIOMETRIC SURFACE INTERMEDIATE AQUIFER
MAY 1989

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CONTOUR INTERVAL = 15 FEET (NGVD)

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W E

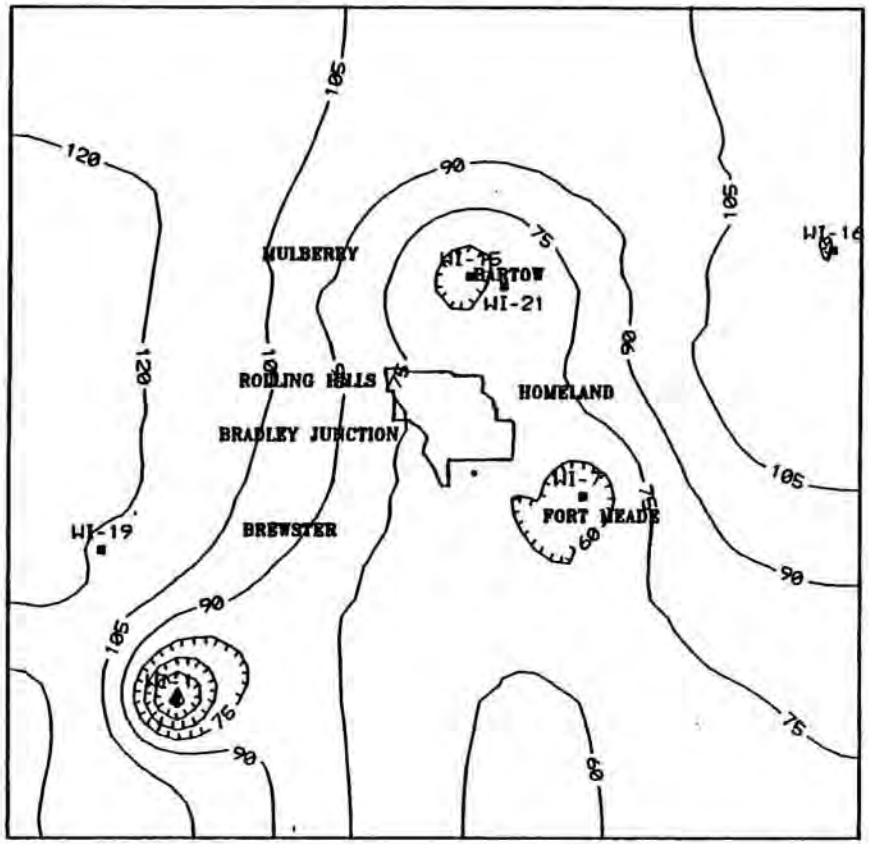
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(APPROXIMATE SCALE)

SOURCE: 1992 SCA

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FIGURE 2.3.2-4
POTENTIOMETRIC SURFACE INTERMEDIATE AQUIFER MAY 1990

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CONTOUR INTERVAL = 15 FEET (NGVD)

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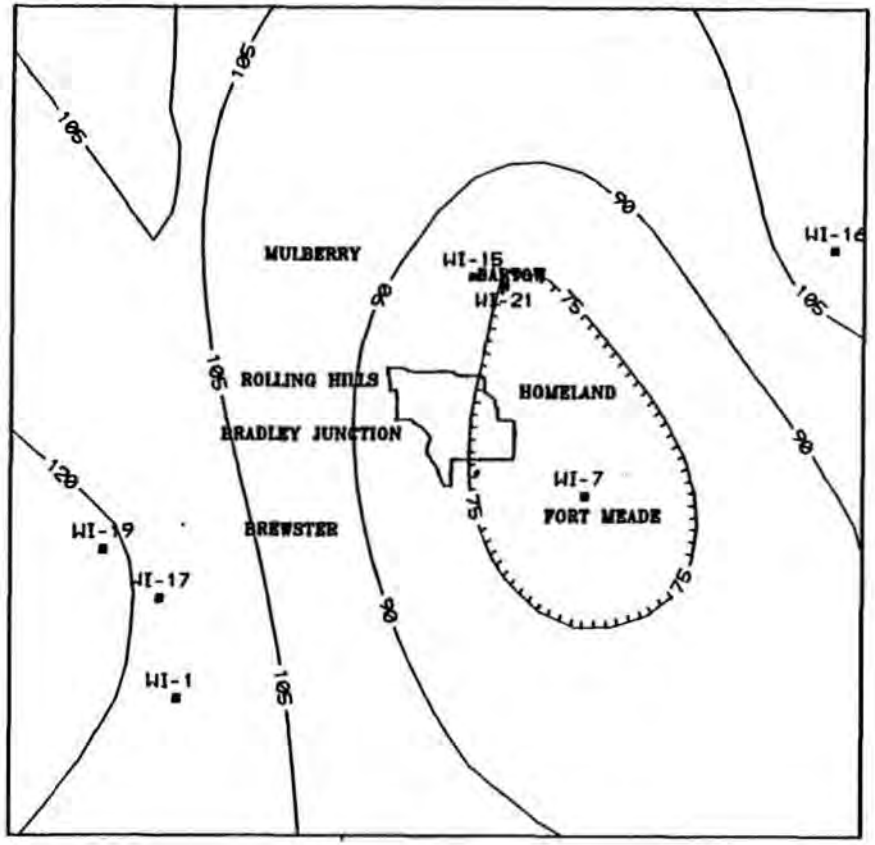
SOURCE: 1992 SCA

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FIGURE 2.3.2-5
POTENTIOMETRIC SURFACE INTERMEDIATE AQUIFER
MAY 1991

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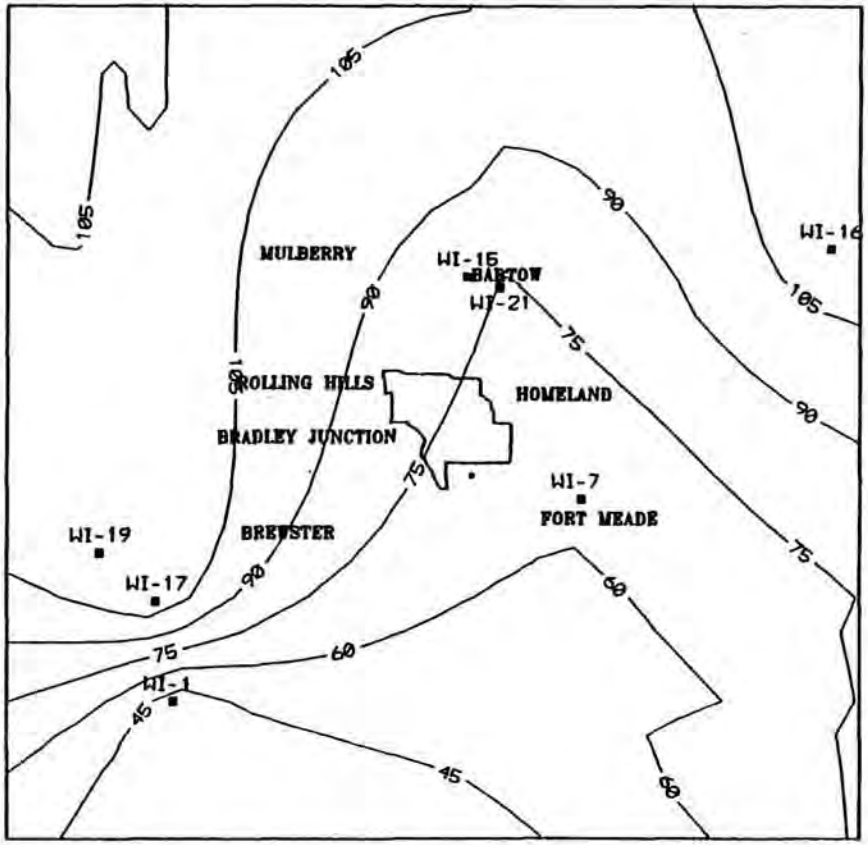
SOURCE: 1992 SCA

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FIGURE 2.3.2-6
POTENTIOMETRIC SURFACE INTERMEDIATE AQUIFER SEPTEMBER 1989

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CONTOUR INTERVAL = 15 FEET (NGVD)

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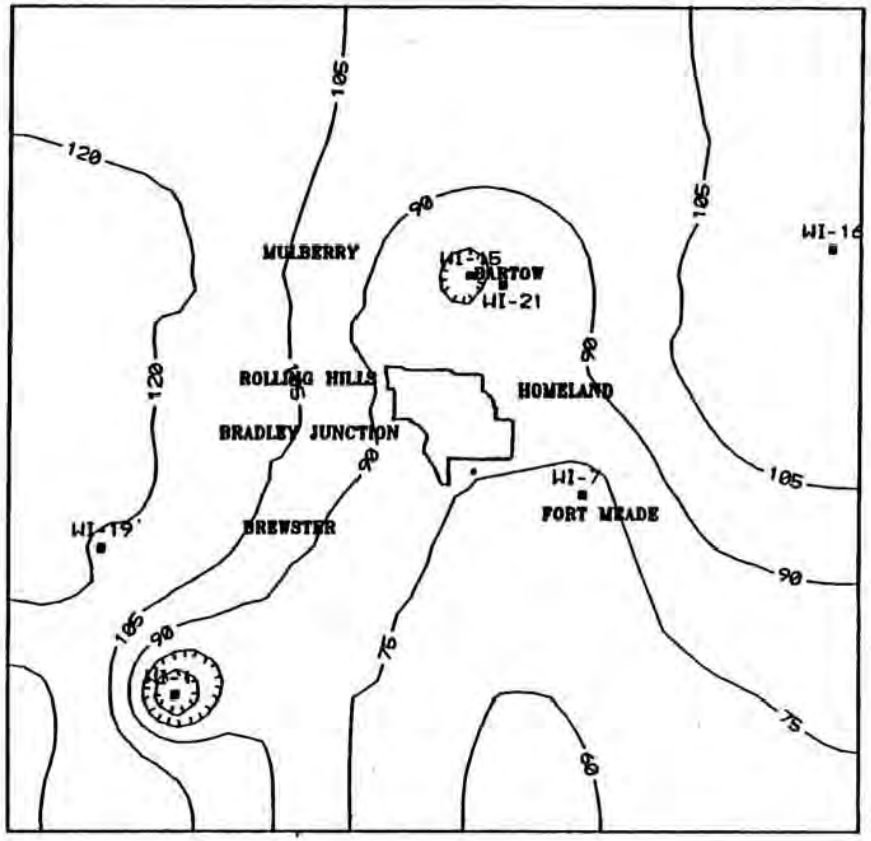
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(APPROXIMATE SCALE)

SOURCE: 1992 SCA

Florida Power CORPORATION
Hines Energy Complex

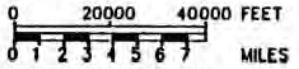
FIGURE 2.3.2-7
POTENTIOMETRIC SURFACE INTERMEDIATE AQUIFER SEPTEMBER 1990

c:\dwg\fpcsca\borders.dwg



CONTOUR INTERVAL = 15 FEET (NGVD)





(APPROXIMATE SCALE)

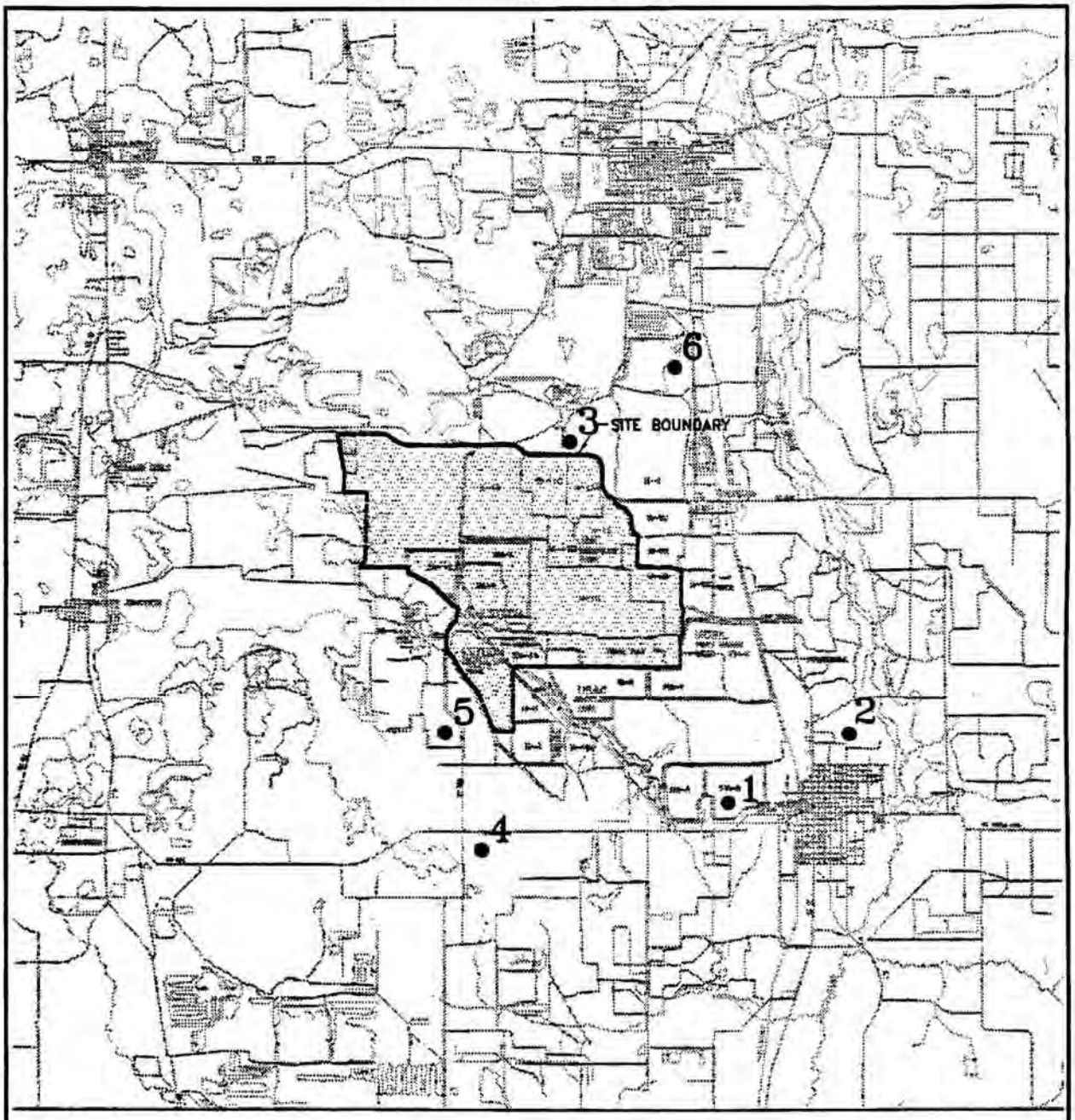
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.2-8
POTENTIOMETRIC SURFACE INTERMEDIATE AQUIFER SEPTEMBER 1991

c:\dwg\fpcsca\borders.dwg

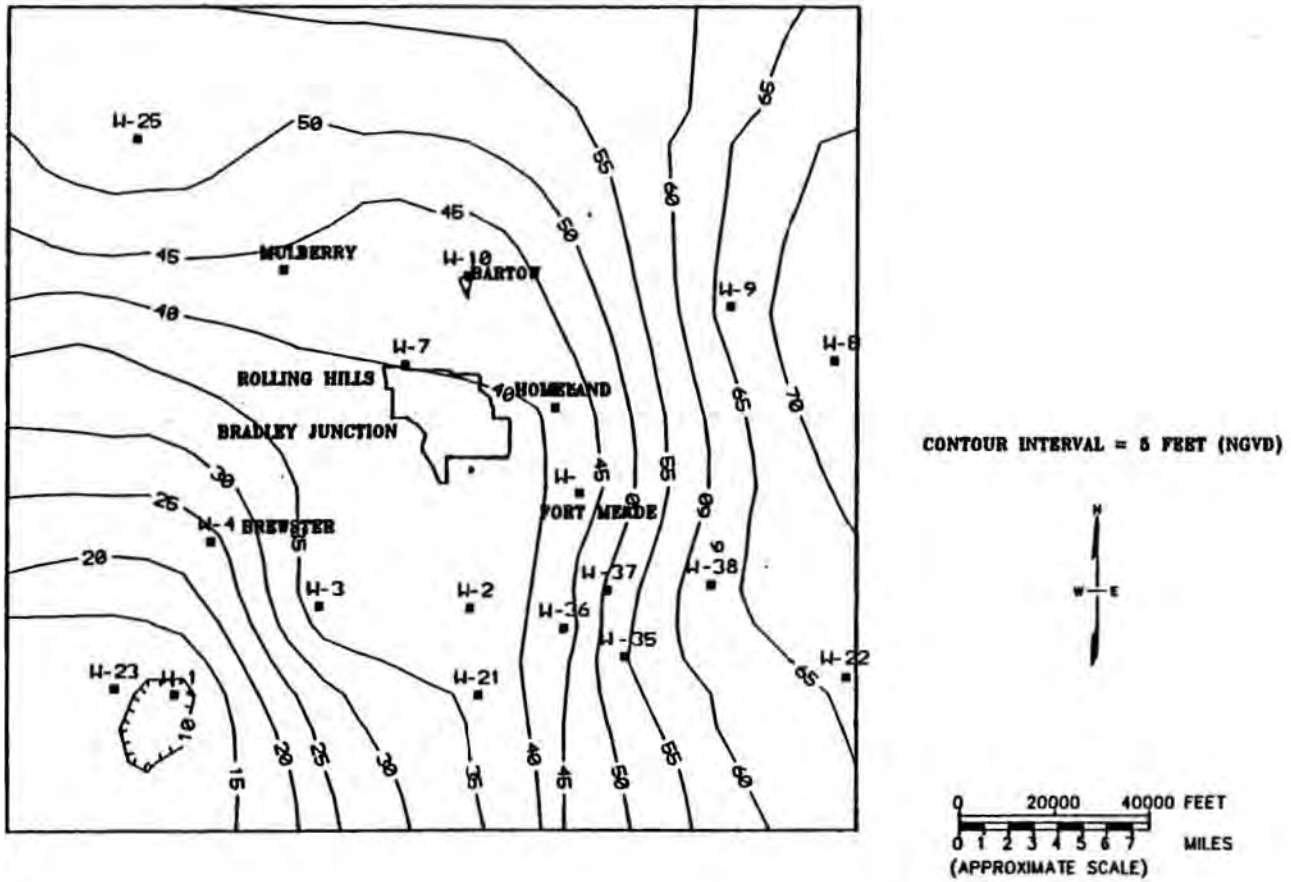


Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.2-9 INTERMEDIATE AQUIFER BASELINE WATER QUALITY DATA SAMPLING LOCATION MAP

c:\dwg\fpcsca\borders.dwg



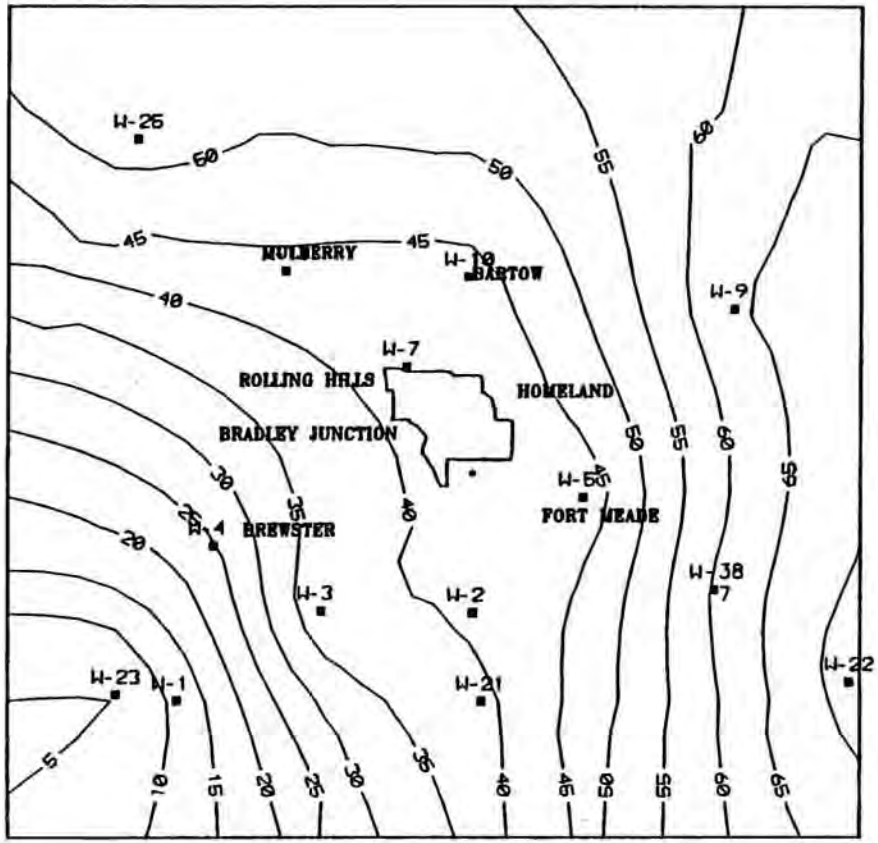
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.2-10
POTENTIOMETRIC SURFACE UPPER FLORIDIAN AQUIFER
MAY 1989

c:\dwg\fpcsca\borders.dwg



CONTOUR INTERVAL = 5 FEET (NGVD)

N
W E

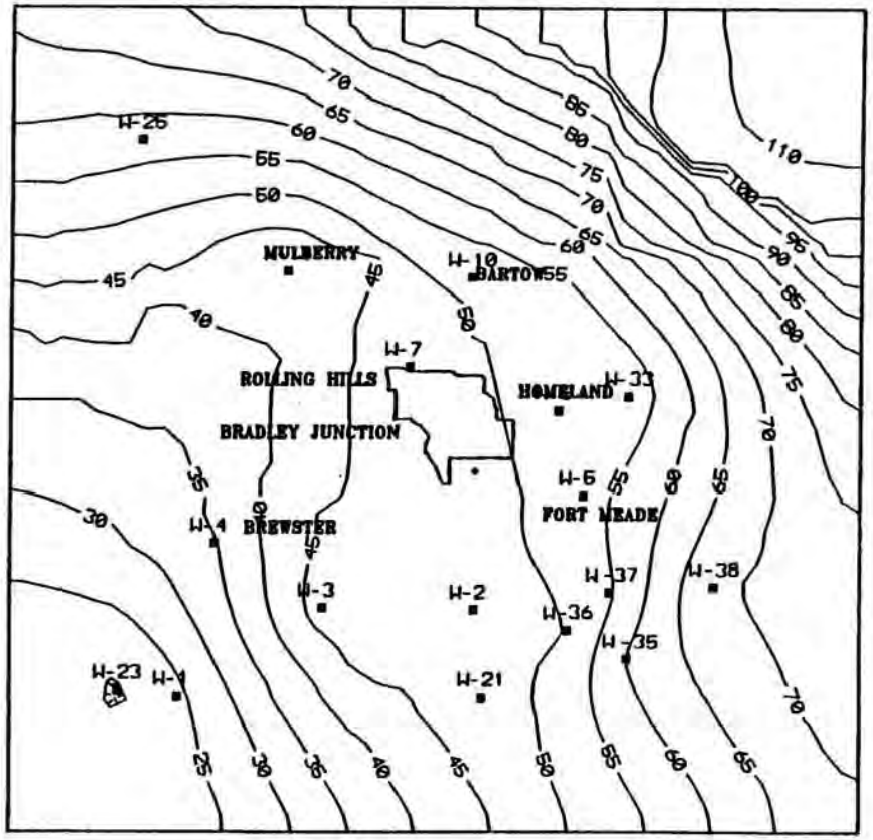
0 20000 40000 FEET
0 1 2 3 4 5 6 7 MILES
(APPROXIMATE SCALE)

SOURCE: 1992 SCA

Florida Power CORPORATION
Hines Energy Complex

FIGURE 2.3.2-11
POTENTIOMETRIC SURFACE UPPER FLORIDIAN AQUIFER
MAY 1990

c:\dwg\fpcsca\borders.dwg



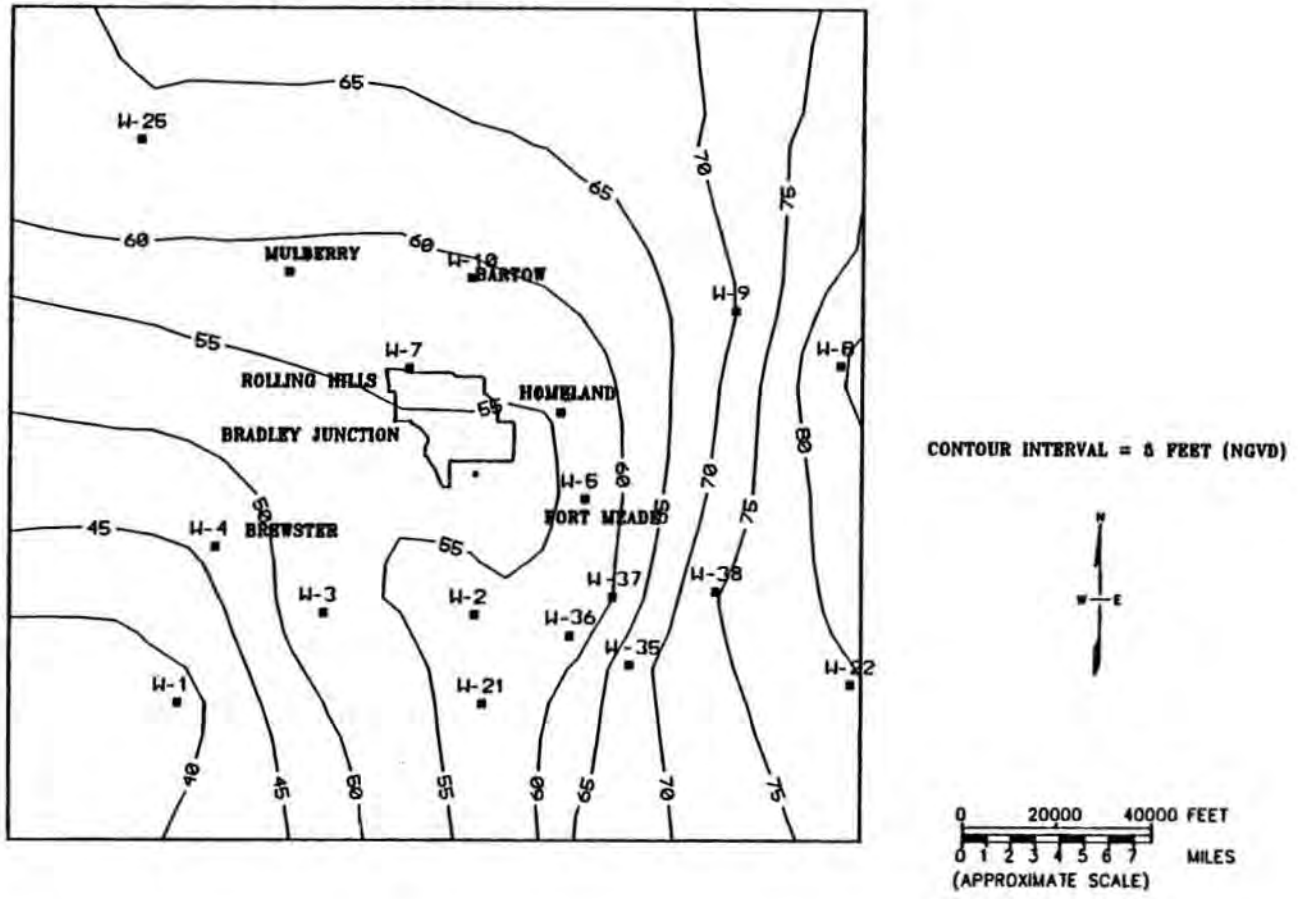
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.2-12
POTENTIOMETRIC SURFACE UPPER FLORIDIAN AQUIFER
MAY 1991

c:\dwg\fpcsca\borders.dwg



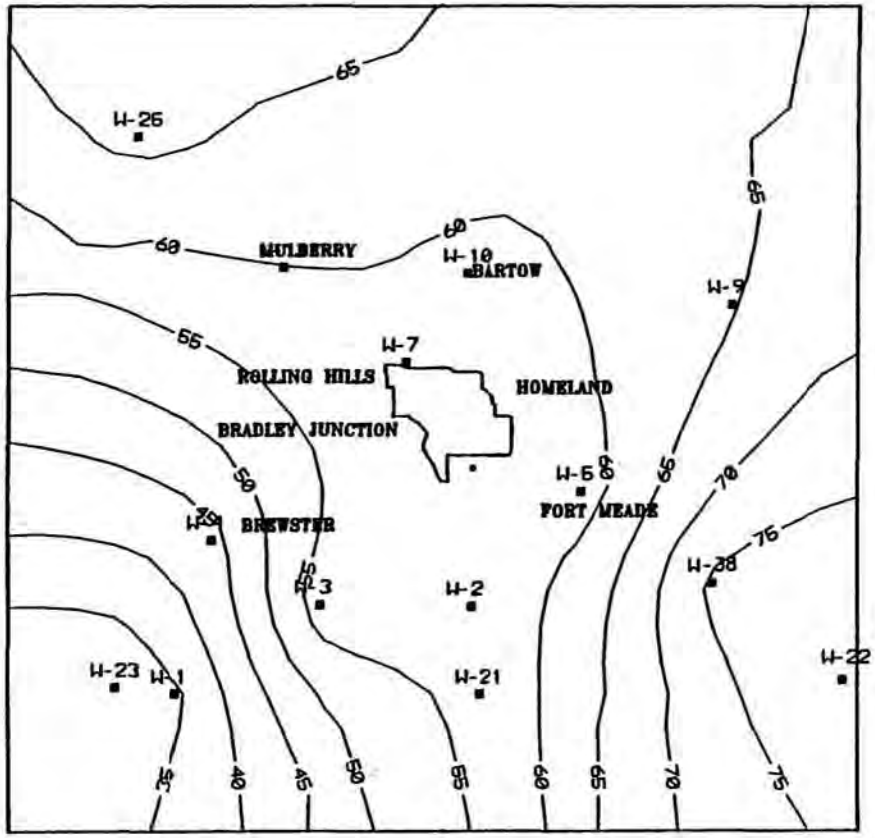
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.2-13
POTENTIOMETRIC SURFACE UPPER FLORIDIAN AQUIFER SEPTEMBER 1989

c:\dwg\fpcsca\borders.dwg



CONTOUR INTERVAL = 5 FEET (NGVD)

N
W E

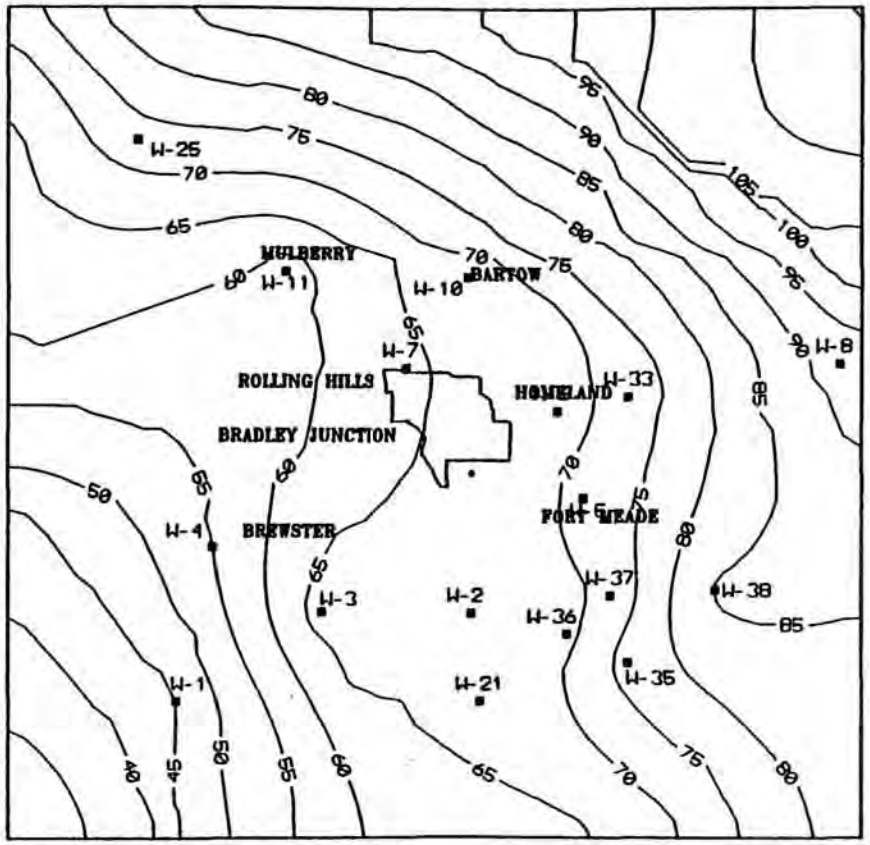
0 20000 40000 FEET
0 1 2 3 4 5 6 7 MILES
(APPROXIMATE SCALE)

SOURCE: 1992 SCA

Florida Power CORPORATION
Hines Energy Complex

FIGURE 2.3.2-14
POTENTIOMETRIC SURFACE UPPER FLORIDIAN AQUIFER SEPTEMBER 1990

c:\dwg\fpcsca\borders.dwg



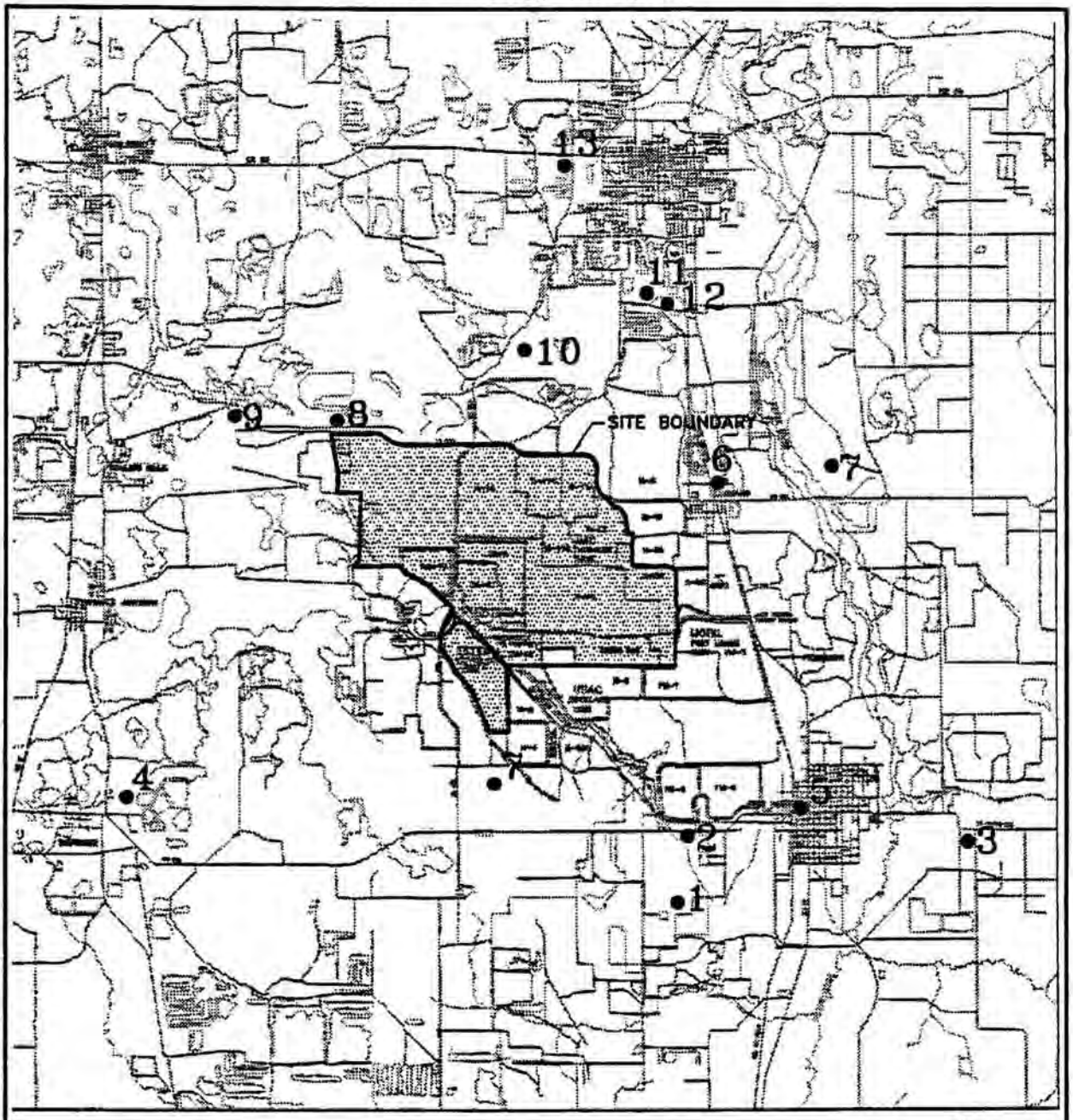
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.2-15
POTENTIOMETRIC SURFACE UPPER FLORIDIAN AQUIFER SEPTEMBER 1991

c:\dwg\fpcsca\borders.dwg



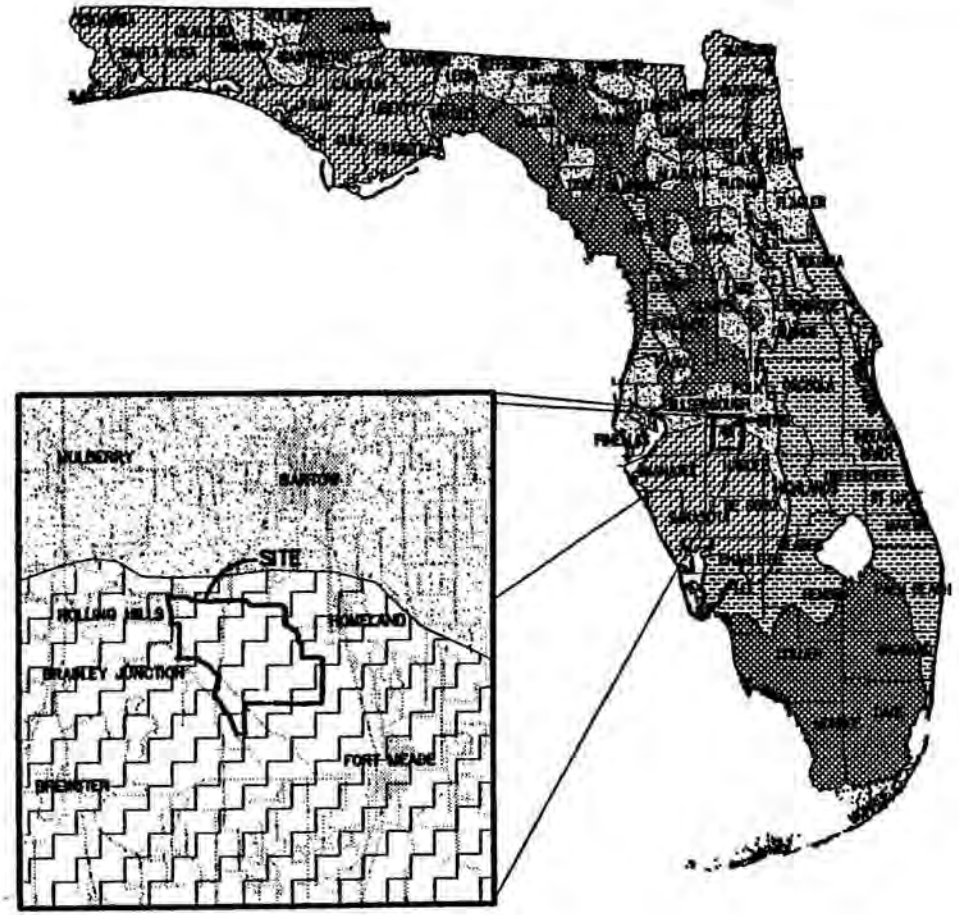
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.2-16
UPPER FLORIDIAN AQUIFER BASELINE WATER QUALITY DATA SAMPLING LOCATION MAP

c:\dwg\fpcsca\borders.dwg



SINKHOLE TYPE, DEVELOPMENT AND DISTRIBUTION IN FLORIDA

AREA I. BARE OR THINLY COVERED LIMESTONE
Sinkholes are few, generally shallow and broad, and develop gradually. Solution sinkholes dominate.

AREA II. COVER IS 30 TO 200 FEET THICK
Consists mainly of incohesive and permeable sand. Sinkholes are few, shallow, of small diameter, and develop gradually. Cover-subsidence sinkholes dominate.

AREA III. COVER IS 30 TO 200 FEET THICK
Consists mainly of cohesive clayey sediments of low permeability. Sinkholes are most numerous, of varying size, and develop abruptly. Cover-collapse sinkholes dominate.

AREA IV. COVER IS MORE THAN 200 FEET THICK
Consists of cohesive sediments interlayered with discontinuous carbonate beds. Sinkholes are very few, but several large diameter, deep sinkholes occur. Cover-collapse sinkholes dominate.

0 25 50
SCALE IN MILES

SOURCE: 1992 SCA

Florida Power CORPORATION
Hines Energy Complex

FIGURE 2.3.2-17
AREAS OF SINKHOLE OCCURENCE IN FLORIDA

c:\dwg\fpesca\borders.dwg

2.3.3 Site Water Budget and Area Uses

Since the use of water from on-site water cropping for the operation of Power Block 2 is authorized under the 1994 Certification, this section presents a general site water budget based on regional information. More detailed information concerning the Hines Energy Complex site water budget information is presented in Section 2.3.4. Also, area uses of water are presented in the following discussion.

2.3.3.1 General Site Water Budget

CLIMATOLOGY AND METEOROLOGY

The Hines Energy Complex is located in the south central Florida peninsula, which has a climate characterized as subtropical. The two National Weather Service stations nearest the Hines Energy Complex with long-term (30-year) periods of record are located at Bartow and Wauchula, Florida. Bartow lies approximately six miles north-northeast of the Hines Energy Complex site and Wauchula is approximately 19 miles south-southeast of the site. As shown in the 1992 SCA, temperatures in the vicinity of the Hines Energy Complex, as measured at Bartow and Wauchula, range from a combined average low of 61.2^0 F in January to a combined average high of 82.0^0 F in August, with a combined average of approximately 72.4^0 F. The highest temperature recorded nearby was 103^0 F and the lowest was 18^0 F, both recorded at the Bartow location.

Average total annual rainfall measured at Bartow and Wauchula, as shown in the 1992 SCA, is 53.43 inches. Normal monthly averages range from 2.00 inches in December to 8.42 inches in July. Generally, the wet season, when the majority of the rainfall occurs, is May through September.

No direct measurements of evaporation and evapotranspiration near the Hines Energy Complex site are available. Pan evaporation has been recorded monthly by NOAA since 1965 at Lake Alfred, which is approximately 23.5 miles north-northeast of the Hines Energy Complex site. SWFWMD analyzed NOAA's monthly measurements of pan evaporation data from Lake Alfred and presented a rationale for the method used to convert pan evaporation to estimated evapotranspiration rates (Keller, 1988). The 1992 SCA presented a summary of the measured precipitation and pan evaporation data along with calculated evapotranspiration, runoff, and recharge rates for the southwest Polk County area. Average yearly precipitation is approximately 53.43 inches and the average pan evaporation is 71.29 inches. Pan evaporation is converted to estimated evapotranspiration, using SWFWMD's formula, by multiplying the pan evaporation by 0.6 to obtain an estimated annual total evapotranspiration of 42.78 inches (Keller, 1988).

The Hines Energy Complex is located within the Peace River Basin. Based upon U.S.G.S. streamflow data for the Peace River Station at Zolfo Springs, Florida, Gauge No. 02295637, the average annual runoff for this area of west-central Florida is 10.35 inches.

GROUND WATER RESOURCES

Generally, the Hines Energy Complex site area is underlain by three hydrostratigraphic units: the Surficial aquifer (removed/altered); the Intermediate aquifer that includes upper and lower confining units; and the Floridan aquifer. Most of the materials that comprise the Surficial aquifer at the Hines Energy Complex site have been altered, or removed, due to mining activities by prior property owners. Where it occurs naturally and before being removed by mining at the Hines Energy Complex site, the Surficial aquifer system typically consists of clastic deposits of sands, silty sands, and clays of eolian and marine origins. In Polk County, the Surficial aquifer is used primarily for domestic and low volume irrigation uses. The bulk of recharge to the Surficial aquifer occurs directly by infiltration of rainfall. The Intermediate aquifer system includes all water bearing units and confining units

between the overlying Surficial aquifer system and the underlying Upper Floridan aquifer system. Water withdrawals from the middle units of the Intermediate aquifer system are used primarily for domestic supply in Polk County. Recharge to the Intermediate aquifer system occurs through leakance from the Surficial aquifer through the overlying confining unit. The Upper Floridan aquifer of the Floridan aquifer system underlies the Intermediate aquifer. Primarily vertical hydraulic conductivity and thickness of overlying confining units control the recharge to the Upper Floridan aquifer in Polk County. Recharge occurs from the Intermediate aquifer through confining units separating the Intermediate aquifer from the Upper Floridan aquifer. The Floridan aquifer underlies the Upper Floridan aquifer and receives recharge principally from leakance through semi-confining units separating the Upper Floridan aquifer from the Floridan aquifer. More detailed information concerning ground water resources is presented in Section 2.3.2 of this SCA.

SURFACE WATER RESOURCES

The Hines Energy Complex site is located completely within areas which were formerly mined for the severance of phosphate ore. This area was comprised principally of waste clay settling areas, with some mined-out areas also present. These mine land forms possess a significant quantity of storage volume which has altered the rate and volume of surface water discharging from the site compared to natural (pre-mining) condition.

As authorized in the 1994 Certification, the Hines Energy Complex site is being developed to support power plant operations. Surface waters within the site are being managed in accordance with the approved plans. Areas within the site which are being managed as closed basin systems include the Cooling Pond and the Brine Pond. These areas are designed to retain all runoff that is generated within them. The Plant Island is served by a stormwater management system which presently drains to the Cooling Pond. Buffer/Mitigation Areas under development, including N-11A, N-13, and N-9B, also presently drain to the closed system portion of the site.

Areas of the Hines Energy Complex site which are being managed as externally drained watershed areas include the McCullough Creek drainage enhancement project, composed of SA-10 and SA-12S, and Tiger Bay. These systems are designed to collect, and convey runoff to McCullough Creek and Camp Branch respectively. Upon completion of development of the N-11A, N-13, and N-9B portion of the Buffer/Mitigation Area, they will also be reconnected to the Camp Branch drainage.

Surface waters within the remaining areas of the site drain as they have during recent history. These areas, which are part of the IMC Noralyn/Phosphoria mine water recirculation system, are drained from the site via an existing network of drainage facilities including ditches, pipes and control structures.

2.3.3.2 Area Water Uses

Surface and ground water use in the vicinity of the Hines Energy Complex site are regulated by the Southwest Florida Water Management District (SWFWMD) by the issuance of water use permits and well construction permits. Information gathered primarily from SWFWMD permit records was used to develop a summary of water uses near the Hines Energy Complex site. Polk County does not maintain any separate records of surface and ground water usage or well construction.

The unincorporated community of Homeland lies approximately one mile northeast of the Hines Energy Complex site. Homeland residents use ground water from individual wells for drinking water. Water use permits are not required for these individual, domestic ground water users.

Ground water is withdrawn from the Surficial, Intermediate, and Upper Floridan aquifers for four principal purposes: phosphate mining operations, chemical manufacturing and

processing, citrus and agricultural irrigation, and public supply. Essentially, all of the large water users withdraw ground water from the Floridan aquifer system. Some public supplies and citrus irrigation water is supplied from the Intermediate and Upper Floridan aquifers. Surface water withdrawal from a mining pit is the only surface water withdrawal permit listed.

Table 2.3.3-1 provides details concerning each water use permit within a five mile radius of the Plant Island. The table lists ownership, location of property, number of permitted wells, source (aquifer or surface water), use, and permitted capacity. Many of these wells are plugged or used strictly for observation or monitoring and thus do not have associated water use permits. Figure 2.3.3-1 shows the approximate location of all known permitted surface and ground water uses within five miles of the Plant Island.

Based on SWFWMD well construction permits, Table 2.3.3-2 lists all the known wells identified in SWFWMD well construction permit files within one mile of the Plant Island. Some of these wells are included in the existing water use permits listed in Table 2.3.3-1. However, the majority are small users and thus do not require water use permits. Additionally, the table lists the ownership, location, well depth, diameter, and permitted use of each well. Of the 160 known wells within one mile of the Plant Island, 110 are listed as domestic use, 27 industrial use, 11 public supply, and 12 irrigation or livestock. None of these wells produce from the Surficial aquifer and many produce completely or partially from the Intermediate aquifer system. The majority produce from the Upper Floridan aquifer. Since most of these well owners are not required to obtain a water use permit, it is assumed that the overall usage is relatively low.

2.3.3.3 References

Campbell, Kenneth M. 1986. Geology of Polk County, Florida. Open file Report 13. Florida Geological Survey. Tallahassee, Florida.

Florida Power Corporation. 1992. Polk County Site. Site Certification Application.

Gale Research Center. 1985. NOAA Data Summary (1951-1980).

Heath, Richard C. 1961. Surface Water Resources of Polk County, Florida. Information Circular No. 25. Prepared by U.S. Geological Survey, in cooperation with the Florida Geological Survey. Tallahassee, Florida.

Keller, Kevin K. Distribution of Evapotranspiration within the Southwest Florida Water Management District. January 1988. SWFWMD. Brooksville, Florida.

SWFWMD. Well Construction and Permitting Section. SWFWMD. Brooksville, Florida. 1992. Computer Records.

USGS. 1980-1990 and 1995. Water Resources Data - Florida, Southwest Florida Surface Water. USGS. Tampa, Florida.

TABLE 2.3.3-1

CONSUMPTIVE USE PERMITS WITHIN A FIVE MILE RADIUS OF THE HINES ENERGY COMPLEX PLANT ISLAND

Consumptive Use Permit No.	OWNER	Location*			# Wells	Gallons Per Day (GPD)	
		SECTION	TOWNSHIP	RANGE		Permit Peak	Permit Average
20. 341.04	CITY OF BARTOW	35,36	29	24	17	5,130,000	4,100,000
		12,13,23,24	30	24			
		14,23,31,32,35	29	25			
		2,4,5,6,7,8,9,16,17,18	30	25			
20. 610.05	CF INDUSTRIES, INC.	24	30	23	27	3,821,800	3,302,300
		8,9,13,17,18,19,20,24,25,30	30	24			
20. 2224.06	CARGILL FERTILIZER	26,27,28,29,32,33,34,35	29	24	8	6,420,000	5,200,000
		3,4,5,9,10,11,14,15,16,21,22	30	24			
20. 8751.01	IMC-AGRICO CO/IMC- FERTILIZER	32,33	30	24	1	33,000	5,000
20. 10035.00	UNC RECLAMATION	30	30	24	1	90,000	30,000
20. 10700.00	POLK POWER PARTNERS LTD	23,25,26	30	24	2	1,010,000	761,000
20.3841.07	C & G CITRUS LIMITED PARTNER	2,9,10,11,13,14,15,16,21,22,23	31	24	44	576,000	132,000
20. 11436.00	CARPENTER, INC. D/B/A VADCON	29	30	25	2	8,400	4,200
20. 11600.01	POLK COUNTY BOCC DEPT. OF PARKS	33,34	30	25	2	3,100	1,700
20. 29.07	CARGILL FERTILIZER INC.	13,23,24,36	31	23	35	13,527,000	11,491,000
20. 438.04	U.S. AGRI-CHEMICALS CO.	13,24,25,26,35,36	31	24	56	18,913,300	9,673,400
		2,11	32	24			
		1,2,3,11,12	33	24			
		18,19,29,30,31,32,33	31	25			
		5,6,7,8	32	25			
20. 2297.06	CARGILL FERTILIZER INC.	1,2,11,12,13,14,23,24,36	32	24	30	20,800,000	15,300,000
		1,9,10,11,12,13,15,16,21,23,24	33	24			
		6,7,9,10,15,16,17,18,19,20,21,22,27 28,29,30,31,32,33,34	32	25			
		5,7,8,17,18,19	33	25			
20. 10638.00	CARGILL FERTILIZER INC.	12	32	24	1	1,000,000	186,000
20. 1255.03	MARY SNELL	5	31	25	1	26,800	13,400

TABLE 2.3.3-1
CONSUMPTIVE USE PERMITS WITHIN A FIVE MILE RADIUS OF THE HINES ENERGY COMPLEX PLANT ISLAND

Consumptive Use Permit No.	OWNER	Location*			# Wells	Gallons Per Day (GPD)	
		SECTION	TOWNSHIP	RANGE		Permit Peak	Permit Average
20.11400.04	IMC-AGRICO CO.	32,33	30	25			
		33	30	25	228	66,500,000	52,000,000
		32	30	25			
		28,29	30	25			
		32,33	30	25			
		33	30	25			
		33	30	25			
		20	30	25			
		25,26,27,28,33,34,35,36	31	21			
		26,27,28,32,33,34,35	29	22			
		2,3,4,9,13,24,25,26,35	30	22			
		1,2,3,4,9,10,11,12,13,14,19,22,23	31	22			
		24,25,27,28,29,31,32,33,34,36,					
		3,4,5,6,7,11,27,34,35	32	22			
		2,8,12,17,23,24,25,26,27,29,30,31	30	23			
		32,33,34,35,36					
		1,2,3,4,5,6,7,8,9,10,11,12,14,15,16	31	23			
		17,18,20,21,22,26,27,28,29,36					
		1,9,10,11,12,13,14,17,20,21,24,27	32	23			
		28,29,30,32,33,34					
		2,3,5,6,7,19,30,31	33	23			
		3,6,20	34	23			
		7,12,13,14,15,16,17,20,21,22,23,24	30	24			
		25,26,27,28,29,30,31,32,33,34,35,36					
		1,2,3,4,5,6,7,8,9,12,13,17,20,21,28,29	31	24			
		30,31					

TABLE 2.3.3-1
CONSUMPTIVE USE PERMITS WITHIN A FIVE MILE RADIUS OF THE HINES ENERGY COMPLEX PLANT ISLAND

Consumptive Use Permit No.	OWNER	Location*			# Wells	Gallons Per Day (GPD)	
		SECTION	TOWNSHIP	RANGE		Permit Peak	Permit Average
20. 1467.02	GOOCHLAND NURSERIES INC.	15	31	25	5	216,000	166,600
20. 2318.03	MOBIL MINING & MINERALS COMPANY	1,2,3,4,8,9,10,11,12,13,14,15,16,17 19,20,21,22,23,24,25,28,29,33,34	31	25	88	1,620,000	1,360,000
		3,4	32	25			
		7,17,18,19,20,29,30	31	26			
20. 2596.02	WAYNE R. SNELL	4	31	25	1	19, ,000	5,000
20. 7226.01	PEMBROKE LABORATORIES INC	15	31	25	1		16,100
20. 8615.01	MARTHA L. SNELL	4	31	25	1	48,700	8,300
20. 10757.00	CENTRAL FLORIDA HUMAN SERVICES	2,3,11	31	25	2	6,000	2,000
20.11470.00	FLORIDA DEPT. OF ENV. PROTECTION	3,4,9,10	31	25	3	2,800	1,400
20. 261.02	ALUMINUM COMPANY OF AMERICA	30	31	25	2	340,000	200,000
20. 438.04	U.S. AGRI-CHEMICALS CORPORATION	13,24,25,26,35,36	31	24	56	7,878,300	9,673,400
		2,11	32	24			
		1,2,3,11,12	33	24			
		18,19,29,30,31,32,33	31	25			
		5,6,7,8	32	25			
		27	31	25			
20. 645.03	CITY OF FORT MEADE	1,2,3,4,8,9,10,11,12,13,14,15,16,17,19	31	25	3	1,534,000	1,264,000
		20,21,22,23,24,25,28,29,33,34	31	25			
20. 2318.03	MOBIL MINING & MINERALS COMPANY	7,17,18,19,20,29,30	31	26	88	1,620,000	1,360,000
		25,30,31,32,35,36	31	25			
20. 3842.11	C & G CITRUS	1,2,3,4,5,9,10,11,12	32	25			
		31,32	31	26	64	7,878,300	1,758,500
20. 8300.01	ANNIE B. WALKER	4,5,6,7,8,9	32	26			
20. 8586.01	JOHN C. BARNETT	33	31	25	1	132,200	22,600
		32	31	25	2	102,600	17,600

TABLE 2.3.3-1
CONSUMPTIVE USE PERMITS WITHIN A FIVE MILE RADIUS OF THE HINES ENERGY COMPLEX PLANT ISLAND

Consumptive Use Permit No.	OWNER	Location*			# Wells	Gallons Per Day (GPD)	
		SECTION	TOWNSHIP	RANGE		Permit Peak	Permit Average
20. 8594.01	VIOLET SHEFFIELD TRUST	29	31	25	1	69,600	18,000
20. 9637.00	JOHN C. BARNETT, JR.	28	31	25	1		15,000
20. 10718.00	THE OAKS NURSERY	27	31	25	1	46,300	22,800
20. 10775.00	BARNETT-SUNBELT, INC.	27	31	25	1	56,200	27,700
20. 10840.00	U.S. AGRI-CHEMICALS CO	31	31	25	3	2,100,000	1,700,000
20. 438.04	U.S. AGRI-CHEMICALS CO	13,24,25,26,35,36	31	24	56	18,913,300	9,673,400
		2,11	32	24	30	20,800,000	15,300,000
		1,2,3,11,12	33	24			
		18,19,29,30,31,32,33	31	25			
		5,6,7,8	32	25			
20. 2297.06	CARGILL FERTILIZER INC.	1,2,11,12,13,14,23,24,36	32	24			
		1,9,10,11,12,13,15,16,21,23,24	33	24			
		6,7,9,10,15,16,17,18,19,20,21, 22,27,28,29,30,31,32,33,34	32	25			
		5,7,8,17,18,19	33	25			
20. 2318.03	MOBIL MINING & MINERALS CO	1,2,3,4,8,9,10,11,12,13,14,15,16 17,19,20,21,22,23,24,25,28,29,33,34	31	25	88	1,620,000	1,360,000
		3,4	32	25			
		7,17,18,19,20,29,30	31	26			
20. 3842.11	C & G CITRUS	25,30,31,32,35,36	31	25	64	7,878,300	7,758,500
		1,2,3,4,5,9,10,11,12	32	25			
		31,32	31	26			
		4,5,6,7,8,9	32	26			
20. 7948.01	JOHN C. & IRIS JEAN BARNETT	7	32	25	1	125,200	21,400
20. 29.07	CARGILL FERTILIZER INC.	13,23,24,36	31	23	35	13,527,000	11,491,000
		1,12	32	23			
		7,8,9,16,17,18,19,21,22,27,28,29 30,31,32,33,34	31	24			
		3,4,5,6,7,8,9,10,16,17,18	32	24			

TABLE 2.3-3.2
WELLS WITHIN ONE MILE OF THE HINES ENERGY COMPLEX

WELL OWNER	LOCATION S T R	WELL DIAMETER	CASING DEPTH	WELL DEPTH	WELL USAGE
INTL MIN CH	25 30 24	8	136	291	IRRIGATION
POLK POWERS P L	26 30 24	4	220	305	PUBLIC SUPPLY
IMC-AGRICO CO.	27 30 24	4	84	150	DOMESTIC
M. TENORIO	27 30 24	4	65	140	DOMESTIC
G. M. HREBEC	28 30 24	4	126	450	DOMESTIC
J. A. PRINE	29 30 24	4	93	170	DOMESTIC
T. G. BROOKE	29 30 24	4	168	325	DOMESTIC
IMC	25 30 24	*	43	125	INDUSTRIAL
IMC	25 30 24	12	80	512	INDUSTRIAL
IMC	25 30 24	12	85	85	INDUSTRIAL
IMC	25 30 24	4	80	130	INDUSTRIAL
IMC	25 30 24	4	84	183	INDUSTRIAL
IMC	25 30 24	8	90	200	INDUSTRIAL
IMC AGRICO CO.	25 30 24	10	120	350	INDUSTRAIL
FARMLAND IND.	25 30 24	34	105	250	INDUSTRIAL
FARMLAND IND	25 30 24	24	105	460	INDUSTRIAL
L. MASON	26 30 24	3	7	18	LIVESTOCK
IMC	26 30 24	8	72	340	INDUSTRIAL
CSW DEVELOPMENT	26 30 24	12	260	800	INDUSTRIAL
CSW DEVELOPMENT	26 30 24	12	261	800	INDUSTRAIL
FARMLAND IND	28 30 24	4	247	260	INDUSTRIAL
A. CRUM	32 30 24	3	72	122	DOMESTIC
T. MATHIS	32 30 24	6	95	200	IRRIGATION
G. LAW	32 30 24	4	84	160	DOMESTIC
J. BRADSHAW	32 30 24	4	126	280	DOMESTIC
J. HAYES	32 30 24	2	*	*	DOMESTIC
J. HAYES	32 30 24	2	58	100	DOMESTIC
J.E. MIMS	32 30 24	4	250	351	DOMESTIC
M. L. WATSON	32 30 24	4	160	355	DOMESTIC
B. THOMAS	33 30 24	3	88	156	DOMESTIC
IMC	33 30 24	4	84	275	DOMESTIC
BOARD CITY COMM.	33 30 24	4	273	400	PUBLIC SUPPLY
POLK CNTY BOARD	33 30 24	10	40	780	IRRIGATION
J. DOUGLAS	34 30 24	3	91	170	DOMESTIC
CARLTON WHITAKER	35 30 24	4	52	131	DOMESTIC
W. R. BRODERI	35 30 24	4	42	132	DOMESTIC
W. GEOHAGAN	35 30 24	4	50	145	DOMESTIC
I. STRICKLAN	35 30 24	4	96	142	DOMESTIC
D. G. HAAG	35 30 24	4	120	157	DOMESTIC
R. M. SPIVEY	35 30 24	4	84	135	DOMESTIC
D. GAY	35 30 24	4	67	135	DOMESTIC
B. REGISTER	35 30 24	4	126	220	DOMESTIC
IMC-AGRICO	35 30 24	4	*	*	DOMESTIC
JOHN DESMIDT	35 30 24	2	90	100	DOMESTIC
DONALD G. HAAG	35 30 24	4	105	195	DOMESTIC
IMC	36 30 24	8	126	300	DOMESTIC
IMC	35 30 24	8	126	205	INDUSTRIAL

TABLE 2.3-3.2 (CONTINUED)
WELLS WITHIN ONE MILE OF THE HINES ENERGY COMPLEX

WELL OWNER	LOCATION S T R	WELL DIAMETER	CASING DEPTH	WELL DEPTH	WELL USAGE
P. WILSON	32 30 25	4	63	110	DOMESTIC
R. HELMS SR	32 30 25	4	*	*	DOMESTIC
PAUL GOSS	32 30 25	4	63	155	DOMESTIC
H. GRAY	32 30 25	4	105	182	DOMESTIC
LLOYD LEACH	32 30 25	4	83	180	DOMESTIC
THOMAS JAROSEK	32 30 25	4	*	*	DOMESTIC
WILLIAM M. LANIER	32 30 25	4	86	163	DOMESTIC
THOMAS JAROSEK	32 30 25	4	60	120	DOMESTIC
LAMAR SELLERS	32 30 25	4	84	180	DOMESTIC
RAY BODEEN	32 30 25	4	50	125	DOMESTIC
TONY HERNBROTT	32 30 25	4	66	160	DOMESTIC
HUGH C. DAVIS JR.	32 30 25	4	147	245	PUBLIC SUPPLY
EARL PETERMAN	32 30 25	4	59	137	DOMESTIC
ISABELL LAWHORN	32 30 25	4	60	90	DOMESTIC
DAN KAUFFMAN	32 30 25	4	54	185	DOMESTIC
JOHN MOON	32 30 25	4	54	98	DOMESTIC
ED WINBERLEY	32 30 25	4	76	125	DOMESTIC
LOUISE HELMS	32 30 25	4	75	112	DOMESTIC
EVERETTS CO.	33 30 25	4	51	130	DOMESTIC
IMC	33 30 25	4	62	240	DOMESTIC
H. MURPHY	33 30 25	4	83	131	DOMESTIC
BUSES UNLIMITED	33 30 25	4	61	160	IRRIGATION
B. W. SMITH	33 30 25	4	180	300	DOMESTIC
CASILLAS	33 30 25	4	63	147	DOMESTIC
RIDGE PALLETS INC.	33 30 25	4	83	310	PUBLIC SUPPLY
IMC	31 30 25	8	83	126	INDUSTRIAL
ALCOA	32 30 25	10	397	823	INDUSTRIAL
ALCOA	32 30 25	10	390	835	INDUSTRIAL
IMC	04 31 24	4	42	90	PUBLIC
IMC FERTILIZER, NC.	04 31 24	4	105	178	PUBLIC
IMC CORP	04 31 24	34	314	790	INDUSTRIAL
IMC	04 31 24	26	310	870	INDUSTRIAL
IMC	04 31 24	8	64	308	INDUSTRIAL
IMC	04 31 24	8	70	390	INDUSTRIAL
A SMITH	11 31 24	4	83	200	DOMESTIC
J. HANEY	11 31 24	4	81	201	DOMESTIC
PORT. DREDGING C.	11 31 24	4	84	160	DOMESTIC
FPC	13 31 24	4	189	250	PUBLIC SUPPLY
ESTECH INC	14 31 24	6	188	822	PUBLIC SUPPLY
ESTECH INC	15 31 24	4	333	822	PUBLIC SUPPLY
IMC	12 31 24	8	65	250	INDUSTRIAL
SWIFT AND CO.	15 31 24	8	325	795	INDUSTRIAL
S. E. WOODS	22 31 24	3	125	227	DOMESTIC
T. DRINE	22 31 24	4	101	119	IRRIGATION
ESTECH INC.	22 31 24	6	307	778	IRRIGATION
IMC	25 31 24	12	129	378	DOMESTIC
USS AGRI-CHEM DIV	26 31 24	4	74	136	DOMESTIC
DIV. OF FORESTRY	27 31 24	4	126	163	DOMESTIC
USS AGRI- CHEM DIV	23 31 24	8	70	174	INDUSTRIAL
SWIFT AGCHEMICAL	23 31 24	6	181	230	INDUSTRIAL
IMC	25 31 24	8	85	351	INDUSTRIAL

2.3.4 Surficial Hydrology

2.3.4.1 Hydrologic Characterization

GENERAL DESCRIPTION

The Hines Energy Complex is located within SWFWMD's boundaries, along the divide between the Peace River Basin and the Alafia River Basin (see Figure 2.3.4-1).

Polk County is on the topographic high of peninsular Florida, from which water flows in all directions. Water from the eastern 35 percent of the County drains eastward and southward into the Kissimmee River and from the south-central 35 percent into the Peace River. Along the western boundary, water from 8 percent of the County drains into the Alafia River and water from 4 percent of the County drains into the Hillsborough River. On the north, water from about 15 percent of the County drains northwest into the Withlacoochee River, and drainage from about 3 percent of the County moves northward into the headwaters of the Oklawaha River, a tributary to the St. Johns River (USGS, 1961).

In the high, rolling, sandy lands of the Peace River basin, channels tend to be somewhat well defined, although many of the natural passages between lakes are more accurately described as long, narrow, wooded swamps than as well defined streams. In many places, these natural drains have been improved by channelizing. In this part of Polk County, lakes are more numerous, although smaller, than in the Kissimmee Valley section. Many of the lakes have no surface outlet and outward drainage may take place through the ground. In several areas, lakes that had no surface connections or were imperfectly joined have been connected by canals and made into full fledged drainage systems.

Along the western side of the county, in the Alafia River and Hillsborough River basins, the land is flat and fairly high. Lakes are few and small. Although the few streams in this area are small, most of them have well defined channels.

Streamflow in Polk County does not fluctuate as rapidly or as much as in many other counties in Florida because of the buffer effect of the many lakes in the County. The lakes store water in times of rainfall excess, thus reducing flood peaks. Conversely, they release water to streams in times of deficiency and thereby sustain streamflow. Each stream is stabilized by lakes to a greater or lesser extent, depending upon the size and number of lakes to which it may be connected. This factor, as well as climatic and geologic factors, causes flow characteristics to be different from stream to stream and even from place to place on the same stream.

PEACE RIVER BASIN. The drainage area of the Peace River is about 2,180 square miles. From its source in northern Polk County, the River flows southward through Hardee and De Soto Counties into the tidewater of Charlotte Harbor in Charlotte County. The River has many tributary streams, some of them having large drainage areas.

The topography of the valley rises from tidewater near the estuary to about 200 feet above sea level on the upper western side of the valley and about 250 feet on the upper eastern side. The highlands and flatwoods areas of the valley were originally heavily timbered with pine but most of this has been cut and replaced with citrus groves and pastures. Cypress swamp extends generally throughout the River floodplain to tidewater.

The Peace River originally received more of the drainage from Green Swamp than it has since the construction of the Atlantic Coast Line Railroad and Highway U.S. 17-92. The original natural divide was nearer the old Polk City-Haines City road.

The main stem of the Peace River is a narrow and shallow watercourse above tidewater in relation to the area it serves as a flood outlet. The floodplain is relatively narrow with a steep slope. This offers little opportunity for flood storage to reduce flood peaks. At the present time, flood waters quickly spread beyond the banks of the natural stream, overflowing the densely wooded floodplain. As the River nears tidewater, extreme floods extend beyond the normal floodplain, inundating large areas of adjacent flat lands.

The River channel has headwaters in three lakes or lake systems: Lake Hancock, normally less than 98 feet above sea level; the Winter Haven chain of lakes, normally about 131 feet above sea level; and Lake Hamilton, normally about 121 feet above sea level. All of these lake outlets converge about 1 mile above Bartow. The distance from the point of convergence to the zone of tidewater influence is about 87 miles along the stream.

ALAFIA RIVER BASIN. The Alafia River drains approximately 460 square miles of Hillsborough and western Polk Counties. The USGS streamflow gauging station above Lithia Springs measures flow from approximately 72 percent of the drainage basin (SWFWMD, 1991).

The Alafia River is notable for the extensive phosphate mining and chemical processing in its basin. Water quality conditions in the river were at their worst during the 1950s and 1960s, but pollution abatement practices applied since the 1970s have resulted in improved water quality. Concentrations of several water quality parameters, such as phosphorus and nitrogen species, fluoride, specific conductance, sulfate, and coliform bacteria remain very high (SWFWMD, 1991). Water quality has consistently been impacted most in the North Prong of the river as a result of the high density of phosphate

mines and chemical processing plants nearby. Water quality has typically been best in the South Prong of the river and is of intermediate quality in the main stem downstream of the confluence of the two prongs.

WATER BODIES NEAR THE SITE. Figure 2.3.4-2 shows the pre-mining drainage basin divides. All of the streams mentioned, except the South Prong Alafia River, are within the drainage basin of the Peace River. Table 2.3.4-1 indicates what percentage of the Hines Energy Complex was formerly within each of the sub-basins.

A portion of the Hines Energy Complex, as it existed prior to the start of mining activities, was within the drainage basin of the Alafia River. These areas, which are identified on Figure 2.3.4-2 represented approximately 0.14 percent of Alafia River's drainage basin. The three areas as they are presently identified include a small portion of land at the north-west corner of the Estech SA-12 parcel, the western portion of the IMC Phosphoria parcel and the western portion of the IMC P-3 parcel. These areas were altered by mining pre-1971, pre-1984, and during 1974 respectively. The P-2 and P-3 parcels, which were previously reclaimed, no longer drain to the Alafia River system. Proposed reclamation plans for the Phosphoria parcel, currently under review by Department of Environmental Protection, indicate that this area will drain to the Peace River system. Since none of these areas have contributed to the Alafia River basin since the start of mining and will not following reclamation, no further discussion of the Alafia River basin will be presented in this SCA.

MORPHOMETRY, BATHYMETRY, AND STAGES

PEACE RIVER. Figure 2.3.4-3 shows the profile of the Peace River, from Punta Gorda to Lake Hancock. Figure 2.3.4-4 shows the USGS flow and water quality monitoring stations

on the Peace River in the vicinity of the Hines Energy Complex. The Bartow station is located at the SR 60 bridge in Bartow, 105 miles upstream from the mouth of the River (USGS, 1998), it is also shown at Milepost 101 on Figure 2.3.4-3. The Peace River station near Homeland is 97 miles upstream from the mouth, or at Milepost 93 as shown on Figure 2.3.4-3. The Peace River station at Fort Meade is 92 miles upstream of the mouth, or at Milepost 88 as shown on Figure 2.3.4-3.

Morphometry and bathymetry for the Peace River were not measured. However, data from the USGS gauging stations at Bartow, Homeland, and Fort Meade indicate that during the dry season, river widths are typically 20 to 50 feet at each of these stations, with maximum depths on the order of 1.5 to 4 feet. During the wet season, river widths are more typically 200 to 600 feet, and maximum depth ranges from 4 to 8 feet. The stage-discharge curve for the Bartow gauging station indicates a flow of 3,000 cfs would occur at a depth (gauge height) of about 7.5 feet. The same depth at the Fort Meade station would coincide with a flow of under 1,000 cfs. The maximum high water surface stages shown on Figure 2.3.4-3 were estimated for a design storm of 9.6 inches over a 5-day period (Johnson, 1960). This storm has a recurrence interval of about 15 years. Maximum stages, and the associated flows, are presented in Table 2.3.4-2 for the Peace River USGS stations in the vicinity of the Hines Energy Complex. The peak stage at Fort Meade is 78.43 ft-NGVD and the peak stage at Bartow is 96.35 ft-NGVD. The coinciding peak flow rates are 2,020 cfs and 1,550 cfs respectively. The 100-year flood stages at Bartow, Homeland, and Fort Meade are reported to be about 99.0, 90.6, and 85.1 ft-NGVD, respectively (FEMA, 1983). The Federal Emergency Management Agency (FEMA) Flood Insurance Rate maps are included as Figure 4.1.3-1.

McCULLOUGH CREEK. McCullough Creek presently arises from a small lake (approximately 10 acres) just south of the Hines Energy Complex property line as shown on Figure 3.8.1-1. The Creek runs approximately south-southeast for about 5 miles and then empties into Whidden Creek. In the upper reaches, the Creek bank elevation is about 150 ft-NGVD. At the Whidden Creek confluence, the McCullough Creek bank elevations are on the order of 50 feet. The 100-year flood stage in the vicinity of the Hines Energy Complex site is expected to be within the channel banks due to the limited drainage area and the large detention storage volume within SA-12S. Presently, the only permitted discharge from the site to McCullough Creek is the weir outfall from SA-12S.

The pre-mining drainage basin for McCullough Creek was 14.5 square miles (Partney, et al, 1990), while in 1990 FDNR reported it contained 16.6 square miles at that time (see Figure 2.3.4-5). The increase in area is a result of phosphate mining changes to the topography. The area within the Hines Energy Complex which was in the pre-mining drainage basin is estimated at 1,526 acres, or about 2.4 square miles. As authorized by the 1994 Certification, approximately 500 acres of the site, known as the McCullough Creek drainage enhancement project, presently drain to McCullough Creek.

CAMP BRANCH. The source of Camp Branch is Tiger Bay. The Branch continues eastward about 3,500 feet and crosses under U.S. Highway 17. In 1971, the Branch traveled generally northward about a mile and then joined a ditch which entered the Peace River, as shown on Figure 2.3.4-6 (EPA, 1985). Since that time, the portion of the Branch east of U.S. Highway 17 has been mined. Its actual channel location is still more or less as described. A determination of total drainage area of the Branch has not been made. As indicated in the 1992 SCA, a portion of the Buffer/Mitigation Area (N-11A, N-13, and N-9B) will be reconnected to Camp Branch. This is scheduled to occur following the restoration of N-13 and N-9B in about the year 2002.

BARBER BRANCH. Barber Branch is a former stream which drained a portion of the Hines Energy Complex to the east and eventually discharged to the Peace River. Virtually no traces of this stream are left as a result of mining activities.

SIX-MILE CREEK. The former Six Mile Creek Basin is now part of the IMC Noralyn and Phosphoria mine areas. Much of the area is presently part of the mine water recirculation system for these mines. Portions of the area are presently being restored. After reclamation is complete, the Six Mile Creek Basin will be reconnected to the Peace River.

FLOWS

PEACE RIVER. Streamflow records in the vicinity of the Hines Energy Complex are available only for the Peace River. Figure 2.3.4-4 shows the three Peace River USGS monitoring locations at Bartow, Homeland, and Fort Meade. For the Bartow and Fort Meade stations, flows have been recorded daily since 1939 and 1974 respectively.

The Peace River Valley Water Conservation and Drainage District developed a unit hydrograph for the Peace River at Bartow in 1960 (Johnson, 1960). It is reproduced in this SCA as Figure 2.3.4-7, and it shows a peak of about 1,150 cfs at 3.5 hours with a duration of about 15 days. The maximum discharge recorded at the Bartow station was 4,100 cfs on September 24, 1947. The average discharge over 57 years (1939 to 1996) is 227 cfs. The maximum discharge recorded at Fort Meade since 1974 was 2,020 cfs on August 11,1995. The minimum daily discharges recorded were 1.2 cfs at Bartow (April 27, 1968) and 0.22 cfs at Fort Meade (June 6, 1985).

Heath and Wimberly (USGS, 1971) calculated the 7 consecutive day 10-year low flow (7Q10) from October 1939 through September 1964 for the Peace River at Bartow was 11.1 cfs, and the average flow was 308 cfs. Based on the period 1966 through 1991, the 7Q10 has dropped to about 3.0 cfs. Based on the period of record (water years 1940 to 1991), the 7Q10 is 4.6 cfs. Based on the period from 1974 to 1991, the 7Q10 is 3.3 cfs at Bartow, and only 0.9 cfs at Fort Meade.

The average flow at Fort Meade is 181 cfs (water years 1974 to 1996); for the same period at Bartow, the average is 154 cfs.

OTHER STREAMS. Heath (USGS, 1961) calculated peak flood relationships for Polk County streams, as shown on Figures 2.3.4-8 and 2.3.4-9. Based on this data, McCullough Creek would have an annual flood peak of about 500 cfs, a 10-year peak of about 1,100 cfs, a 25-year peak of about 1,700 cfs, and a 50-year peak of about 1,900 cfs. However, Partney (1990) indicates that the contributing area of a drainage basin is typically reduced by at least 50 percent when an area is mined for phosphate and then reclaimed.

If Figures 2.3.4-8 and 2.3.4-9 are used to estimate the peak 50-year flood on the Peace River at Bartow (drainage area of 390 square miles), the estimate is on the order of 6,840 cfs. Since the actual peak for 57 years of record was only 4,100, it appears that Heath's method (USGS, 1961) would overestimate peak flows by a factor of about 65 percent.

TEMPERATURE

Heath (USGS, 1981) reports an average annual temperature range of streams in south-central and south-western Florida of 72 to 76° F. All of the USGS data for the Peace River at Bartow, near Homeland, and at Fort Meade have been plotted over the period of

temperature record, and are shown on Figures 2.3.4-10 through 2.3.4-12. Based on the USGS data, water temperatures in the Peace River in the vicinity of the Hines Energy Complex range from a low of 50°F in the winter to a high of 94.1°F in the summer. There are no published temperature data for other water bodies in the site vicinity.

As part of the surface water hydrology studies in support of the 1992 SCA, water quality data were monitored at seven surface water locations during both the wet and dry season (see Figure 2.3.4-13). These monitoring results are tabulated in Table 2.3.4-3. They indicate that the temperatures in McCullough Creek and Camp Branch are, for all practical purposes, the same as in the Peace River. For SA-11, N-15, and N-16, water temperatures during the wet season (June to September) were 3 to 6° F higher than those in McCullough Creek, Camp Branch, and the Peace River, but were indistinguishable from them in the dry season (October to May). Water temperatures measured in Tiger Bay were similar to those measured in the other on-site areas.

WATER QUALITY

As was the case with temperature, historical water quality data are available for the Peace River at the three locations shown on Figure 2.3.4-4.

Water quality data have been taken continuously at the Bartow station since February 1963; and at the Fort Meade Station since January 1965. Water quality data are available for the Homeland station from January 1965 to August 1994, however these data are not continuous. These water quality data for the Bartow, Homeland, and Fort Meade stations are voluminous and will be made available upon request.

As part of baseline surficial hydrology studies conducted in support of the 1992 SCA, water

quality samples were taken during the wet (September 1991) and dry (February 1992) seasons at seven locations (see Figure 2.3.4-13). The complete results of that monitoring program are shown in Table 2.3.4-4 of Appendix 10.5.2.3. Table 2.3.4-5 of Appendix 10.5.2.3 presents the results of that monitoring program showing only those constituents which were detected.

Heath and Conover (USGS, 1981) indicate that streams in southwest Polk County are of the calcium and magnesium sulfate type (see Figures 2.3.4-14 and 2.3.4-15). This information indicates that the dominant cations for streams in the site vicinity are calcium, magnesium, and sodium, and the dominant anions are sulfate, bicarbonate, and chloride.

ON-SITE WATER BODIES

There is one existing on-site natural water body, Tiger Bay, which contains numerous surface water bodies and is not part of Plant operations. Tiger Bay is located east of the Plant Island area and consists of about 524 acres of reclaimed land and lakes mine area. Tiger Bay drains to the remnant Camp Branch system located on its east side. Tiger Bay receives water input from direct precipitation and minimally from adjacent upland areas.

SITE DRAINAGE

Stormwater runoff is being managed for all areas within the Hines Energy Complex site. Areas which are in contact with plant process waters or industrial wastewater will be managed as closed basins. Several areas within the Hines Energy Complex are designed to drain freely, so as to enhance the flows in adjacent drainage systems. This has been done to intentionally provide flows to the McCullough Creek and Camp Branch drainages. Those areas within the Hines Energy Complex that are not specified as closed systems or

that are not designated as off-site drainage enhancement areas are used for water cropping purposes. The water cropping system is intended to capture runoff from selected areas within the Hines Energy Complex site and to use this water to support plant operations, primarily for Cooling Pond makeup. Complete details concerning water management on the site are presented in Section 3.8.

2.3.4.2 References

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TABLE 2.3.4-1 HINES ENERGY COMPLEX SITE PRE-MINING DRAINAGE BASINS	
Pre-mining Basin	% of Site Acreage
PEACE RIVER BASIN	
McCullough Creek	18.5%
Six Mile Creek	52.5%
Barber Branch	11.5%
Camp Branch[1]	12.3%
Peace River Basins Subtotal	94.7%
ALAFIA RIVER BASIN	
in SA-12	0.6%
In Phosphoria	2.5%
In P-3	2.1%
Alafia River Basin Subtotal	5.2%

1. Also know as Camp Meeting Ground Branch.

Source: 1992 SCA.

TABLE 2.3.4-2
MAXIMUM STAGES - PEACE RIVER

Station Location	At Bartow		Near Homeland	At Fort Meade	
Years of Complete Record	Flow 57	Stage 29	N/A	Flow 23	Stage 21
Peak Stage ft. NGVD	96.35		N/A	78.43	
Flow at Peak Stage, cfs	1,550		N/A	2,020	

N/A = Not Available

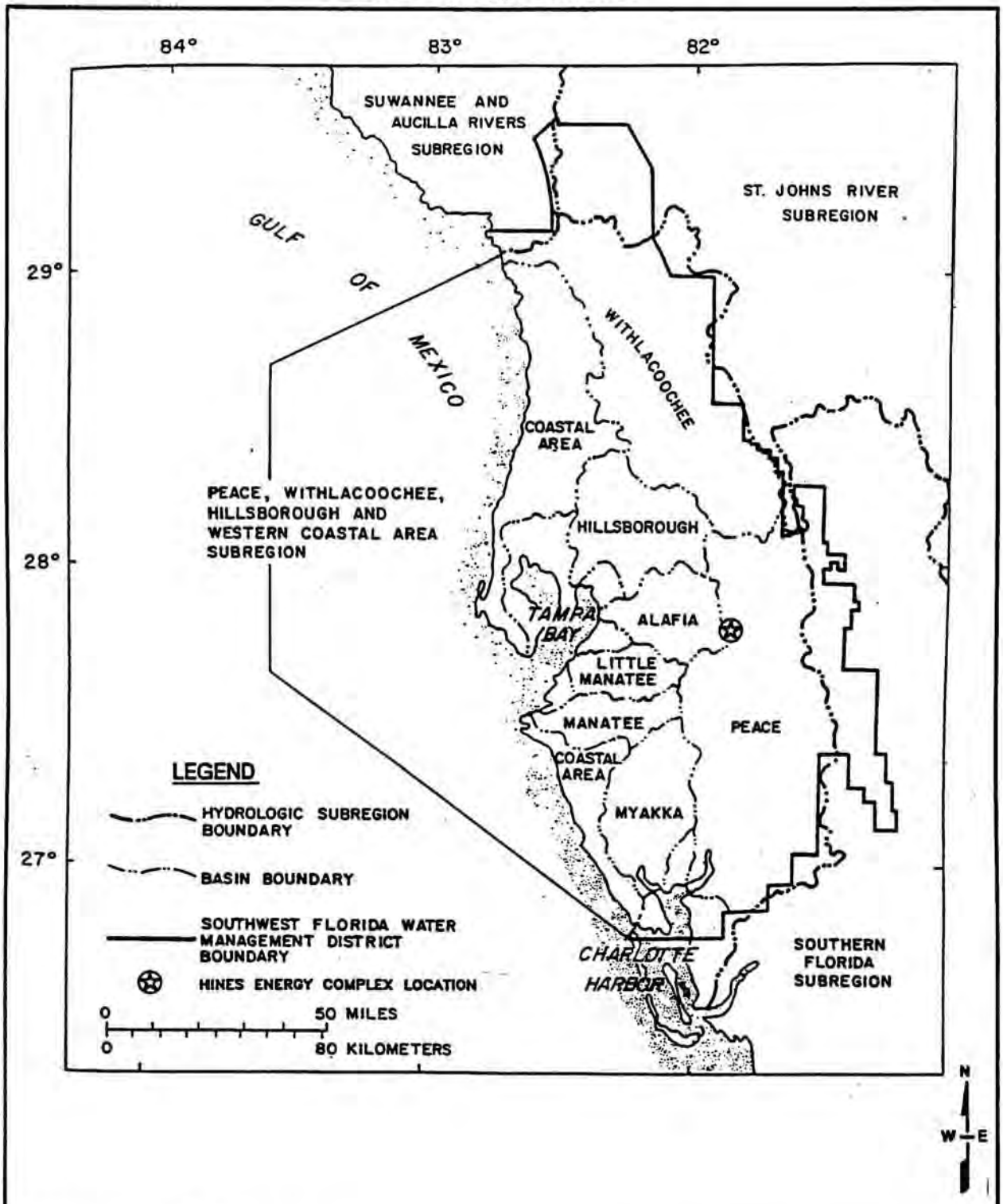
Source: USGS wWebsite www.USGS.gov/water. 1998.

TABLE 2.3.4-3
MEASURED WATER TEMPERATURES[1]

Location	Wet Season	Dry Season
N-15	86.7	71.2
N-16	89.4	71.8
SA-11	86.0	72.1
Tiger Bay	87.1	72.5
Camp Branch[2]	82.4	71.6
McCullough Creek	83.7	69.6
Peace River	83.3	70.3

1. Temperature expressed in °F.
2. Also know as Camp Meeting Ground Branch.

Source: 1992 SCA



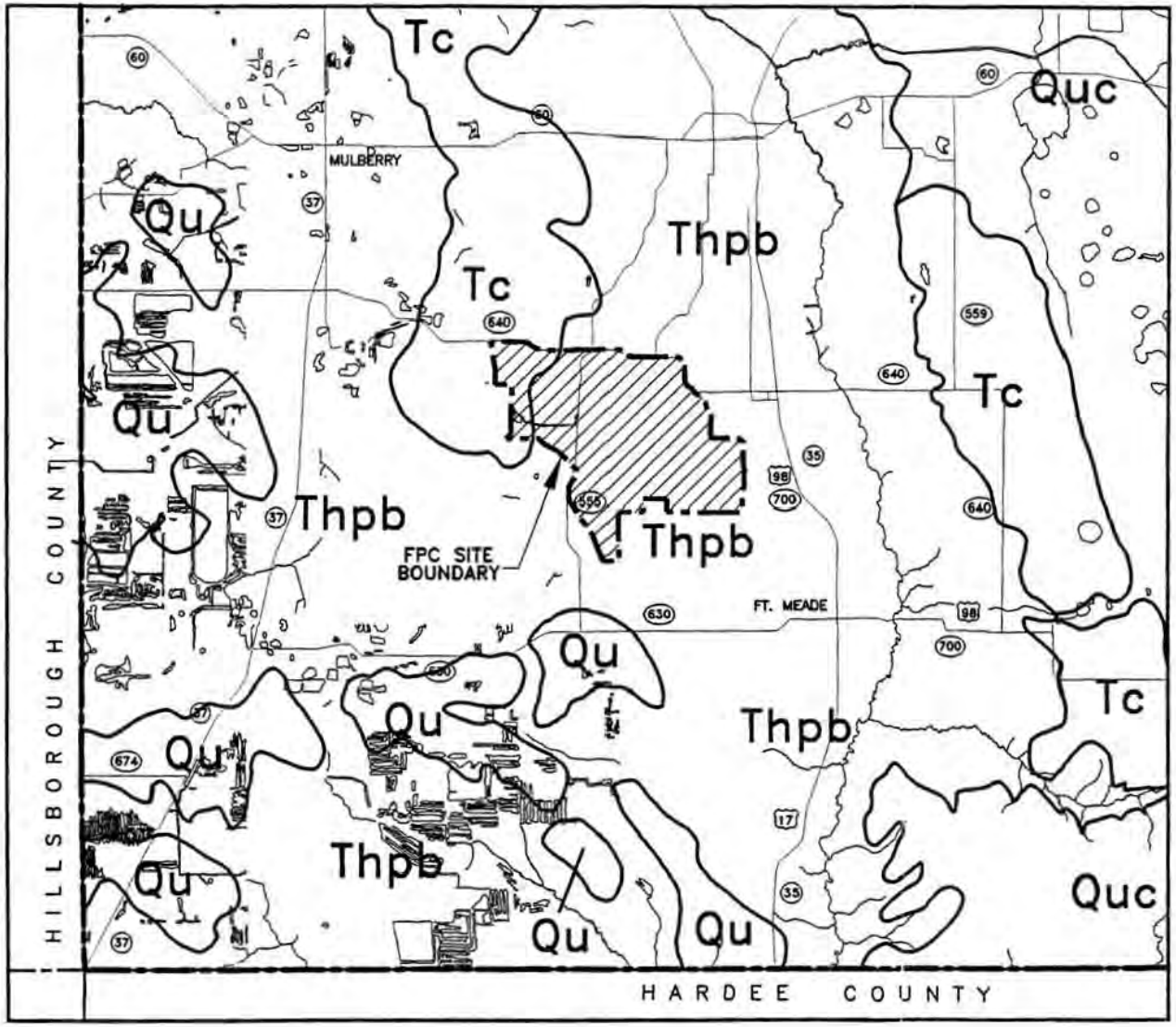
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.4-1 MAJOR RIVER BASINS IN VICINITY OF SITE

c:\dwg\fpcsca\borders.dwg



EXPLANATION

QUATERNARY

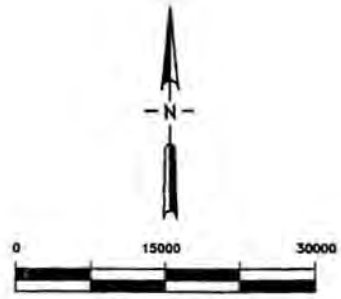
Qu– Undifferentiated surficial sands, clayey sands, clays, marls and peats >20 feet thick. No formations recognized.

Quc– Undifferentiated sands reworked from Cypresshead Fm.. Also isolated occurrences of Cypresshead.

TERTIARY

Tc– Cypresshead Fm. quartz sands with minor clay. Lies on Hawthorn Group.

Thpb–Bone Valley Member of the Peace River Formation, Hawthorn Group. Consists of pebble– or gravel–sized phosphate fragments and sand–sized phosphate grains in a matrix of quartz sand and clay. Percentages of the various components are highly variable.



THIS IS AN INTERIM GEOLOGIC MAP. EDITING AND EDGE MATCHING HAVE NOT BEEN COMPLETED. UPDATING AND CORRECTION ARE CONTINUING.

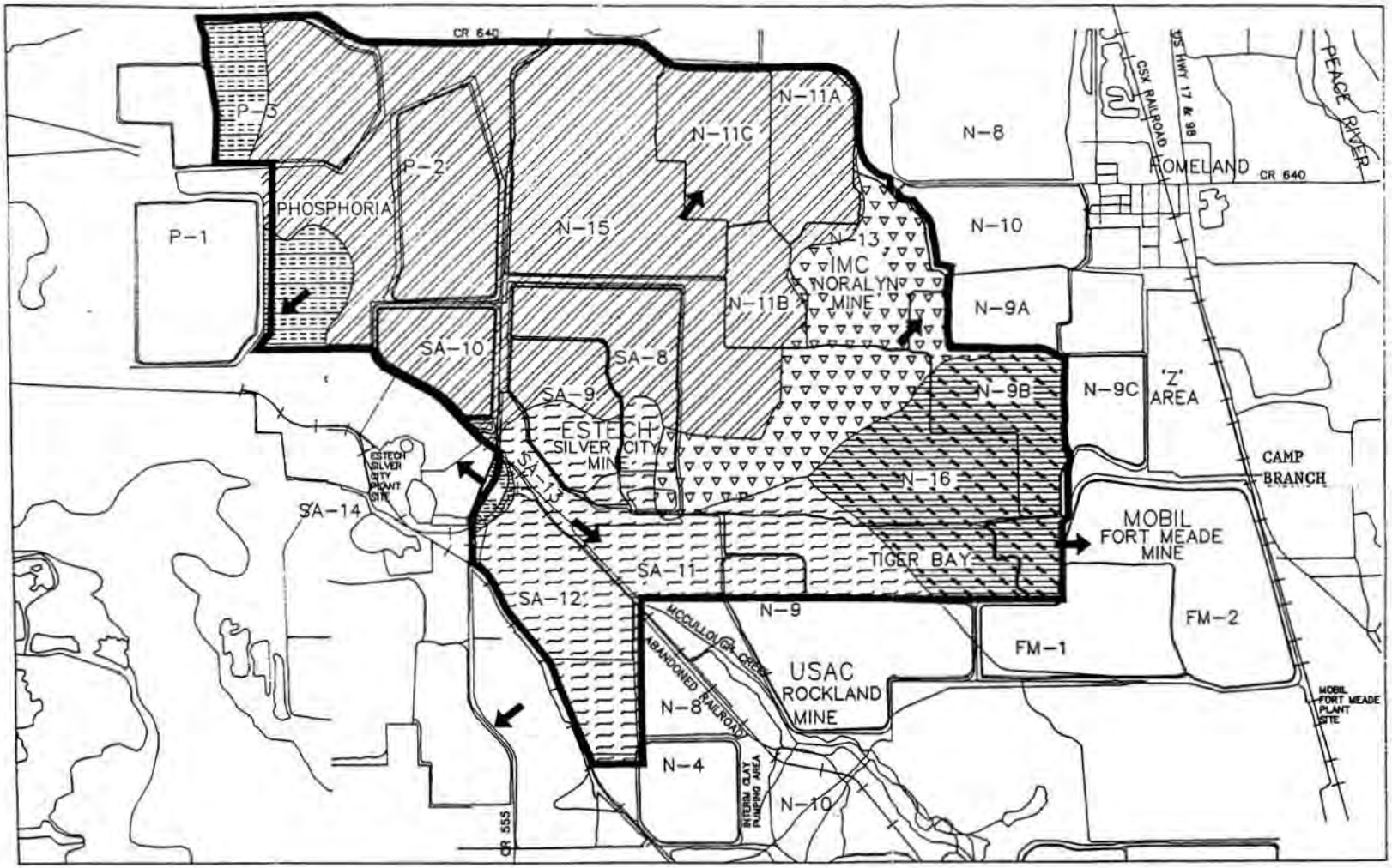
SOURCE: 1992 F.G.S. MAP, CAMPBELL, 1992

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.1-8
GEOLOGIC MAP OF SOUTHWESTERN POLK COUNTY

c:\dwg\fpcsca



LEGEND

- ROADWAYS
- SITE BOUNDARY
- RAILROADS
- McCULLOUGH CREEK
- SIX MILE CREEK
- BARBER BRANCH
- CAMP MEETING GROUND BRANCH
- SOUTH PRONG ALAFIA RIVER
- FLOW DIRECTION

N
W — E

0 4000'

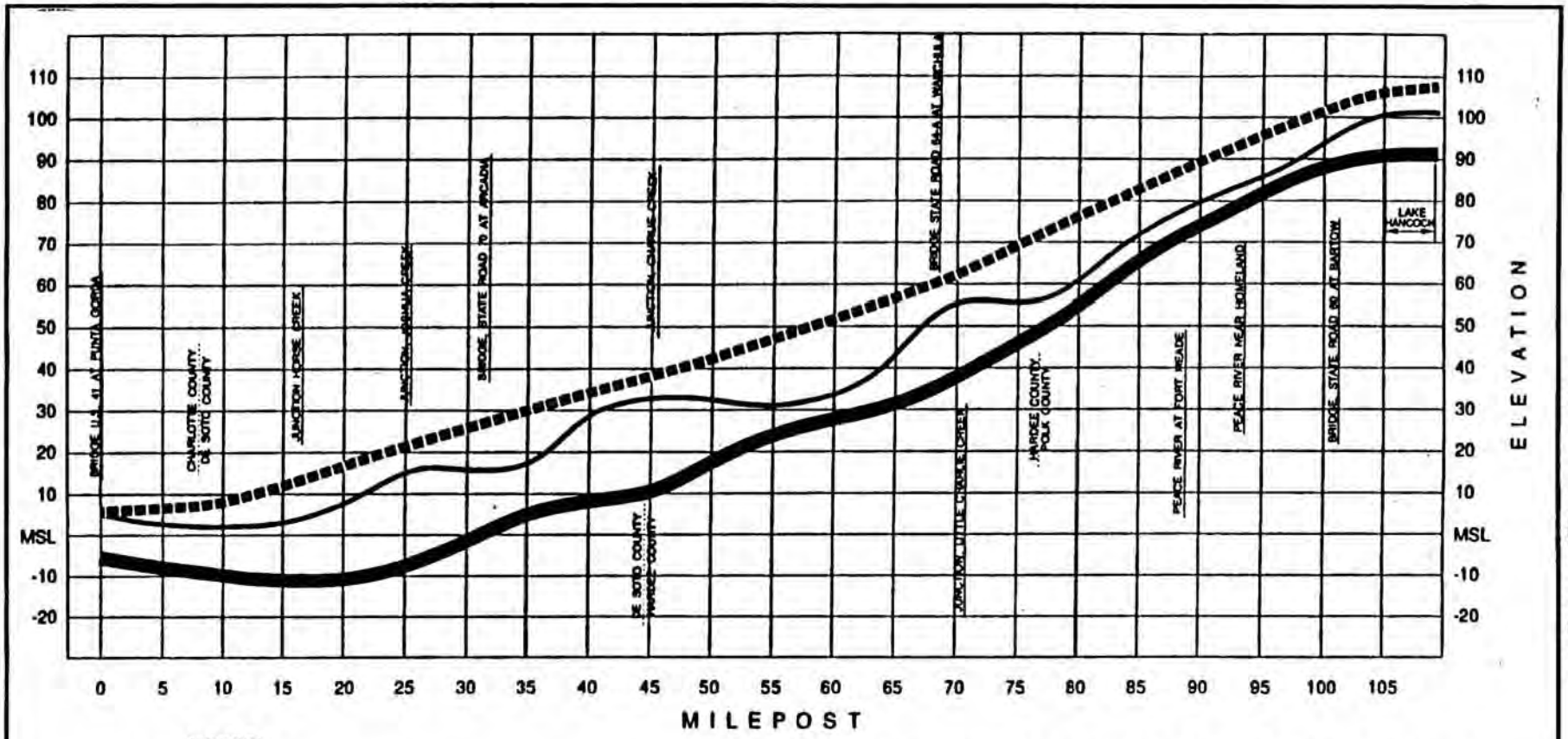
CE: 1992 SCA

Florida Power CORPORATION

Energy Complex

FIGURE 2.3.4-2
PRE-MINING DRAINAGE BASIN BOUNDARIES

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NOTE: *(1)* MILEPOST MEASUREMENT IS TAKEN ALONG THE NATURAL WATERCOURSE OF THE RIVER, BEGINNING AT THE BRIDGE ON U.S. 41 IN PUNTA GORDA AND PROCEEDING NORTH TO LAKE HANCOCK IN POLK COUNTY.

(2) ELEVATIONS SHOWN ARE IN FEET ABOVE OR BELOW MEAN SEA LEVEL (MSL).

SOURCE: 1992 SCA

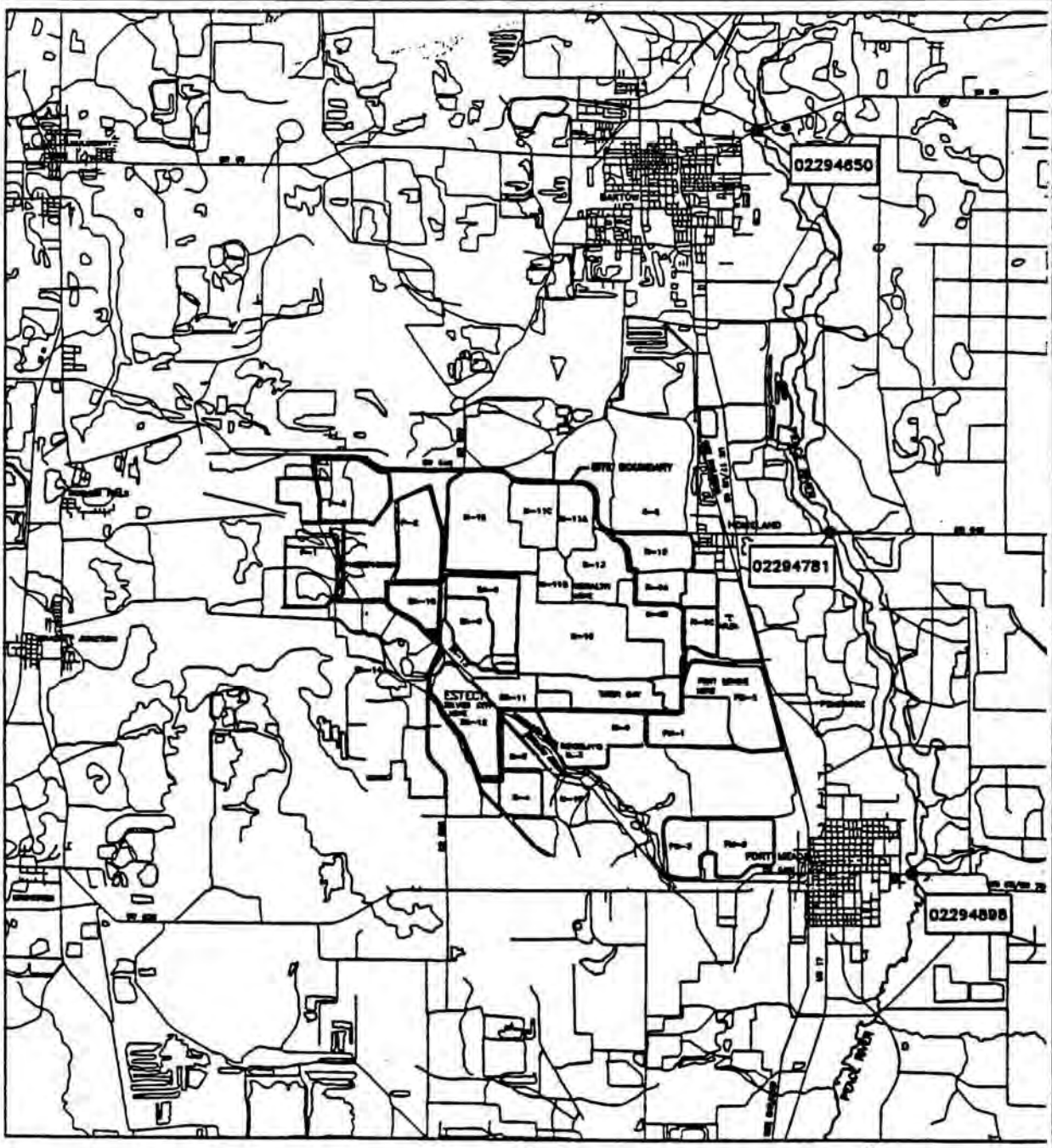
Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.4-3
PROFILE OF PEACE RIVER

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Hines Energy Complex



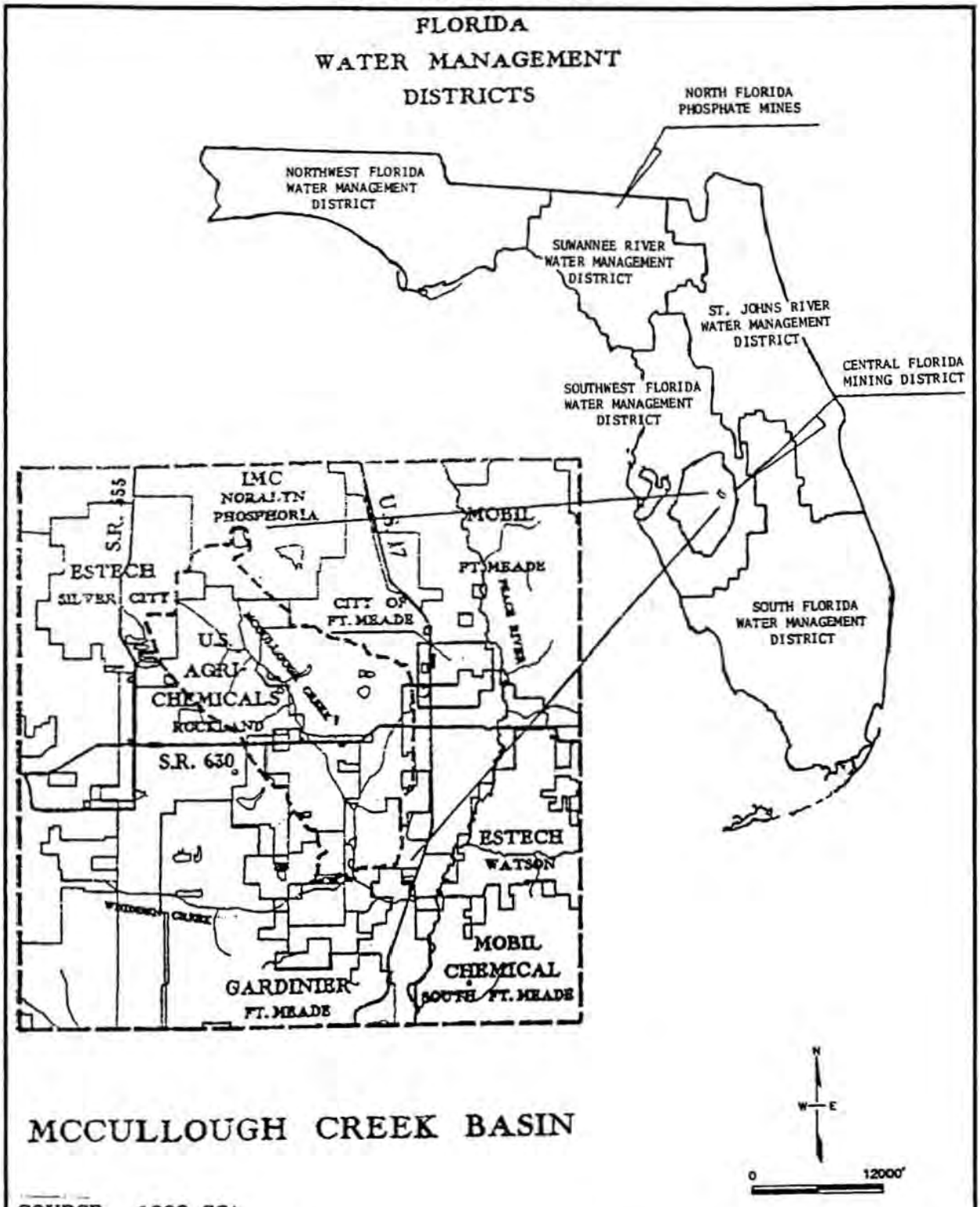
SOURCE: 1992 SCA

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Hines Energy Complex

FIGURE 2.3.4-4
USGS STATION LOCATIONS

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MCCULLOUGH CREEK BASIN

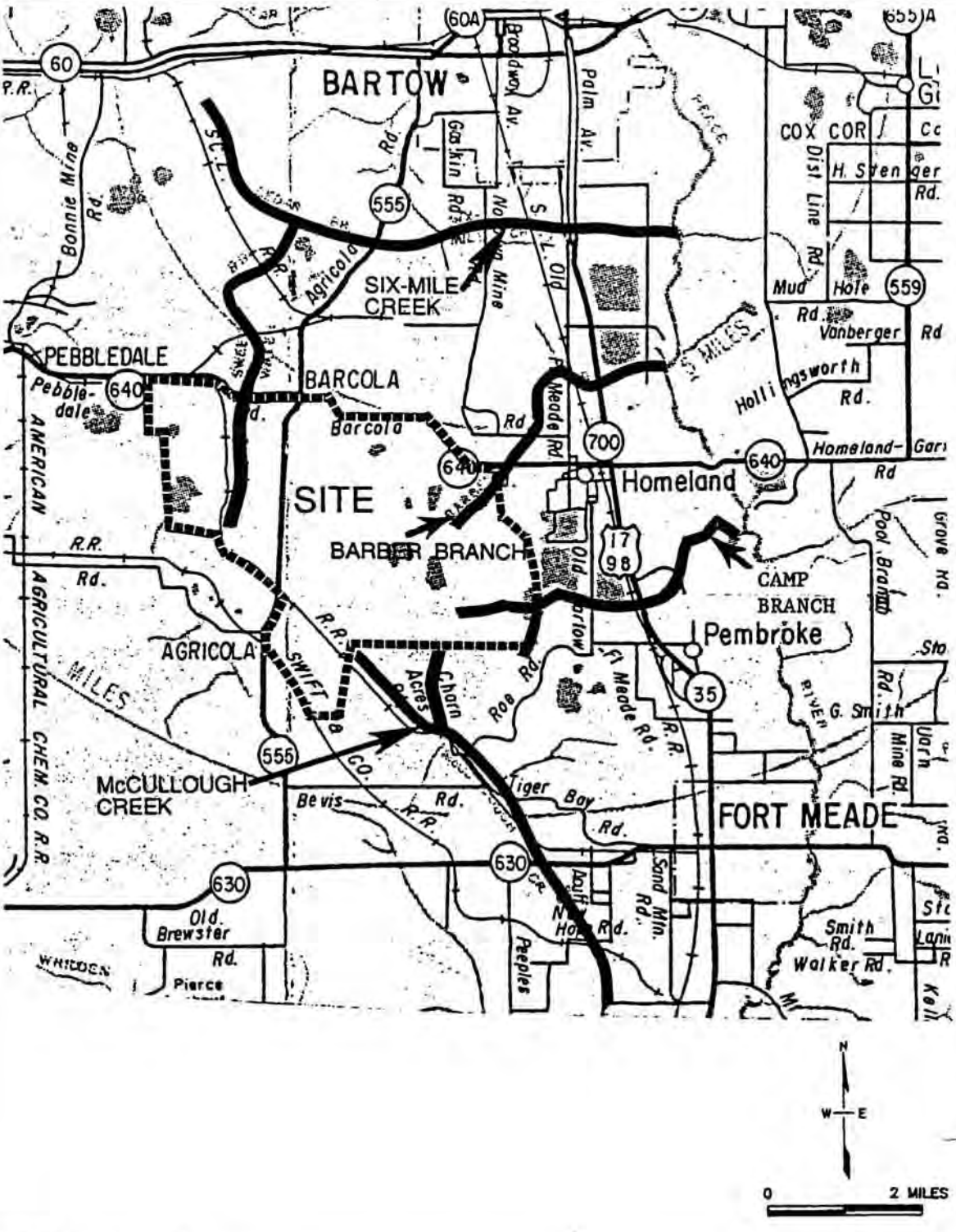
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.4-5
PRE-MINING DELINEATION OF McCULLOUGH CREEK BASIN

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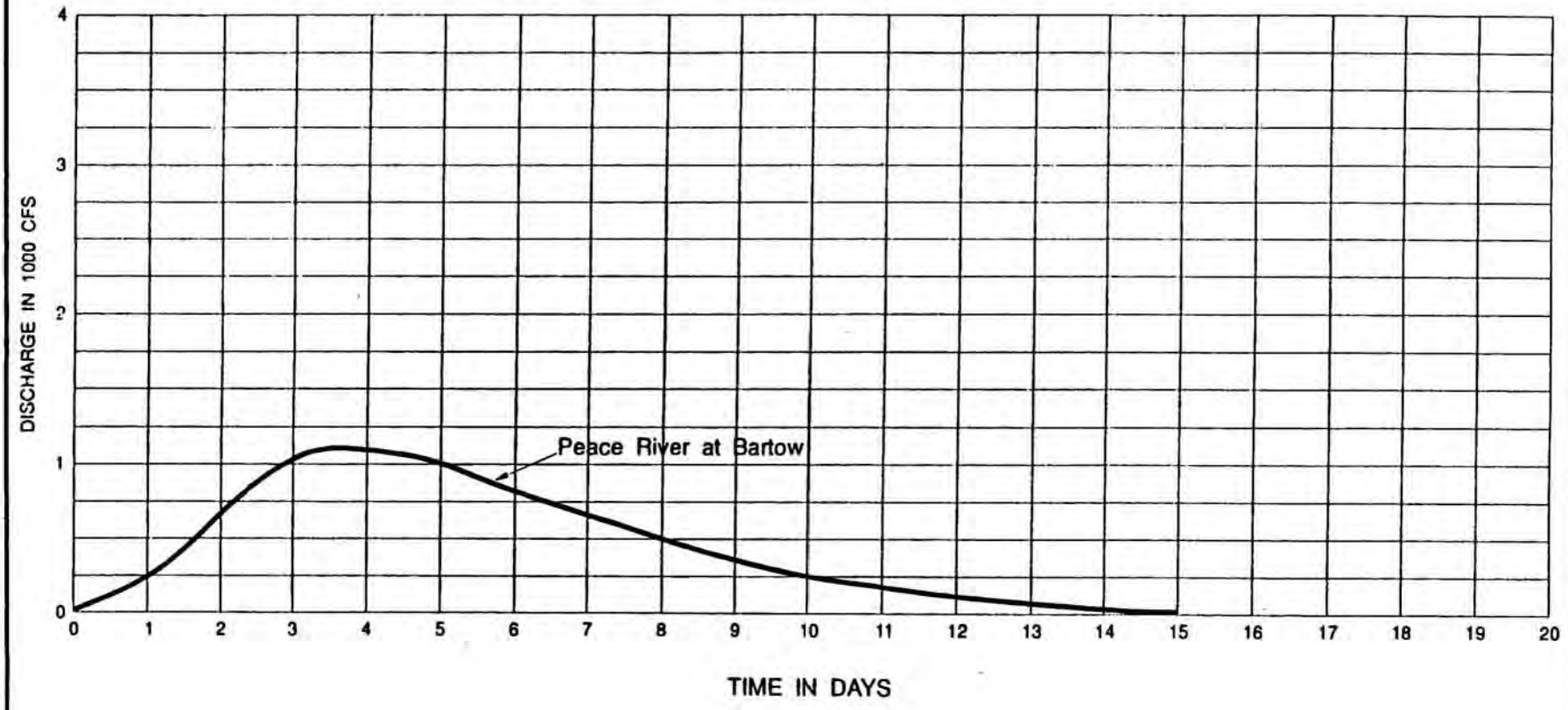
SOURCE: 1992 SCA

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Hines Energy Complex

FIGURE 2.3.4-6
PRE-MINING ON-SITE WATER BODIES

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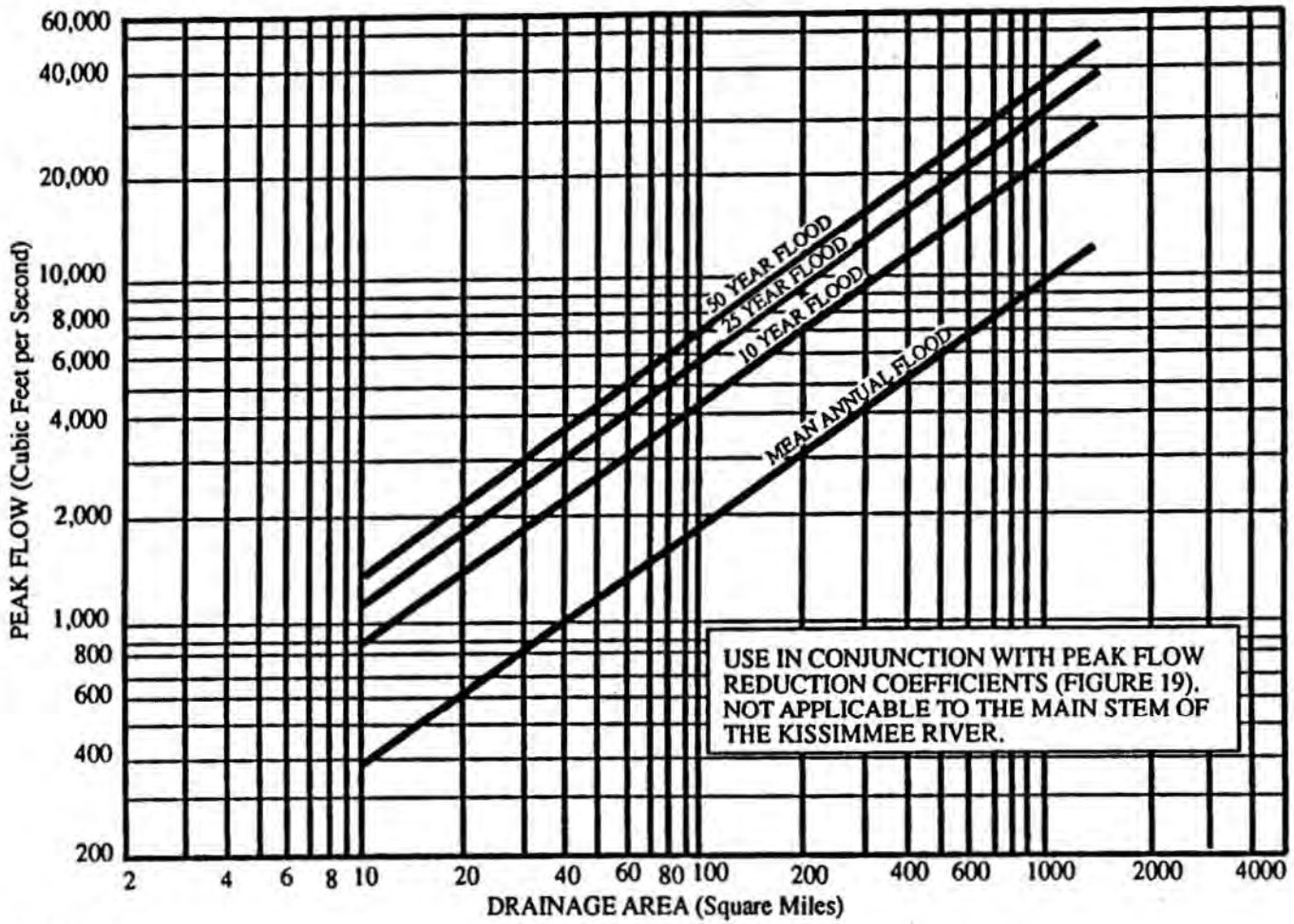
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.4-7
UNIT HYDROGRAPH
PEACE RIVER AT BARTOW, FLORIDA

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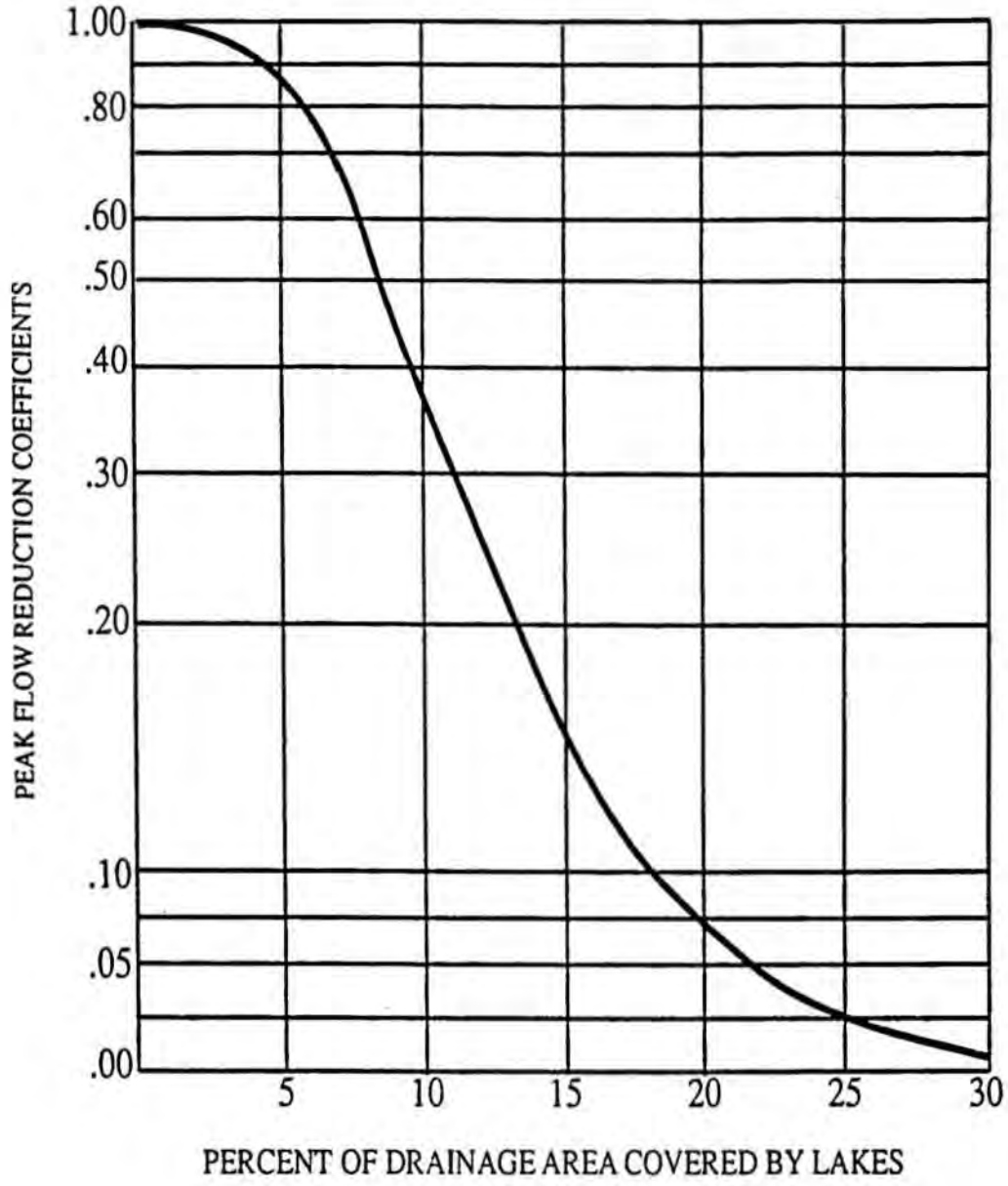
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.4-8
PEAK FLOW, FLOOD FREQUENCY AND DRAINAGE AREA RELATIONSHIP, POLK COUNTY STREAMS

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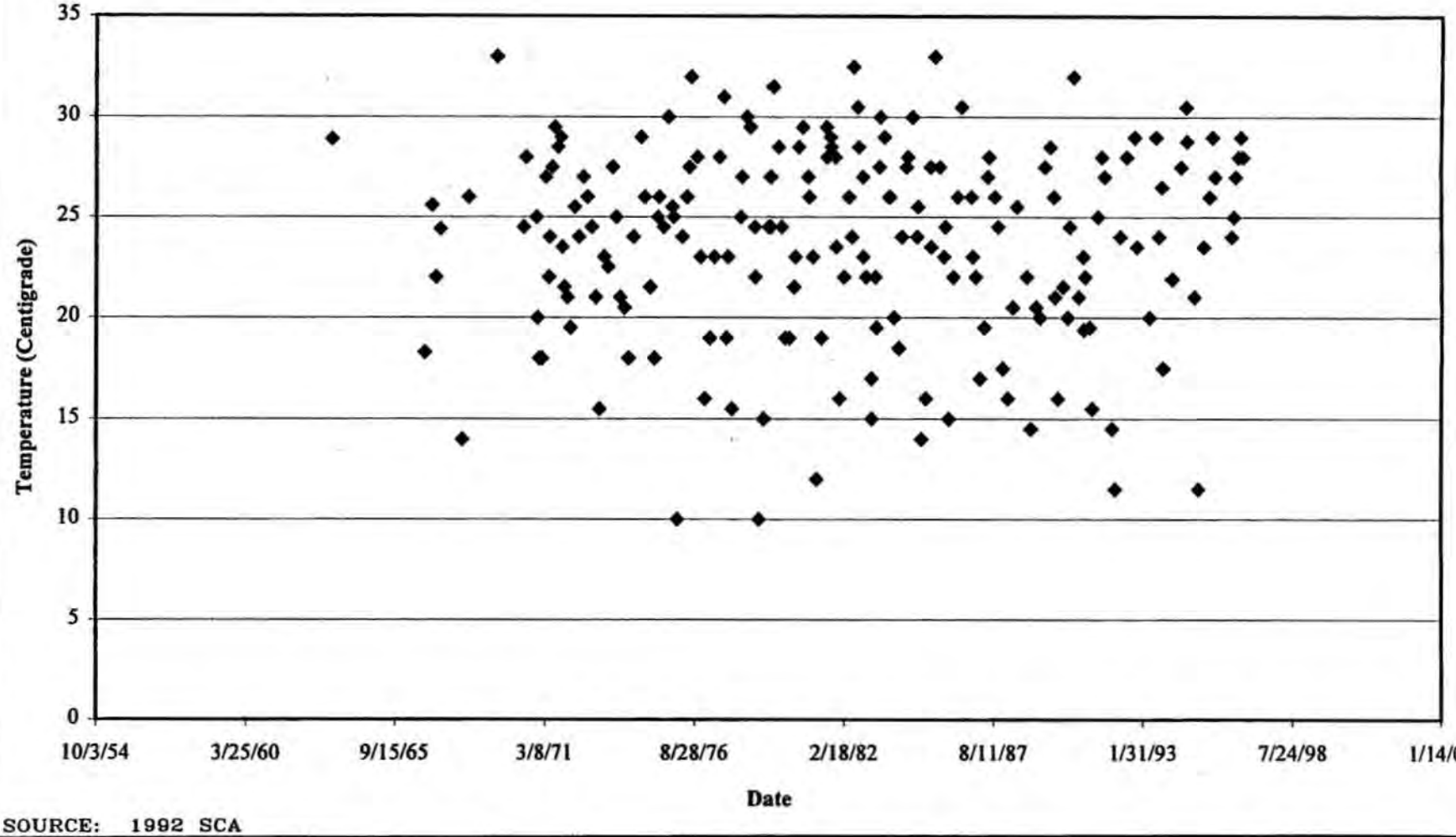
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.4-9
PEAK FLOW REDUCTION COEFFICIENTS

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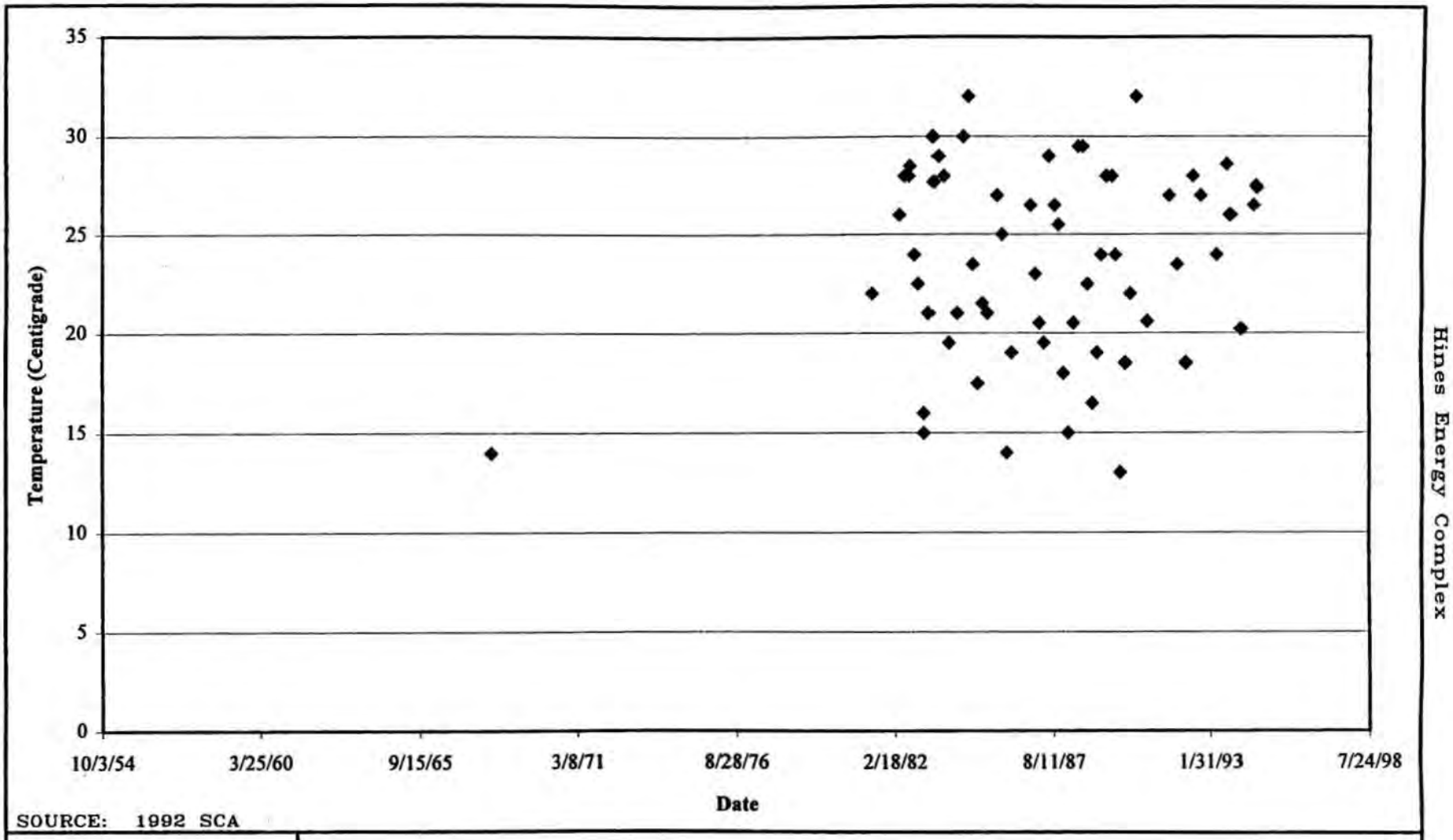
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.4-10
WATER TEMPERATURE
PEACE RIVER - BARTOW STATION No. 02294650

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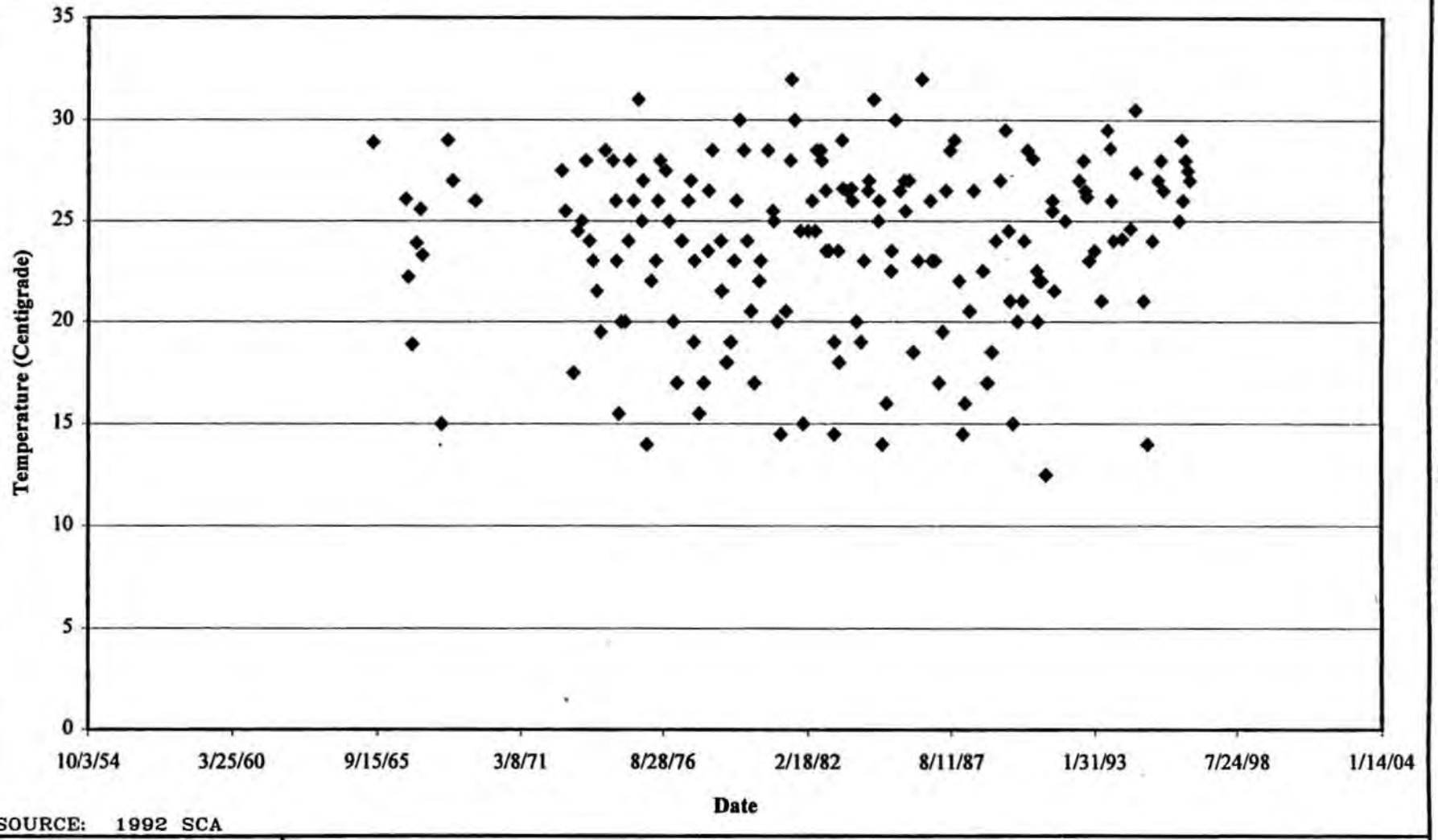
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.4-11
WATER TEMPERATURE
PEACE RIVER - HOMELAND STATION No. 02294781

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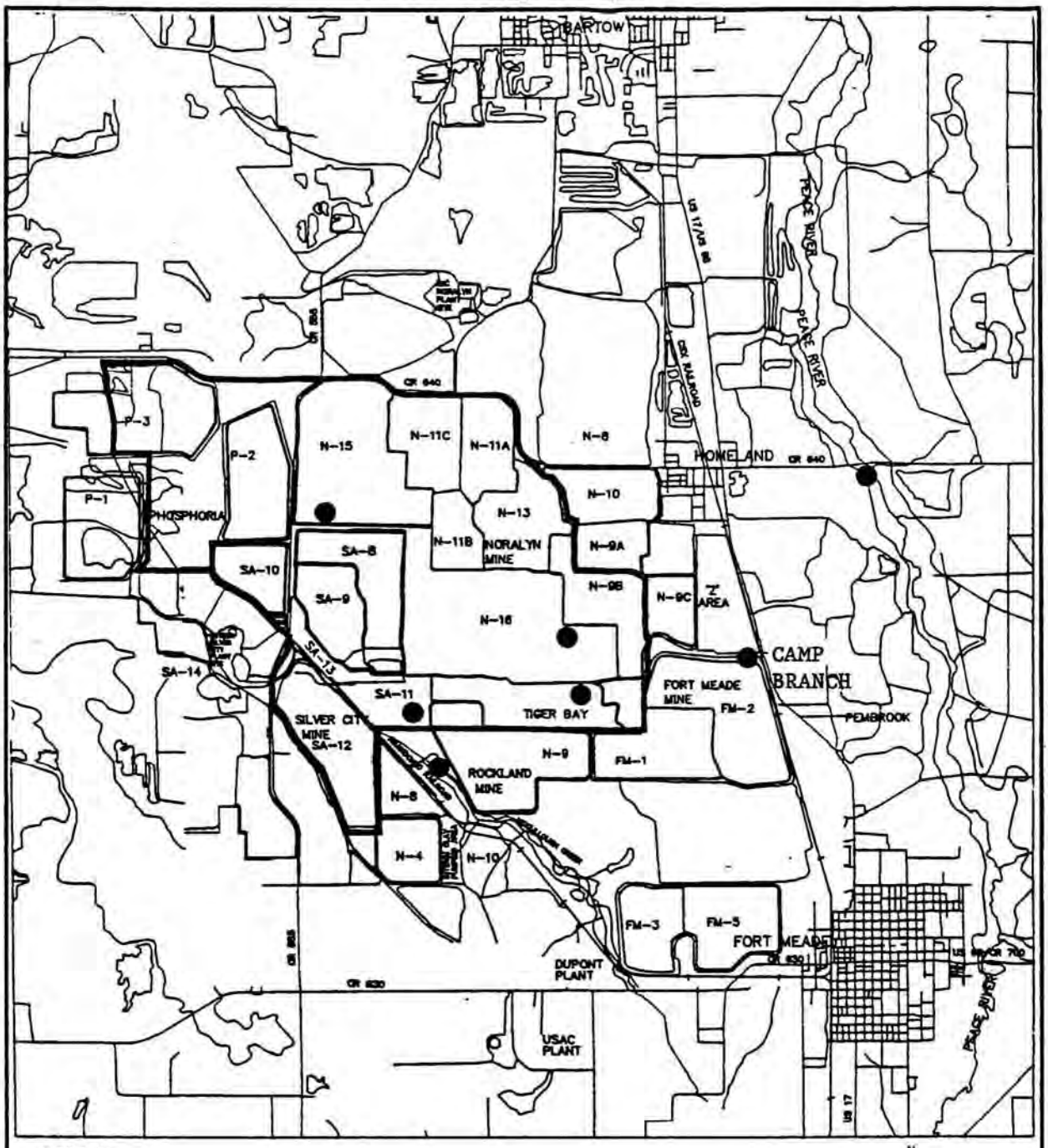
SOURCE: 1992 SCA

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Hines Energy Complex

FIGURE 2.3.4-12
WATER TEMPERATURE
PEACE RIVER - FORT MEADE STATION No. 02294898

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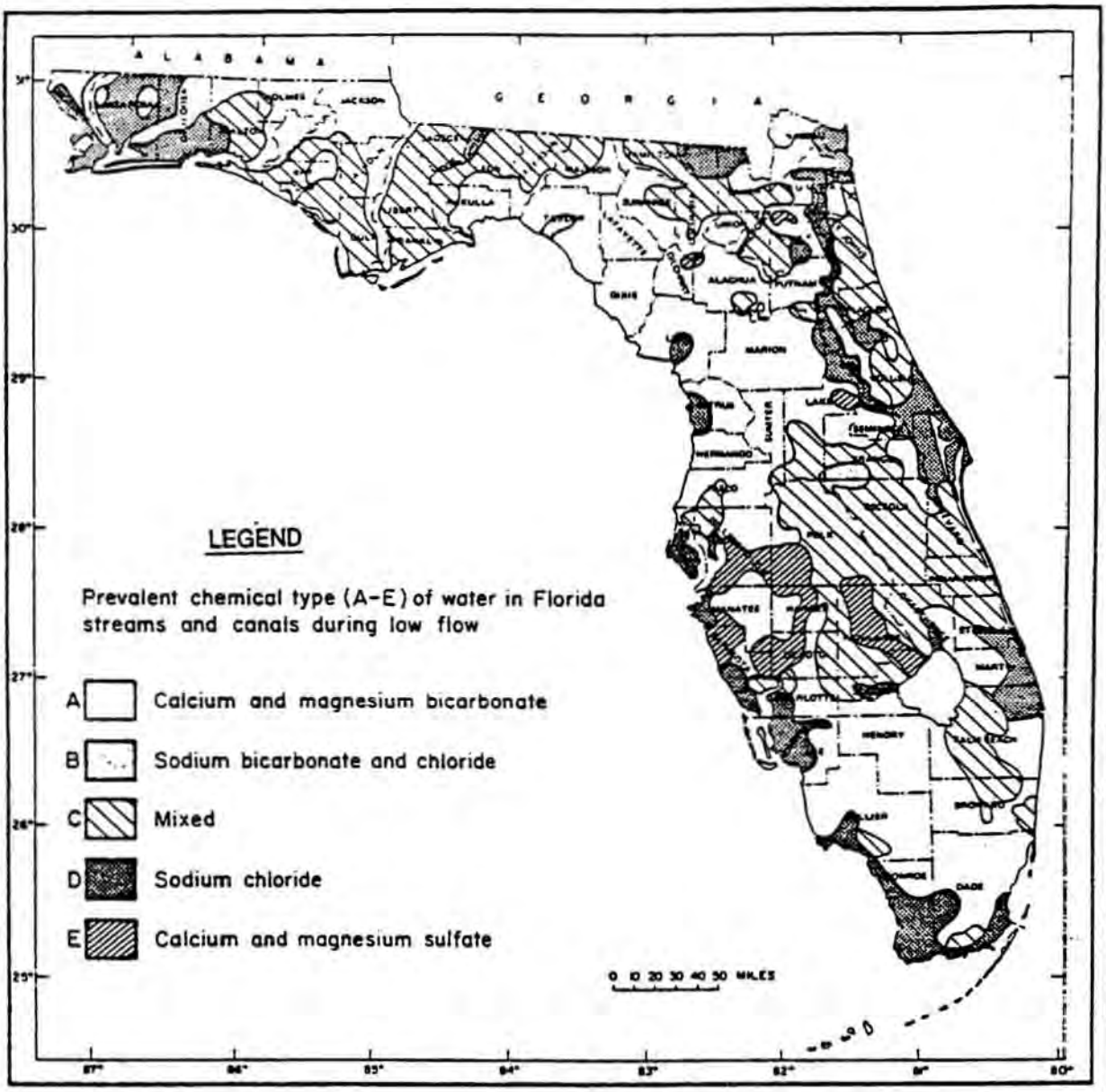
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.4-13 SURFACE WATER SAMPLING SITE LOCATIONS

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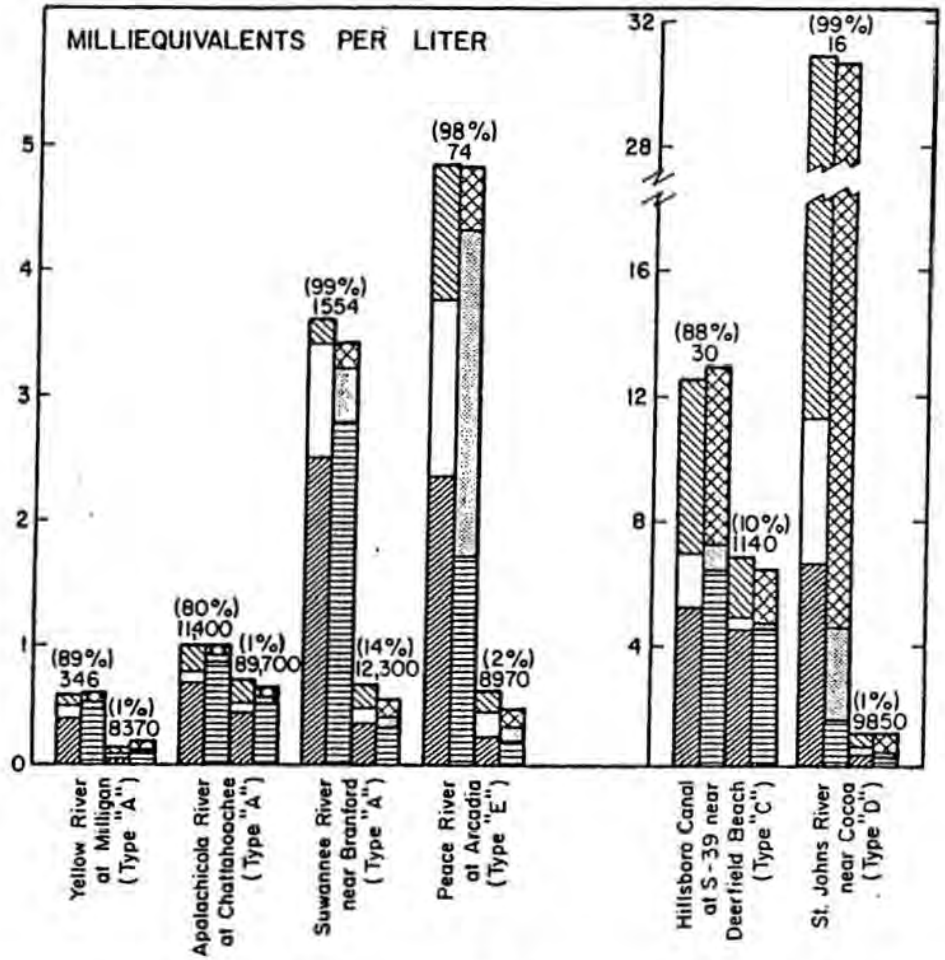
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.4-14 CHEMICAL TYPES OF WATER IN FLORIDA STREAMS

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SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.4-15
RELATIONS AMONG CHEMICAL COMPOSITION, CONSTITUENT CONCENTRATION AND DISCHARGE FOR SIX FLORIDA STREAMS AND CANALS DURING LOW VERSUS HIGH STREAMFLOW

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2.3.5 Vegetation/Land Use

The Hines Energy Complex consists of land developed for placement of electrical generation facilities and mandatory mined lands (where mining began in 1975 or more recently) and nonmandatory mined lands (where mining began prior to 1975). Mandatory lands were subject to reclamation plans which were approved by the DEP prior to approval of the site certification. The 1994 Certification granted variances to mandatory reclamation requirements to both FPC and IMC. Nonmandatory lands do not have reclamation requirements. For economic, liability and safety reasons, nonmandatory clay settling areas are dewatered by mining companies. Following dewatering, which consolidates the clays, these areas are typically converted to pasture, citrus, and cropland.

2.3.5.1 Baseline Conditions

During consideration of the 1992 SCA, vegetation and land use impacts for full site buildout were reviewed and approved. This established the projected condition of the Hines Energy Complex site at the conclusion of site buildout and forms the basis against which project conditions will be compared.

The baseline conditions used for impact assessment purposes in this document, therefore, are those vegetation and land use impacts already authorized by the 1994 Certification, and as permitted by the Corps of Engineers. For reference purposes only, a summary discussion of existing conditions is presented in this section along with the discussion of baseline conditions.

SITE DESCRIPTION

Figures 2.3.5-1A through 1F are land cover maps of the site. Land covers shown on these maps are consistent with the site's stage of development as authorized in the 1994 Certification. The following vegetation/land use types would be present in the site area under the full site buildout condition. Classification is based on Levels I and II Florida Land Use, Cover and Forms Classification System.

- Electrical generation facilities
- Native uplands
- Wetlands
- Lakes

DOMINANT INDICATOR VEGETATION

Final site buildout as authorized in the 1994 Certification, will include native upland and wetland vegetation communities which will be created as part of the site ecological mitigation program and which will be in the Tiger Bay area (Figure 2.3.5-1). This mitigation program is currently in progress in two areas within the southern and eastern buffer zone of the site. At these locations, two non-mandatory mine areas (N-9B and SA-10) are being reclaimed to native vegetation communities. Progress toward development of these mitigation areas is nearing conclusion of the clay consolidation process and as such is on the certified schedule for completion. Dominant vegetation in these lands will include cypress, red maple and a variety of herbaceous species in wetland areas and oak and pine species dominating the uplands to be created.

Tiger Bay is composed of 417 acres of uplands, wetlands, and open water lakes. Since abandonment, Tiger Bay East has revegetated naturally without the assistance of a

reclamation program. It is currently a mix of forested wetlands, uplands and small lakes.

VEGETATION COMMUNITY QUALITY AND CONDITION

Tiger Bay is considered low to medium in ecological quality. The planting of over 30 wetland and transitional species during reclamation has increased the plant species diversity of Tiger Bay. Some of the planted tree and shrub species are well established and form narrow bands along lake margins. However, cattail, Carolina willow, and hydrilla (*Hydrilla verticillata*) clearly dominate the majority of the wetlands. These three undesirable invasive species have not been planted or seeded but instead have become established by natural means.

Tiger Bay East is also considered low to medium in ecological quality. The area has revegetated naturally and contains some relatively mature second growth upland forests. In fact, the small (102 acres) area contains the majority of the upland forest community types on-site. Tiger Bay East has relatively high plant species diversity and exhibits some plant community types at intermediate stages of successional development.

2.3.5.2 Reclamation Activities

General

The Hines Energy Complex site is comprised entirely of lands that are either currently being mined or which have been previously disturbed by phosphate mining and processing activities. Subsequent to these disturbances, some of the property has been reclaimed, either by the previous owners or by FPC, in accordance with typical state reclamation standards. Additionally, some of the site parcels have been

developed as power plant facilities by FPC and some of the property still remains to be reclaimed. The site parcels can be further classified according to their status, under state reclamation law, as either Non-Mandatory Lands or Mandatory Lands. The Non-Mandatory Lands are those which were mined by the phosphate companies prior to July 1, 1975. Reclamation of these parcels, which comprise approximately half of the Hines Energy Complex site, is not required by state law. However, a trust fund has been established by the state to encourage the voluntary reclamation of these lands. The Mandatory Lands are those which were mined after July 1, 1975 and must either be reclaimed in accordance with the standards of Chapter 62C-16 F.A.C. or must be granted variances from these standards by the DEP. The Mandatory Lands which have been or are planned to be developed as power plant facilities were granted the necessary variances from these standards through the approval of the 1994 Certification.

Phosphoria, P-2, P-3 and Triangle Lakes

These areas, which are west of CR 555, comprise approximately 1,700 acres of the site. These areas are almost entirely Mandatory Lands, as defined above, and must be reclaimed by IMC-Agrico (IMC) in accordance with the standards of Chapter 62C-16. When purchased by FPC from IMC, the P-2 clay settling area had already been mined and reclaimed. However, IMC has continued mining and waste clay disposal activities in P-3 and Phosphoria under a lease agreement with FPC. Mining of these areas will conclude in early 1999. Similarly, Triangle Lakes continues to operate as a portion of the IMC mine water recirculation system. Pursuant to Condition XXVF.5.a., these areas "shall be contoured to provide on-site water cropping for the operation of the (Hines Energy Complex) Cooling Pond and shall otherwise be reclaimed as currently approved". An approved Conceptual Reclaimation Plan was in place prior to FPC's

acquisition of these areas. An application for the Conceptual Reclamation Plan Modification for Noralyn/Phosphoria mining areas is currently under review by the DEP-BOM. (A copy of this application is included in Appendix 10.4.6.)

Buffer/Mitigation Area (N-11A, N-11C, N-13, N-9B, SA-10 and Tiger Bay)

The Buffer/Mititgation Area of the site is located on its southern and eastern boundaries, encompassing approximately 2,100 acres. The individual parcels within the area are in varying states of reclamation progress, as follows.

N-11A

N-11A is a non-mandatory clay settling area located in the northeastern corner of the site. Active consolidation of the clays in the area is in progress and is scheduled to be complete by March 2000. This will enable the reclamation of the area as an upland drainage watershed to support the hydrology of other reclamation areas to the south.

N-11C

N-11C is a nonmandatory clay settling area which also contains large amounts of phosphatic sand tailings which were disposed of by IMC. These sand tailings will be used by FPC as backfill material to support site reclamation activities.

N-13

N-13 is a former IMC non-mandatory waste clay settling area which is in the final stages of clay consolidation. As required by the December 1997 Certification

Modification, FPC will reclaim this area mainly as a palmetto prairie by capping the consolidated clays with sand tailings from the N-11C area and then planting palmetto and other shrub and brush species. The area will also serve as watershed for the N-9B wetland areas to the south.

N-9B and SA-10 - Corps of Engineers Mitigation Areas

The N-9B parcel, located on the southeastern boundary of the site, is a former IMC non-mandatory waste clay settling area. SA-10, on the southwest boundary, is a former Estech Mining Co. waste clay settling area. These areas are in the final stages of clay consolidation, in preparation for future required reclamation activities by FPC. The habitat to be created in these areas is projected to consist of herbaceous and forested wetlands and their associated upland watersheds. The upland portions of the mitigation areas are planned as shrub, brush and forested habitat. **Note:** Originally, the N-9B and N-13 parcels were approved in the 1994 Certification as mitigation areas for the N-16 impacts. These areas are currently required to be reclaimed by U.S. Army Corps of Engineers Dredge and Fill Permit No. 199302169 (IP-MN), as mitigation for impacts to spoil pile wetlands which existed in the N-16 Cooling Pond at the time the Hines Energy Complex site was acquired by FPC. (A copy of Permit No. 199302169 (1P-MN) is included in Appendix 10.1.4.) However, a modification of the Site Certification was approved in 1996 to allow FPC to transfer the requirement for palmetto prairie reclamation from SA-10 into N-13 and to transfer the N-13 mitigation requirements to the SA-10 parcel. Concurrence from the U.S. Army Corps of Engineers is pending.

Tiger Bay and Tiger Bay East

These areas form the portion of the Buffer/Mitigation Area located south of the N-16 Cooling Pond. Tiger Bay is a previously reclaimed mandatory mining parcel, while Tiger Bay East is an unreclaimed non-mandatory area. These areas collectively form the headwaters of Camp Branch, to the east, which is a tributary to the Peace River. Additionally, these areas represent a link in the wildlife corridor connecting Hookers Prairie, in the Alafia River drainage basin, to the Peace River basin via Camp Branch.

SA-12 South - McCullough Creek Drainage Enhancement Project

This area was constructed by FPC as the watershed detention area which discharges runoff from this project to the McCullough Creek headwaters located on the US AgriChemicals property to the east. As required by the 1994 Certification, this detention area was designed by FPC to receive runoff from the offsite Silver City drainage area to the northwest and from the SA-10 reclamation area, also to the northwest, and then gradually discharge this water as an enhancement to the downstream McCullough Creek hydrology.

N-16 (Cooling Pond), SA-9 (Brine Pond), SA-12 North, SA-11 and SA-13

These areas were mandatory lands which have been developed by FPC for their respective uses as power plant generation and support facilities. The construction and operation of these facilities is described in the 1992 SCA, the 1994 Certification and in subsequent modifications. As-built drawings for all of these facilities have been submitted to DEP as required by the 1994 Certification.

SA-8, N-15, N-11B, N-16E (Clay Storage and Reclaimed Water Storage Areas)

These areas, which are either clay settling areas or unreclaimed mined areas, are designated for construction and operation as future power plant support facilities. SA-8 is approved as the Phase I Solid Waste Disposal Area if FPC implements coal gasification as the fuel option for future generation. The remainder of the areas are approved as future additions to the Cooling Pond. All of these areas, with the exception of the clay storage area of N-16E, are classified as Non-Mandatory Lands. N-16E is the only area that may serve as temporary storage for reclaimed water when supplies exceed demand of the Cooling Pond for makeup. It should be noted that all of these areas will be used temporarily as components of the water crop system prior to final development as power plant support facilities.

2.3.5.3 References

FDOT (Florida Department of Transportation). 1985. Florida Land Use, Cover and Forms Classification System. 2nd Ed. Proc. No. 550-010-001-A. FDOT, State Topography Bureau. Tallahassee, Florida.

Florida Power Corporation. 1992. Polk County Site. Site Certification.

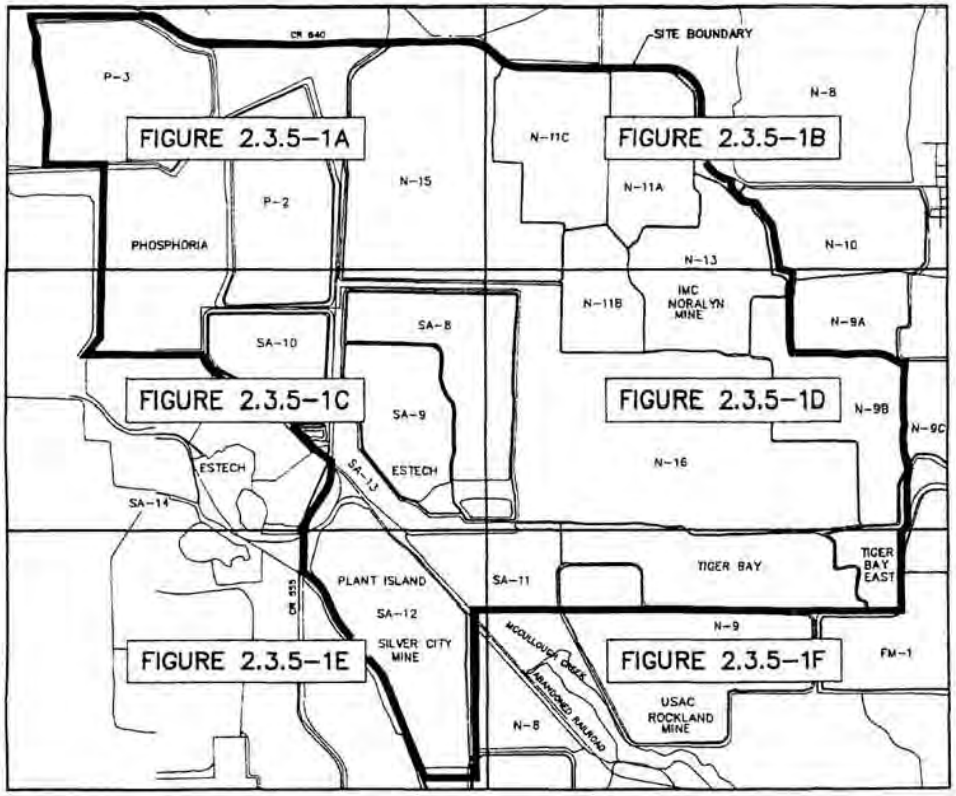
Siting Board. 1994. Final Order Approving Certification. In Re: Application for Power Plant Certification of Florida Power Corporation Polk County Site PA 92-33. DOAH Case No. 92-5308 EPP.

Siting Board. 1997. Final Order Modifying Conditions of Certification. In Re: Application for Power Plant Certification of Florida Power Corporation Polk County Site. DEP Case No. PA 92-33B.

Siting Board. 1997. Final Order Modifying Conditions of Certification. In Re: Application for Power Plant Certification of Florida Power Corporation Polk County Site. DEP Case No. PA 92-33C. OGC Case No. 92-1494.

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.



KEY

NOTES

KEY AND ASSOCIATED FLUCCS CODE LEGEND TO BE USED IN THE FOLLOWING FIGURES:

2.3.5-1A
2.3.5-1B
2.3.5-1C
2.3.5-1D
2.3.5-1E
2.3.5-1F

FLUCCS CODE LEGEND

210	CROPLAND AND PASTURELAND
220	CITRUS
310	UPLAND HERBACEOUS
320	UPLAND SHRUB AND BRUSHLAND
400	UPLAND FORESTS
520	LAKES
630	WETLAND FORESTS
640	VEGETATED NON-FORESTED WETLANDS
830	UTILITIES



SOURCE: SCA, 1992

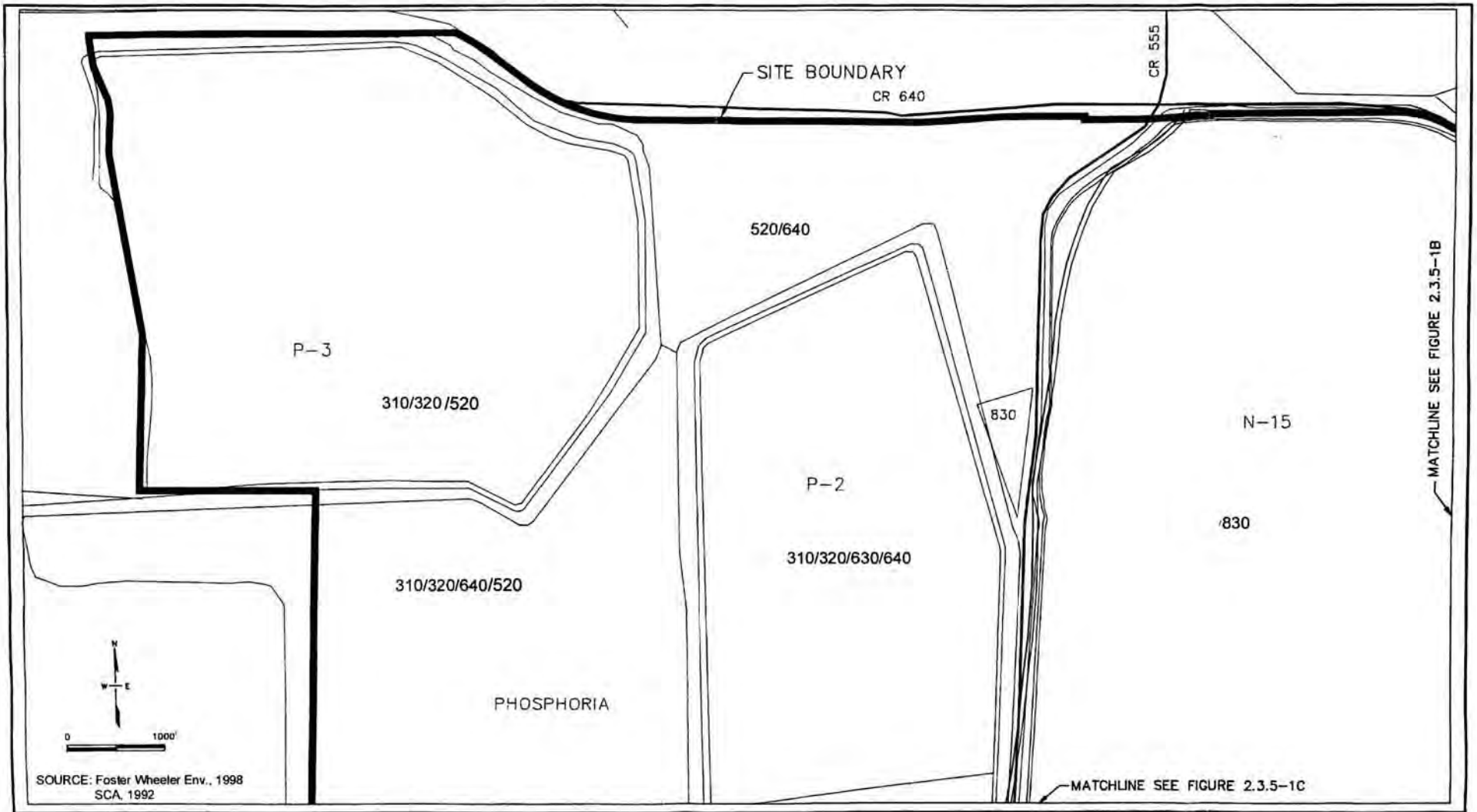
Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.5-1
VEGETATION/LAND USE MAP
BASELINE CONDITIONS
KEY

FPC/SCA

12/98



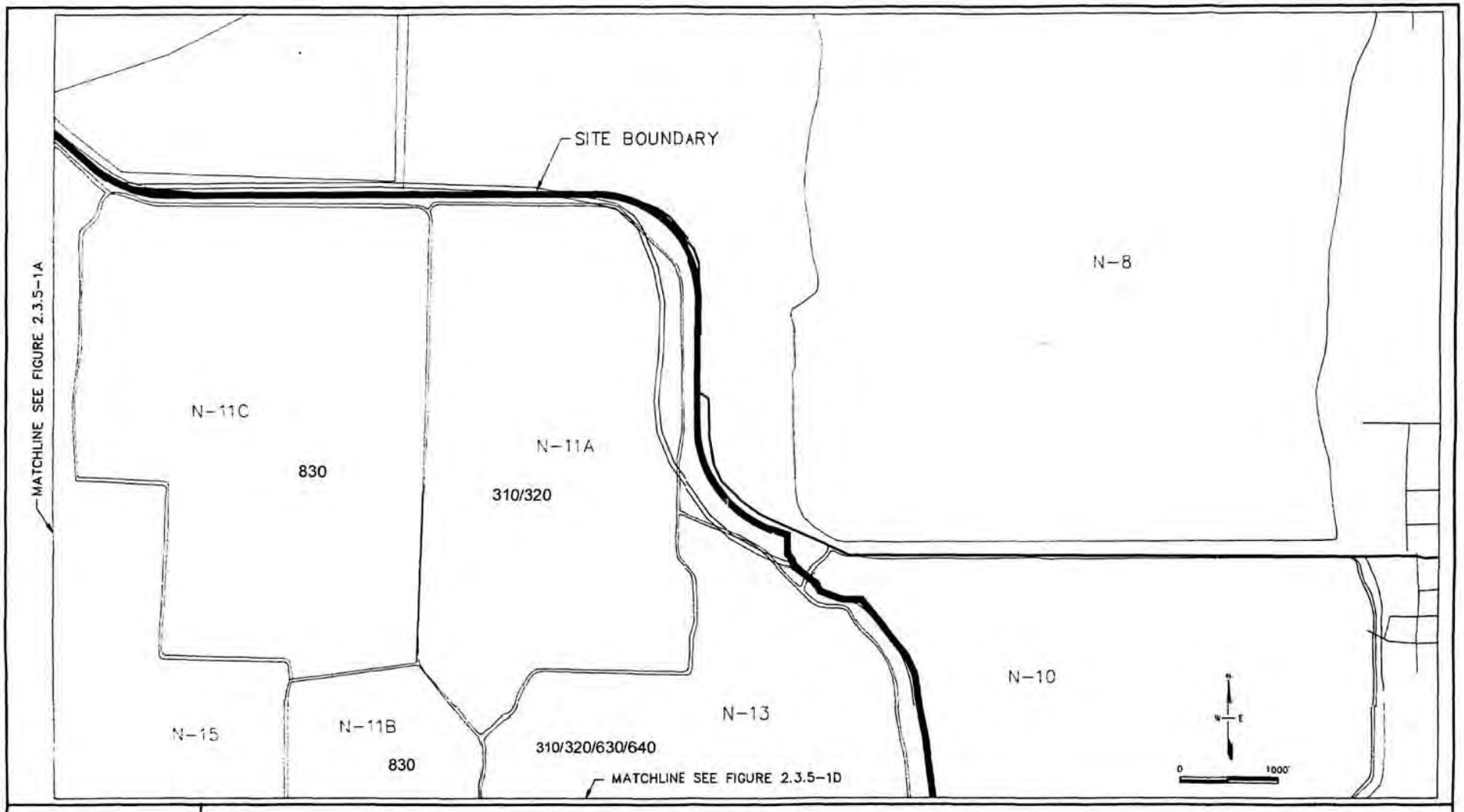
Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.5-1A
VEGETATION/LAND USE MAP
BASELINE CONDITIONS
SHEET A

FPC/SCA

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Florida Power CORPORATION

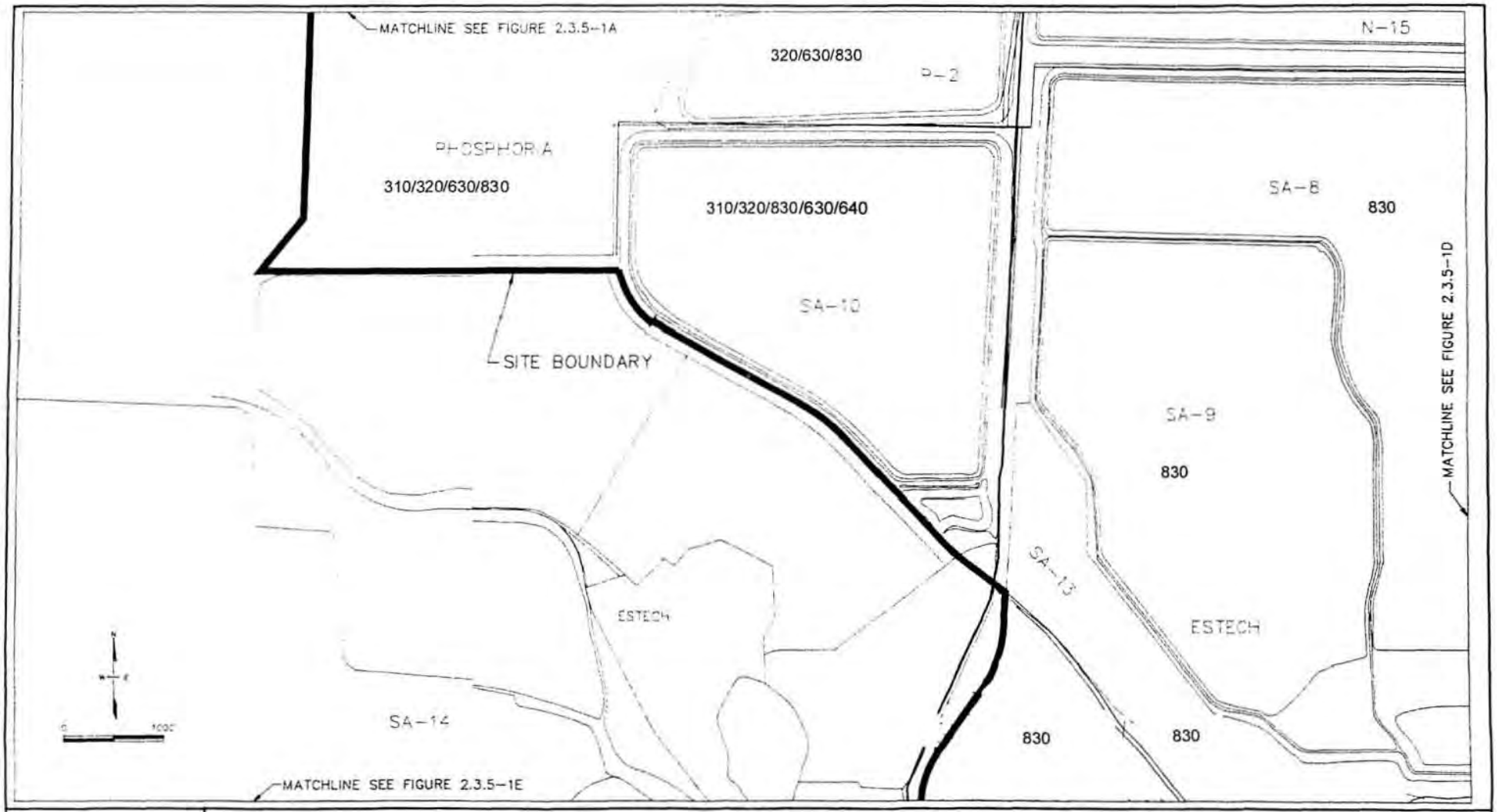
Hines Energy Complex

SOURCE: Foster Wheeler Env., 1998; SCA, 1992

FIGURE 2.3.5-1B
VEGETATION/LAND USE MAP
BASELINE CONDITIONS
SHEET B

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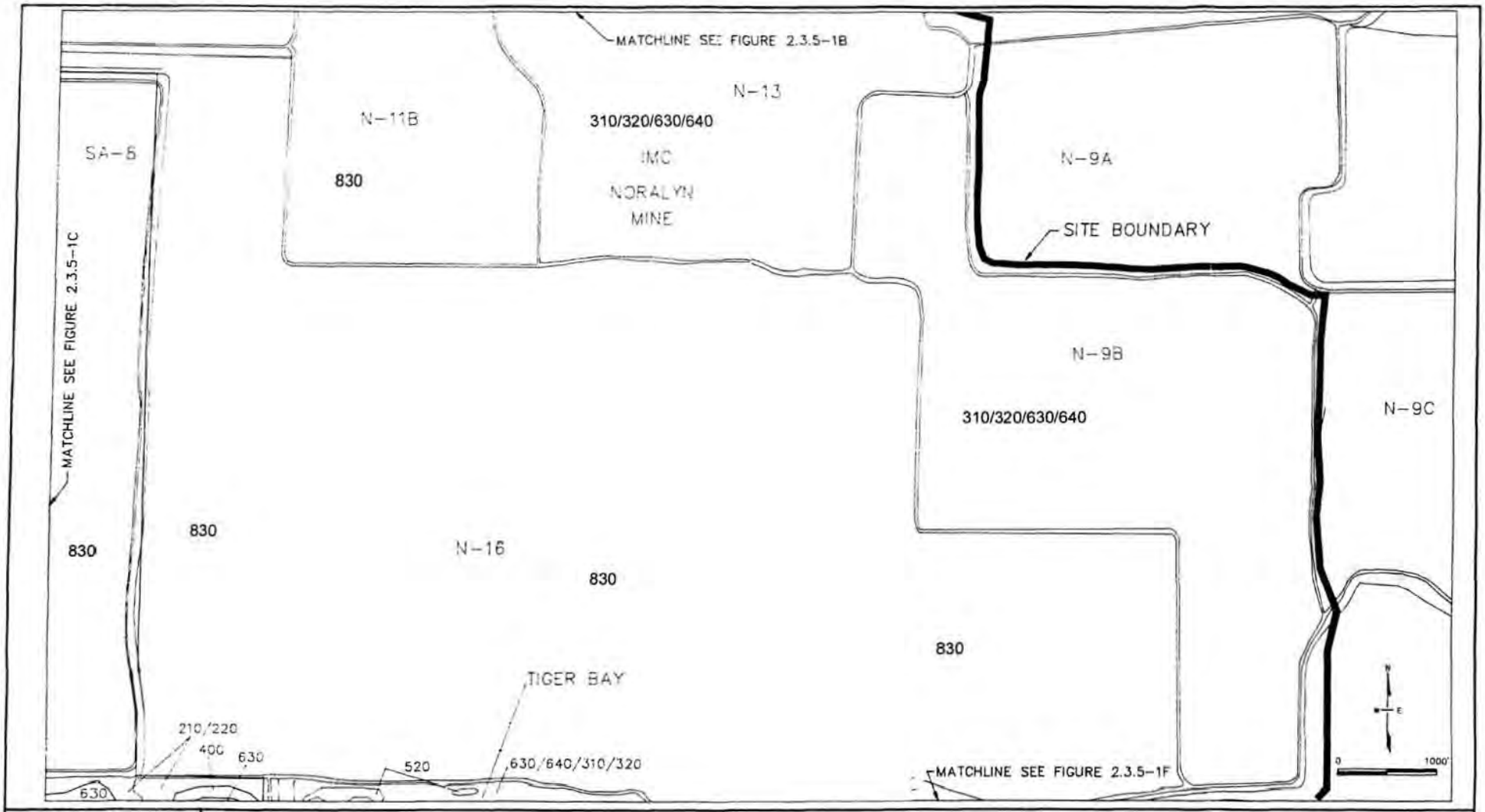
Hines Energy Complex

SOURCE: Foster Wheeler Environmental, 1998; SCA,1992

FIGURE 2.3.5-1C
VEGETATION/LAND USE MAP
BASELINE CONDITIONS
SHEET C

FPC/SCA

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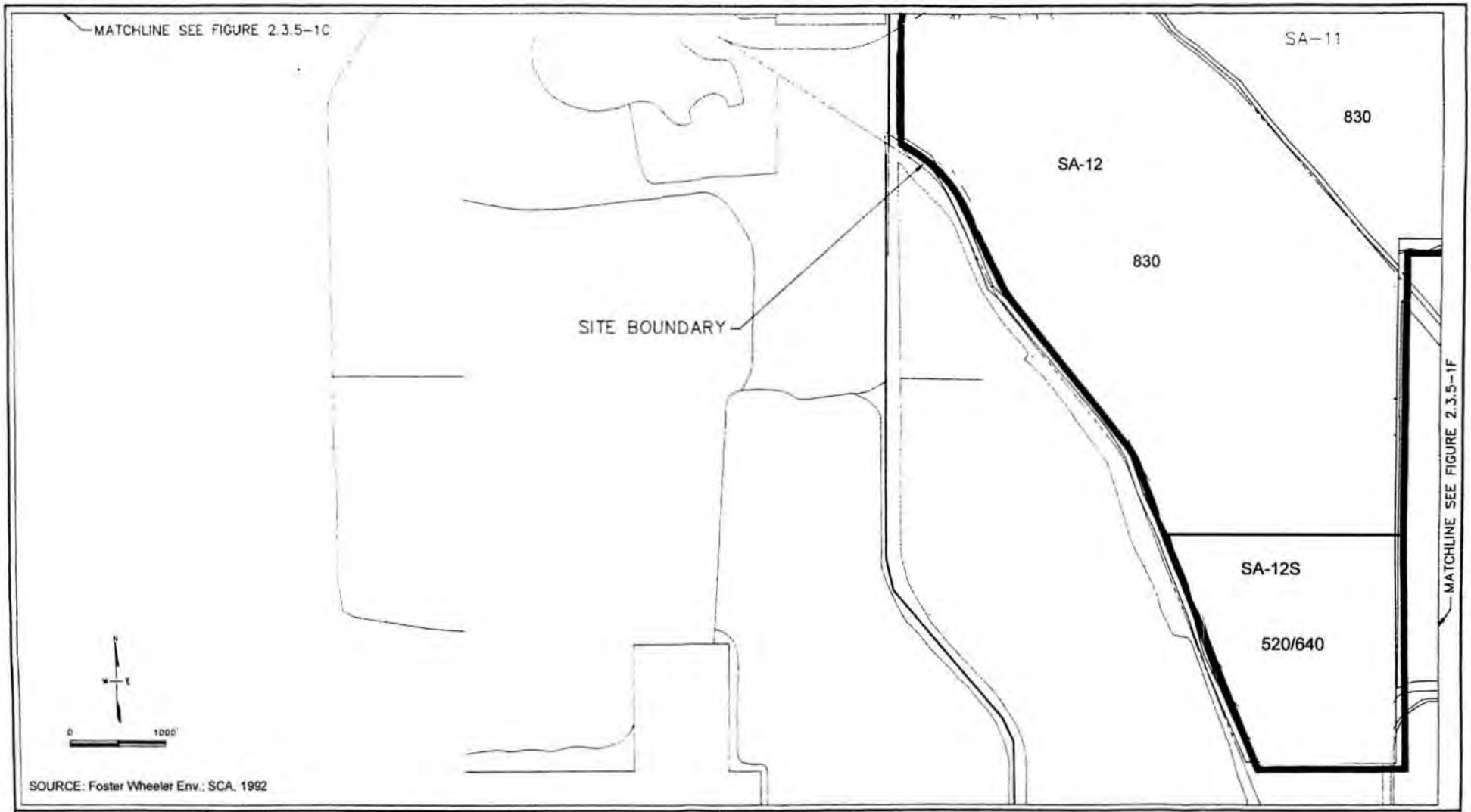
Florida Power CORPORATION
Hines Energy Complex

SOURCE: Foster Wheeler Env., 1998; SCA, 1992

FIGURE 2.3.5-1D
VEGETATION/LAND USE MAP
BASELINE CONDITIONS
SHEET D

FPC/SCA

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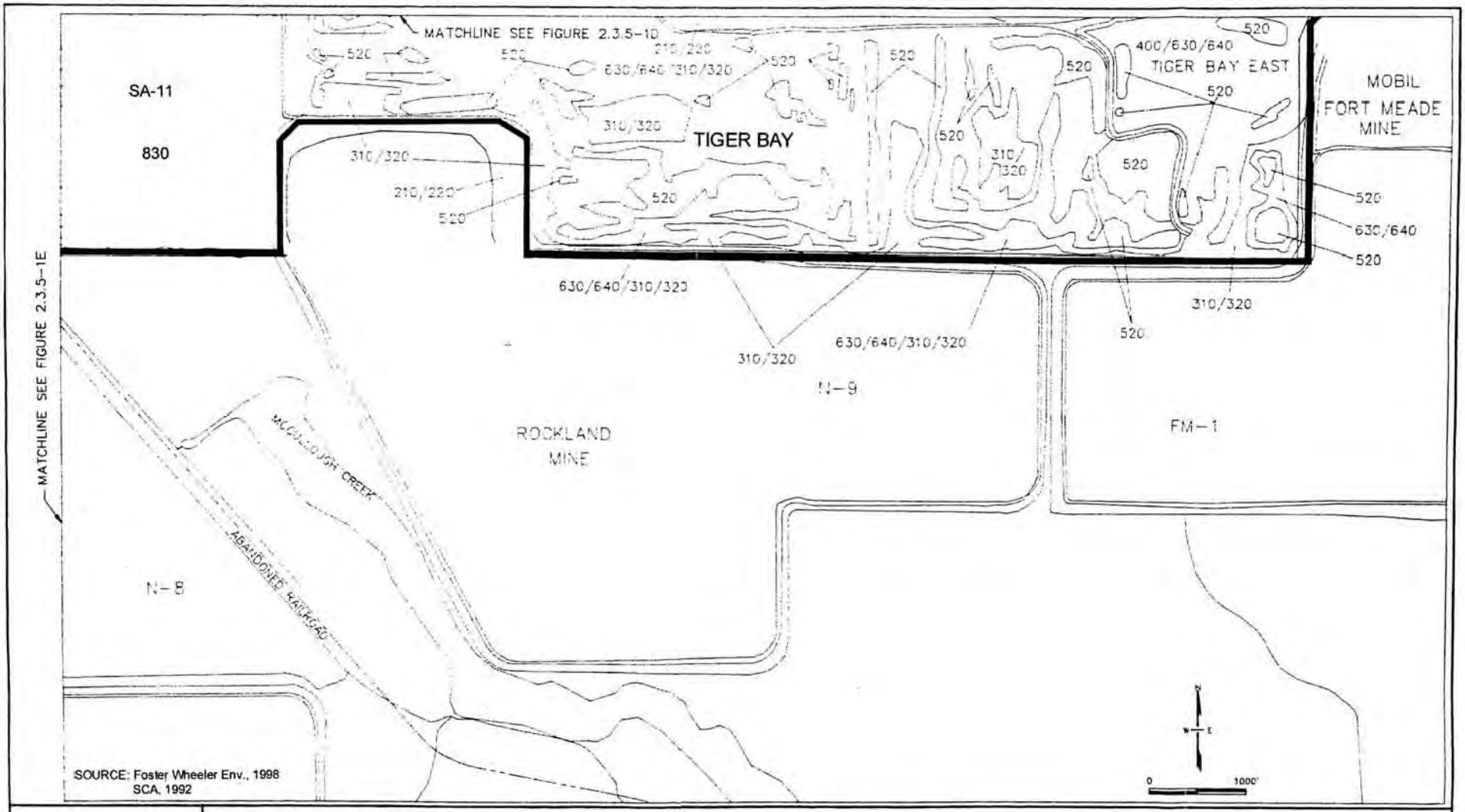
Hines Energy Complex

FIGURE 2.3.5-1E
VEGETATION/LAND USE MAP
BASELINE CONDITIONS
SHEET E

FPC/SCA

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FIGURE 2.3.5-1F
VEGETATION/LAND USE MAP
BASELINE CONDITIONS
SHEET F

FPC/SCA

12/98

2.3.6 Ecology

During consideration of the 1992 SCA, vegetation and land use impacts for full site buildout were reviewed and approved. This established the projected condition of the Hines Energy Complex site at the conclusion of site buildout and forms the basis against which project conditions will be compared.

The status of important flora and fauna is highlighted in this section. Importance status is based upon species or assemblages of species which are:

- Threatened or endangered species by the U.S. Fish and Wildlife Service(FWS)
- Threatened or endangered species or species of special concern by the FGFWFC and Department of Agriculture and Consumer Services (DACS)
- Game, furbearers, or fishery resources by the FGFWFC
- Indicators of species that are endemic or unique to specific plant communities or habitat types
- Functionally dominant species in their vegetation communities or habitat types

The potential status of important species at the full buildout has not changed from that described in the 1992 SCA.

2.3.6.1 Species - Environmental Relationships

AQUATIC SYSTEMS

BASELINE CONDITIONS. At full buildout, aquatic ecological systems will occur in Tiger Bay and the Buffer/Mitigation Area as developed for mitigation. Tiger Bay aquatic systems were not involved in construction of Power Block 1 and therefore characterizations of these systems remains similar to that in the 1992 application. The only differences are related to natural ecological succession. The aquatic systems to occur in the Buffer/Mitigation area have not been created. Development of eastern Buffer/Mitigation Area aquatic systems is initially dependent on conclusion of clay consolidation. The clay consolidation process is on schedule.

Threatened and Endangered Species and Species of Special Concern. No state or federally threatened or endangered species, or species of special concern, are known to occur in the aquatic habitats associated with the Hines Energy Complex (50 CFR 17).

Freshwater Game or Commercial Fish. Limited sport and commercial fishing, formerly permitted on the previously mined land has been discontinued.

Indicator and Endemic Species. There are no indicator species existing on the Plant Island because of a lack of aquatic habitat in that area. Indicator species likely occur in other areas of the site where naturally occurring vegetation communities occur. No endemic species likely occur on the site.

Species Significant to Local Ecological Systems. At full buildout, only Tiger Bay, the eastern portion of the Buffer/Mitigation Area, SA-10 and SA-12 will have aquatic habitats. Tiger Bay is made up of a series of generally isolated systems which have been protected from

site development impact and which will not become part of the future generation facilities. No change would be expected from the 1992 SCA discussion of Tiger Bay ecological systems.

BASELINE TERRESTRIAL AND WETLAND CONDITIONS

SPECIES IMPORTANCE CRITERIA. Descriptions of expected vegetation community structure are presented in Section 2.3.5. Within these communities is the potential for occurrence of faunal and floral species which are of special importance. This special importance arises from species status as being either:

- Threatened, endangered, or species of special concern
- Indicator and endemic species
- Vertebrate species significant to local ecological systems

Threatened or Endangered Plant Species. Endangered, or federally threatened plants whose ranges include the Hines Energy Complex are listed in Table 2.3.6-1. Individual discussions are provided below for plant species. For conservative evaluation purposes, consideration was given to species whose known occurrence is within a one county radius of Polk County. None of the species described below have been found at the Hines Energy Complex. When the eastern Buffer/Mitigation Areas has been developed and ecological succession has progressed, habitat for many of these species should develop.

Protected species importance is based on species lists of the FWS (50 CFR 17.11-12), the FGFWFC (Section 39-27.003-005 F.A.C.), and the Florida Department of Agriculture and Consumer Services (DACS) (Preservation of Native Flora Act, Section 581.185-187, F.S.).

AURICLED SPLEENWORT (*Asplenium auritum*) is a rare fern that grows in hammocks. It has been recorded in only a few counties of central and southern Florida and is therefore listed by DACS as endangered. This species was not observed and is not expected to occur on-site due to a minimal amount of preferred habitat.

MANY-FLOWERED GRASS PINK (*Calopogon multiflorus*) commonly occurs throughout central peninsular Florida in pine flatwoods. It is listed by FWS as threatened. This species was not found and is not expected to occur on the Hines Energy Complex due to a minimal amount of preferred habitat.

SPURRED NEOTTIA (*Centrogenium setaceum*) is a rare orchid only reported in Dade and Highlands Counties. It grows in dense hammocks and is listed by DACS as endangered. This species was not observed and is not expected to occur at the Hines Energy Complex due to a minimal amount of suitable habitat and its reported range.

SATINLEAF (*Chrysophyllum olivaeforme*) is a small tree growing up to 30 ft tall. It is listed by DACS as endangered. It occasionally occurs in hammocks and pinelands from the Florida Keys northward to Brevard County. This species was not observed and is not expected to occur at the Hines Energy Complex due to the minimal amount of preferred habitat.

CRESTED CORALROOT (*Hexalectris spicata*) is an orchid occasionally found in hammocks throughout Florida. It is listed by DACS as endangered. This species is not expected to occur at the Hines Energy Complex due to the minimal amount of suitable habitat and it was not observed there.

PINE PINWEED (*Lechea divaricata*) is occasionally found in pinelands throughout central peninsular Florida. It is listed by DACS as endangered. This species was not found and is

not expected to occur on the Hines Energy Complex due to the minimal amount of preferred habitat.

SCRUB MILKWORT (*Polygala lewtonii*) is occasionally found in sandpine scrub and dry oak woods of central peninsular Florida. It is listed by DACS as endangered. It is not expected to occur in the Hines Energy Complex area due to the minimal amount of suitable habitat and was not observed there.

CHAFFSEED (*Schwalbala americana*) is a rare species that grows in dry oak woods and pinelands of only Levy and Highlands Counties. It is listed by DACS as endangered. This species was not found and is not expected to occur on-site due to a minimal amount of suitable habitats and its reported range.

SIMPSON ZEPHYR LILY (*Zephyrnanthes simpsonii*) frequently occurs throughout peninsular Florida in wet pine flatwood and wet prairies. It is listed by DACS as endangered. This species was not found, but may occur in small isolated areas where natural vegetation still remains or has developed over time such as Tiger Bay and Camp Branch.

Threatened, Endangered, or Species of Special Concern (Animals). Terrestrial vertebrate protected species status for the Hines Energy Complex based on habitats expected to exist following full buildout in the eastern Buffer/Mitigation Area is summarized in Table 2.3.6-1. Descriptions of habitat requirements, species range and other life history characteristics of protected vertebrate species potentially occurring at the Hines Energy Complex with existing certified baseline reclamation are given below. When the Buffer/Mitigation Area has been developed and ecological succession has progressed, habitat for many of these species should occur.

FLORIDA GOPHER FROG (*Rana areolata*) has been recorded throughout most of Florida. Its most common habitat association is in and around gopher tortoise burrows. The preferred habitat is dry but near enough to grassy ponds for breeding. The gopher frog feeds upon insects and toads. No habitat for the species currently exists on the Hines Energy Complex.

GOPHER TORTOISE (*Gopherus polyphemus*), a species of special concern in Florida, has large populations within the state of Florida. Species habitat includes dry, well drained soils covered with a variety of upland pine and oak species, as well as old field vegetation communities. Vegetation cover is usually a habitat requirement. Gopher tortoises feed on grasses, leaves, and other herbaceous matter. This species excavates long burrows for its own use; however, a variety of other species also use these burrows for shelter such as the eastern indigo snake *(Drymarchon corais couperi)* and gopher frog. Some species use only tortoise burrows for life history needs (McDiarmid, 1978). Potential habitat for the gopher tortoise would be found in reclaimed upland areas of the Buffer/Mitigation Area of the Hines Energy Complex. Areas with flat topography and high wet season water table would limit burrowing habitat. Sandy soils versus soils with rock and solidified hard clays on the site will be preferred by the tortoise. The gopher tortoise was recorded on the site area prior to mining (FNAI files, Tallahassee, FL), but not observed during field inspections.
AMERICAN ALLIGATOR (*Alligator mississippiensis*), federally classified as threatened through its similarity in appearance to the American crocodile (*Crocodylus acutus*), and a species of special concern in Florida, has populations existing throughout the state and over much of the southeastern United States coastal plain. This species is found in nearly all wetland and aquatic habitat types in Florida. Food for the alligator includes aquatic and wetland vertebrates and larger invertebrates (McDiarmid, 1978). Potential habitat for this species following baseline reclamation in the area ranges from drainage canals to freshwater depression type wetlands, and ponds. Alligators were observed to be very common in clay settling ponds on the site.

SHORT-TAILED SNAKE (*Stilosoma extenuatum*) is found in Florida from the northeastern portion of the state south to Highlands County. This species is associated with xeric conditions of longleaf pine-turkey oak communities and in oak hammocks. Its natural history is poorly known (Ashton and Ashton, 1988). Habitat loss from timber operations and development are the primary reasons for its threatened status (McDiarmid, 1978). Habitat is not present on the Hines Energy Complex but will be of limited occurrence with Buffer/Mitigation Area reclamation.

FLORIDA PINE SNAKE (*Pituophis melanoleucus mugitus*) is found throughout most of northern and eastern Florida. It occupies sandy habitats such as longleaf pine and turkey oak communities. The pine snake feeds upon small mammals, birds, and other small vertebrates (Ashton and Ashton, 1988). Habitat loss is the primary reason for its population decline and listing as a species of special concern. No habitat for this species is currently on the Hines Energy Complex. The Buffer/Mitigation Area following reclamation would contain limited appropriate habitat.

EASTERN INDIGO SNAKE (*Drymarchon corais couperi*), classified as threatened by Florida and the federal government, is generally found in Florida and southeastern Georgia. Species habitat includes dry sandy areas, as well as moist vegetation communities. The indigo snake frequently uses gopher tortoise burrows as shelter in xeric habitats, in part to avoid desiccation. Food for this species includes a wide range of small upland vertebrates including other snakes (McDiarmid, 1978). Potential habitat for the indigo snake in the Hines Energy Complex area exists in pine flatwoods and pine and wet prairies and would be present following the Buffer/Mitigation Area reclamation. No indigo snakes were observed at the Hines Energy Complex. The indigo snake has been observed in several areas of Polk County prior to mining (FNAI, 1992).

BLUE-TAILED MOLE SKINK (*Eumeces egregius lividus*) occurs on the Lake Wales Ridge in Polk and Highlands Counties. Its habitat is sand pine and scrub where it burrows in the St. Lucie Fine Sand. Occasionally, it is found in the turkey oak vegetation community. This species consumes small invertebrates such as roaches, spiders, and crickets. Habitat loss is reason for its threatened status (McDiarmid, 1978). The Hines Energy Complex currently lacks habitat for this species. The Buffer/Mitigation Area reclamation plans include limited and marginal habitat which might be suitable for the species.

WOOD STORK (*Mycteria americana*) is considered endangered in Florida with nesting colonies occurring in South Carolina, southeastern Georgia and Florida. Nesting and feeding occur in freshwater wetlands and brackish mangrove swamps. Food for this species includes small fish usually obtained from shallow water. Inland nesting is frequently in large cypress trees while mangrove islands provide nesting habitat in estuarine and marine environments (Kale, 1978). Shallow open water and isolated marsh lands represent potential feeding habitat for the wood stork in the Hines Energy Complex area, particularly under low water conditions when fish are concentrated. This habitat exists along ditches, in depressions and in shallow areas on clay settling ponds. Wood storks were observed feeding in these habitats on the Hines Energy Complex. No suitable freshwater swamp nesting habitat and was found to occur at or near the Hines Energy Complex. Wood storks were observed feeding in off-site reclaimed wetlands and adjacent ponds. The Buffer/Mitigation Area reclamation plans include limited feeding habitat which might be suitable for the species.

SOUTHERN BALD EAGLE (*Haliaeetus leucocephalus*), considered threatened by the State of Florida and endangered by the federal government, occurs throughout the state; however, nesting is concentrated in north central counties and along coastal portions of Charlotte, Lee, Collier, Monroe, and Dade Counties. Nesting usually occurs near feeding areas along shorelines and over shallow water bodies. Nests are solitary and are usually

in tall pine or cypress trees often with good visibility over the surrounding countryside. Although fish are this species' primary food source, other vertebrate prey may be captured (Kale, 1978). Feeding habitat for this species includes clay settling ponds and marshlands which occur now and will occur following reclamation. The potential for nesting at the Hines Energy Complex is low now but would increase with implementation of the Buffer/Mitigation Area reclamation.

SOUTHEASTERN AMERICAN KESTREL (*Falco sparverius paulus*), considered threatened by the State of Florida, is an open habitat bird preferring open pine forest and clearings with dead trees. However, it can also be found along the open edges of river bottoms, coastal regions, suburban areas, and even in large cities. Large insects are the primary food item with small rodents and reptiles also being important prey items. *Falco sparverius paulus* ranges from South Carolina south to southern Alabama and Florida with recent observations indicating that the Florida population is declining (Kale, 1978). Kestrels were observed occasionally at the Hines Energy Complex during the winter surveys, but not during the breeding season surveys. Habitat for this species would be present with Buffer/Mitigation Area reclamation.

OSPREY (*Pandion haliaetus*) occurs at and near rivers, lakes and wetlands throughout the state. The population in the Keys is listed as a species of special concern. It has received consideration here because of its protected status elsewhere in the state, its previous decline due to chlorinated insecticides, and its high level position in the food chain. The osprey nests on tall structures near feeding areas or near the ground on islands with low predator populations (Kale, 1978). The species feeds upon fish. The Hines Energy Complex is occupied by osprey during all seasons. Nest platforms in Tiger Bay have been occupied by nesting pairs regularly during the breeding season.

FLORIDA SANDHILL CRANE (*Grus canadensis pratensis*) is classified as threatened in Florida and ranges from extreme southeastern Georgia (Okefenokee Swamp) southward through peninsular Florida, becoming scarce in Monroe and Dade Counties. The preferred habitat includes wet prairies, marshy lake margins, and low-lying improved cattle pastures. Nesting activity is related to water level with eggs hatching normally in March and April. Sandhill cranes feed on a wide range of plants. Besides eating various grains, they consume herbaceous foliage, underground stems, tubers, and roots. Invertebrates such as grasshoppers, beetles, caterpillars and snails along with certain amphibians and mammals make up the bulk of the animal portion of its diet (Kale, 1978). Suitable feeding habitat exists in Tiger Bay. No sandhill cranes were observed on the Hines Energy Complex.

LIMPKIN (*Aramus guarauna*), a species of special concern in Florida, can be found throughout peninsular Florida where they favor slow-moving freshwater rivers and streams, marshes and lake shores. Nesting in Florida probably occurs year round and corresponds with the availability of foods. Various snails along with other freshwater mussels are the limpkin's primary foods. Lizards, insects, frogs and worms are eaten in lesser amounts (Kale, 1978). Suitable limpkin habitat was present at the Hines Energy Complex, however, this species was not observed. The lack of slow moving open watercourses now and within Buffer/Mitigation Area reclamation limits the opportunity for limpkin usage.

LITTLE BLUE HERON (*Egretta caerulea*), a Florida species of special concern, breeds along much of the Atlantic and Gulf coasts. In Florida, they range from the panhandle south to the Florida Keys. Cypress (*Taxodium distichum*), southern willow (*Salix caroliniana*), red mangrove, black mangrove, cabbage palm (*Sabal palmetto*), and Brazilian pepper are among the more common trees used during the breeding season which, in Florida, spans the months of February to September. These tree species occur in habitats ranging from fresh to saltwater. Little blue herons prefer to forage in freshwater habitats for the crustaceans, insects, small fish, frogs and lizards which form the major portion of their

diet (Kale, 1978). Suitable nesting and feeding habitat would be expected to be present following Buffer/Mitigation Area reclamation.

SNOWY EGRET (*Egretta thula*), a Florida species of special concern, is typically restricted to coastal areas. It is found from Maine to Florida along the Atlantic Coast and to Texas along the Gulf. This small white egret nests in both inland and coastal colonies throughout peninsular Florida, but only rarely in western Florida. The largest nesting colonies occur in coastal estuarine habitats often in association with tricolored heron. Woody species typically chosen for nest sites include mangroves, willow, buttonbush, and wax myrtle stands. Small fish and various invertebrates are among the more common food items. Feeding habitat and nesting for the snowy egret exists at the Hines Energy Complex and would occur with implementation of Buffer/Mitigation Area reclamation.

TRICOLORED HERON (*Egretta tricolor*), is classified as a species of special concern in Florida. In peninsular Florida, this large wader is most commonly found in estuarine colonies and only occasionally in freshwater habitats. Mangroves, willow, buttonbush, marsh elder, and wax myrtle are among the more common woody species used for nesting. Small fish are the primary food source while a variety of invertebrates are also consumed to a lesser extent. Nesting habitat for the tricolored heron occurs within the Hines Energy Complex as noted for the little blue heron above. Suitable feeding habitat is present and would be present with implementation Buffer/Mitigation Area reclamation plans.

LEAST TERN (*Sterna albifrons*) occurs in coastal areas throughout the state. Nesting colonies have occurred at widely scattered inland locations. The tern has nested near Polk County in both Lake and Highlands Counties. Nesting generally occurs on open flat sandy areas. Feeding habitat includes aquatic areas where they feed upon small fish (Kale, 1978). The Hines Energy Complex may be sparingly used by this species for feeding. It could be used in a similar fashion under Buffer/Mitigation Area reclamation conditions until

sand deposits and open water habitats revegetate. Habitat loss and human disturbance are the reasons for its listing as a threatened species.

FLORIDA PANTHER (*Felis concolor coryi*), is a species considered endangered by both the State of Florida and the FWS. In Florida, this species is generally found in large undeveloped lands in the central parts of the state southward. It feeds primarily on large mammals, such as deer, rabbits, raccoons, etc. It may be diurnally active. The Florida panther has a large home range and may travel extensively up to 25 miles in a given night (Whitaker, 1980). Unofficial observations of the species were made at the Hines Energy Complex in the area between N-15 and SA-8. No tracks of the species could be found in either instance. Several subsequent trips to the Hines Energy Complex, to locate tracks and scat of this species, did not result in any panther evidence. The FNAI files show no records of the panther in the region.

SHERMAN'S FOX SQUIRREL (*Sciurus niger shermani*), a Florida species of special concern, prefers the longleaf pine-turkey oak vegetation association of the sandhills. However, smaller numbers are known to occupy certain ecotonol situations. Among these transition areas are areas where range includes much of peninsular Florida east of the Suwannee River and north of Lake Okeechobee. Pine seeds and acorns along with a few insects are the primary food items (Layne, 1978). Suitable habitat does not exist on the Hines Energy Complex. However, it could possibly exist under Buffer/Mitigation Area reclamation conditions.

Indicator and Endemic Vertebrate Species. No animal species endemic to Florida are likely to require habitats associated with the electrical generation facilities on the Hines Energy Complex. With Buffer/Mitigation Area reclamation, indicator species are likely to be in the reclaimed native vegetation communities. The following indicator species characteristic of a given habitat type may be present after reclamation:

- Eastern Meadowlark - Pasture and Rangeland
- Marsh Rice Rat - Herbaceous Wetlands
- Bullfrog - Open Water, Herbaceous Wetlands
- Pig Frog - Open Water, Herbaceous Wetlands
- Southern Leopard Frog - Open Water, Herbaceous Wetlands
- Southern Cricket Frog - Ponds, Herbaceous Wetlands
- American Alligator - Ponds, Herbaceous Wetlands, and Forested Wetlands

Vertebrate Species Important to Local Ecological Systems. The importance of vertebrate species to ecological systems on the Hines Energy Complex with Buffer/Mitigation Area reclamation will be based upon roles species play in the local food chains and their ability to impact this energy flow by virtue of their numbers present. Most of the Hines Energy Complex will be used for electric generation. Full buildout conditions will likely include more species than those that currently occur at the Hines Energy Complex. This will happen because the eastern portion of the Buffer/Mitigation Area will have a greater diversity of habitat types.

Seasonal shifts in faunal ecosystem roles can complicate site food chain characteristics. For example, breeding, migratory and wintering birds differ seasonally in their food

requirements and use of site habitats. Additionally, during the dry season, when many site wetland areas will dry out for several months, these areas take on terrestrial characteristics. Consequently, habitat availability for species changes during the course of a year.

Reptilian species which may be most prominent at the Hines Energy Complex could include the following: black racer, skinks (Genus *Eumeces*), common garter snake and eastern diamondback rattlesnake in upland areas. In site wetlands, the American alligator, cooters, and water snakes (*Nerodia* spp.) are expected to be most abundant.

The following discussion of avian species important to local ecological systems focuses on winter and breeding season populations. During these periods of time, species populations are, at least in part, directly dependent on site habitats for food, cover and other life history requirements. During migratory seasons avian populations have less of a dependence upon site resources. The ecological effects of all species of migratory birds likely influence populations of most site biota.

Birds significant to local ecological systems are generally those with larger population densities or those considered to be upper and top carnivore species. Upper and top carnivore species include raptors, shrikes, and large wading birds. For most of the smaller migratory bird species, dietary shifts occur in preparation for migration and winter occupation (when high energy content foods such as grains are required) and for nesting (when higher protein content foods are required for egg production and nestling growth). During the breeding season, therefore, many of these migratory species position in the food chain will rise with more carnivorous diets and in the other seasons fall at times when more herbivorous or graniverous diets are required.

Large wading bird use of the Hines Energy Complex with baseline reclamation conditions would be restricted generally to shallow ditches and open isolated wetlands with standing

water. Red-tailed and red-shouldered hawks would be observed throughout the open and forested portions of the Hines Energy Complex respectively. Red-shouldered hawks would be observed more often in and near forested habitats. Red-tailed hawks would be more often observed foraging in open pine flatwoods and pastureland and rangelands. The northern harrier would occur, foraging over open low vegetation in large dry wet prairies, rangelands and pasturelands as they are present. Loggerhead shrikes would most frequently be observed in pasture and pine flatwoods. In the larger open water habitats in the Buffer/Mitigation Area, waterfowl including ducks, coots, common moorhens, double-crested cormorants, white and brown pelicans and anhingas would dominate the food chain systems at the upper trophic levels.

Confirmed indications of top or upper carnivore species presence at the Hines Energy Complex have been that of the bobcat and fox. These species would also be present at the Hines Energy Complex with Buffer/Mitigation Area reclamation. The occurrence and food chain status of mammals at the site are presented in the 1992 SCA.

In wetlands, streams, and open water habitats, river otters would likely be the most prominent mammals. Elsewhere, where there is adequate cover, the assortment of medium-sized mammals as currently occurs at the Hines Energy Complex would likely occur after Buffer/mitigation Area reclamation. These include raccoons, opossum, armadillos, and bobcats. The white-tailed deer should also be present. In addition to the bobcat as a top carnivore, the gray and red fox could be present in adequate numbers to significantly influence the food chain. Other species which could be present include the eastern cottontail and marsh rabbits, and striped skunks. Small mammals which could be present include several rodents and shrews.

2.3.6.2 Pre-existing Stresses

Pre-existing stresses for this discussion consist of environmental disturbances which would occur under full buildout conditions as approved in the 1994 Certification. Generally, stresses which would be expected at the Hines Energy Complex result from the effects of human activity associated with certified electrical generation.

Effects of human activity will result from certified electrical generation and will be generally restricted to site areas outside of the Buffer/Mitigation Area. These activities will include noise generated from the facility and the movement of vehicles and machinery used in the operation of the facility. The primary area on the Hines Energy Complex where human activity will occur is in the Plant Island.

2.3.6.3 Measurement Program

Methods associated with the 1992 SCA aquatic ecology studies and terrestrial and wetlands ecological studies are described in Section 2.3.6.3 of the 1992 SCA. Two types of data are addressed in these studies: a general characterization of existing conditions and a more detailed evaluation of site conditions proposed with conclusion of mining operations and implementation of existing approved (pre-1992) reclamation plans. Because the Buffer/Mitigation Area reclamation process is on schedule and land to be used for development of Power Block 2 has already been cleared, no special ecological surveys were needed for this SCA.

2.3.6.4 References

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Table 2.3.6-1

PROTECTED PLANT SPECIES POTENTIALLY OCCURRING IN THE HINES ENERGY COMPLEX

Scientific Name	Common Name	Designated Status FDAC	Designated Status USFWS	Habitat	Hines Energy Complex
Asclepias curtissii *	Curtiss milkweed	E		scrub, sandhills	Habitat not present
Asplenium auritum	Auricled spleenwort	E		hammock	Habitat marginal, species not found
Bonamia grandiflora *	Floirda bonamia	E	T	scrub	Habitat not present
Calopogon mutliflorus	Many-flowered grass pink		T	pine flatwoods	Habitat marginal, species not found
Centrogenium setaceum	Spurred neottia (orchid)	E		hammock	Habitat marginal, species not found
Chionanthus pygmacus *	Pigmy fringetree	E	E	scrub	Habitat not present
Chrysophyllum olivareforme	Satinleaf	E		hammock, pine flatwoods	Habitat marginal, species not found
Chrysopsis floridana	Florida golden aster	E	E	scrub	Habitat not present
Dicerandra fruterscens	Scrub balm	E	E	oak scrub	Habitat not present
Eryngium cuneifolium	Scrub celery	E	E	scrub	Habitat not present
Hexalectris spicata	Crested coralroot (orchid)	E		hammock	Habitat marginal, species not found
Hypericum cumulicola *	Highlands scrub St. John's wort	E	E	scrub	Habitat not present
Justicia cooleyi	Cooley's water willow	E	E	moist hammock, rocky woods	Habitat marginal, species not found
Lechea cernua *	Nodding pinweed	E		scrub	Habitat not present
L. divaricata	Pine pinweed	E		pinelands	Habitat marginal, species not found
Liatris ohlingerae *	Scrub blazing star	E	E	scrub	Habitat not present
Lupinus aridorum *	Scrub lupine	E	E	scrub	Habitat not present
Nolina brittoniana *	Scrub beargrass	E		scrub, dry pine	Habitat not present
Ophioglossum palmatum *	Hand adder's tongue ferm	E		epiphyte on Sabal palm	Habitat not present
Paronychia chartacea *	Paper-like nailwort	E	T	scrub	Habitat not present
Polygala lewtonii *	Scrub milkwort	E		dry oak, scrub	Habitat marginal, species not found
Polygonella ciliata var. basjramia *	Hairy jointweed	E	E	scrub	Habitat not present
Prunus geniculata *	Scrub plum	E	E	scrub	Habitat not present
Schwalbaca americana	Chaffseed	E		pine, dry oak	Habit marginal, species not found
Warea amplexifolia *	Clasping warea	E	E	dry pine, sandhills	Habitat not present
W. carteri *	Carter's mustard	E	E	scrub	Habitat not present
Zephymanthes simpsonii	Simpson zephyr lily	E		wet pine flatwoods, wet prairie	Habitat marginal, species not found

FDAC = Florida Department of Agriculture and Consumer Services
USFWS = U.S. Fish and Wildlife Service
E = Bendangered
T = Threatened
* = Recorded as present in Polk County by Florida Natural Areas Inventory. April 1991.

Source: 1992 SCA

2.3.7 Meteorology and Ambient Air Quality

2.3.7.1 Meteorology

REGIONAL CLIMATE

The climate in central Florida is classified as subtropical with maritime influences from both the Atlantic Ocean and the Gulf of Mexico. Summers are long, warm, and relatively humid, while winters are mild because of the latitude and the warming influence of the Gulf Stream. Coastal locations average slightly warmer in winter and cooler in summer than do the inland areas. The summer heat is tempered by sea breezes along the coasts and by frequent afternoon or early evening thunderstorms in all areas. Thunderstorms, which on the average, occur on about one-half of the days in the summer, frequently are accompanied by a temperature drop of as much as 10 to 20 degrees. They cause high winds, heavy rain, occasional hail, and frequent lightning. Tornadoes that reach the surface are a rare occurrence in this part of the state, and very destructive tornadoes are almost nonexistent. Tornadoes are most likely to occur during seasonal changes when cool, dry air and warm, moist air clash.

Hurricanes are tropical cyclones in which winds reach speeds of 74 mph or more and blow in a large spiral around a relatively calm center. Near the center (eye), hurricane winds may gust to more than 200 mph, and the storm dominates the ocean surface and lower atmosphere over tens of thousands of square miles. The fastest non-gust wind speed (fastest mile of wind) recorded at Tampa was 84 mph, and the fastest 5-minute average was 75 mph. These both occurred with the passage of the Labor Day hurricane of September 3 to 5, 1935 (NOAA, 1977).

Gentle breezes occur almost daily in all areas. Because most of the large-scale wind patterns affecting Florida have passed over water surfaces, hot drying winds seldom occur. High local winds of short duration occur occasionally in connection with thunderstorms in summer and with cold fronts moving across the state in other seasons.

The humidity in Florida is generally high. Inland areas with greater temperature extremes experience slightly lower relative humidity, especially during times of hot weather. On the average, variations in relative humidity from one place to another are small; humidities range from about 50 to 65 percent during the afternoon hours to about 85 to 95 percent during the night and early morning hours.

Heavy fogs are usually confined to the night and early morning hours in the late fall, winter, and early spring months. On the average, they occur on about 21 days a year at Tampa. These fogs usually dissipate or thin soon after sunrise; heavy daytime fog is seldom observed in Florida.

Climatological data for the site area are available from the weather service offices at Tampa (47 miles northwest), Orlando (62 miles northeast), and Lakeland (21 miles north-northwest). Based on discussions with and recommendations from FDEP in association with the 1992 SCA, observations from the National Weather Service (NWS) "first order" station at Tampa are being used as representative data for the site. The Local Climatological Data summary, from which the climatological data presented in this section are taken, is included as Appendix 10.5.3.

The following temperature statistics are based on data collected from the Tampa station for the period-of-record 1961 through 1990, which is the latest period currently available. These data are summarized in Appendix 10.5.3. For normal daily mean minimum temperatures, January exhibits the lowest value of approximately 50°F. January also

exhibits the lowest normal mean monthly temperature of 60°F. The highest normal daily maximum temperature (90°) occurs in July and August. Highest and lowest record temperatures of 99°F and 18°F were recorded in June 1985 and December 1962, respectively.

For rainfall data representative of the plant site, the nearest station is Bartow. Average annual rainfall at Bartow is 53.43 inches. Lowest monthly average rainfall occurs in December with 2.00 inches, and highest monthly average rainfall occurs in July with 8.42 inches.

For the Tampa "first order" National Weather Service station, normal annual rainfall is approximately 44 inches. The monthly statistics (Appendix 10.5.3) show the start of the rainy season in June and its end in September. Most of the summer rainfall is derived from local showers or thunderstorms. The highest normal monthly rainfall is approximately 7.6 inches and occurs in August. April is the driest month, with an average of approximately 1.2 inches of precipitation. The maximum rainfall in one day was 12.11 inches and occurred in July 1960. Record monthly precipitation also occurred in July 1960, when 20.59 inches of rain were recorded.

March has the highest mean monthly wind speed of 9.5 mph. The lowest mean monthly wind speed of 7.0 mph is usually encountered in August. An easterly prevailing wind direction is evident during most of the year. The annual average wind speed is 8.3 mph. The predominant wind direction during the 1987 to 1991 time period was from the east-northeast, which occurred approximately 12 percent of the time. Wind directions from the east, northeast, and east-southeast each occurred more than 8 percent of the time. A wind rose for Tampa is presented in Figure 2.3.7-1.

DISPERSION METEOROLOGY

STABILITY. Atmospheric stability in conjunction with general wind patterns and mixing height determines the potential of the atmosphere to disperse airborne pollutants. Atmospheric stability conditions are typically categorized as unstable, neutral, or stable. An unstable atmosphere is one in which rapid diffusion takes place in both the horizontal and vertical directions. In terms of temperature change with height, an unstable atmosphere is characterized by a sharp decrease in temperature with height. Neutral conditions, which are characterized by moderate decreases of temperature with height, are common in the atmosphere and are associated with moderate diffusion rates. A stable atmosphere is characterized by a slight decrease (less than 1°C per 100 meters), or even an increase in temperature with height, and greatly reduced diffusion rates in comparison with unstable or neutral atmospheric conditions.

The stability classifications discussed in this section are based on the Turner (1970) classification scheme, which assigns a stability on the basis of surface wind speed, cloud cover, and solar insolation.

MIXING HEIGHT. An important parameter which describes the regional dispersion capability of the atmosphere is mixing height. Mixing height is simply the vertical extent of the surface layer within which relatively vigorous mixing of pollutants takes place. Holzworth (1972) has compiled statistical summaries for mixing height at various locations throughout the United States based on twice daily radiosonde measurements. The abundance of moisture from the ocean around southern Florida creates high humidities and low-level cloudiness that absorb heat and generally prevent the mixing height from subsiding below 500 meters. Because mixing heights are dependent upon surface temperatures, afternoon levels reach above 1,400 meters under intense solar insolation.

Lesser diurnal mixing height fluctuations occur at coastal stations in Florida, as compared to inland locations, due primarily to moderating effects of the ocean.

The Tampa upper air station has been considered regionally representative of the site by FDEP in previous applications, including the 1992 SCA. The Tampa data indicate that the site area experiences mixing heights that are typical of or higher than large areas of the eastern half of the United States. Thus, the site area experiences better than average dispersion conditions. The Tampa upper air data for 1987 through 1991 were included as part of the meteorological data input to the dispersion modelling evaluation of the Power Block 2 air quality impacts discussed in Sections 6 and 7 of the PSD permit application.

2.3.7.2 Ambient Air Quality

REGIONAL AIR QUALITY

The Hines Energy Complex is located in an area that FDEP currently classifies as attainment for all criteria pollutants. It is designated as Class II from a Prevention of Significant Deterioration (PSD) standpoint. The nearest Class I area is the Chassahowitzka Wilderness Area, located approximately 118 km to the northwest.

Ambient air monitoring data are available that can be used to characterize the existing conditions in the vicinity of the site. FDEP data from these monitors for 1997 are summarized in Table 2.3.7-1. The nearest FDEP PM_{10} data are from the Tampa metropolitan area and are not very representative of Polk County. However, historical Total Suspended Particulate (TSP) data for Polk County (1992 SCA) indicate that existing PM_{10} concentrations would also be well below National and Florida Ambient Air Quality Standards (AAQS). In addition, the predicted maximum PM_{10} impacts from the proposed Power Block 2 are less than the levels that EPA considers significant; therefore, particulate

emissions from Power Block 2 will not cause or contribute to any degradation in Polk County air quality with respect to particulate matter.

Concentrations of SO_2 have been measured by FDEP at Mulberry and Nichols. FDEP data from 1997 show existing SO_2 concentrations at those nearby locations to be well below the AAQS. Ambient data for nitrogen oxides (NO_x), carbon monoxide (CO), and lead (Pb) have been collected by FDEP only in the Tampa and Sarasota metropolitan areas. Given the rural nature of the site, existing concentrations of these pollutants, which are usually associated more closely with urban environments (since they are emitted primarily by mobile sources), should be well below the applicable standards.

Ozone (O_3) data are collected at two locations in Lakeland. Data from 1997 indicate that O_3 concentrations in Polk County are within the AAQS. The Tampa Bay region, as well as most of Florida and the Southeast, experienced relatively high O_3 levels in May 1998. These data have not yet been quality-assured, and the DEP has petitioned EPA to consider excluding some of the readings based on outside influences, such as smoke from large fires that were burning in Mexico at the time.

2.3.7.4 References

CFR (U.S. Code of Federal Regulations). Title 40, Section 52.21, Prevention of Significant Deterioration of Air Quality.

EPA (U.S. Environmental Protection Agency). 1987. Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD). EPA-450/4-87-007. Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.

Holzworth, C. C. 1972. Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States. U.S. Environmental Protection Agency. AP-101, January, 1972.

NOAA (National Oceanic and Atmospheric Administration). 1997. Local Climatological Data Annual Summary with Comparative Data - Tampa, Florida. National Climatic Center. Asheville, North Carolina.

Turner, D. B. 1970. Workbook of Atmospheric Dispersion Estimates. U.S. Environmental Protection Agency. Research Triangle Park, North Carolina.

Florida Power Corporation. 1992. Polk County Site. Site Certification Application.

TABLE 2.3.7-1

REGIONAL 1997 AMBIENT AIR QUALITY DATA

POLLUTANT	LOCATION	SITE #	CONCENTRATION (µg/m³)				
			3-HOUR		24-HOUR		ANNUAL ARITHMETIC MEAN
			HIGH	2ND HI	HIGH	2ND HI	
SO_2	MULBERRY	2860006F02	168	134	49	38	11
	NICHOLS	3680010F02	176	148	53	48	17

POLLUTANT	LOCATION	SITE #	CONCENTRATION (µg/m³)	
			1-HOUR	
			HIGH	2ND HI
O_3	HILLSBOROUGH BAY	1800081G03	210	206
	TAMPA	4360035G02	226	220
	TAMPA	4360065G01	218	214
	TAMPA	4360068G01	216	204
	LAKELAND	2160005F01	204	200
	LAKELAND	2160006F01	216	197

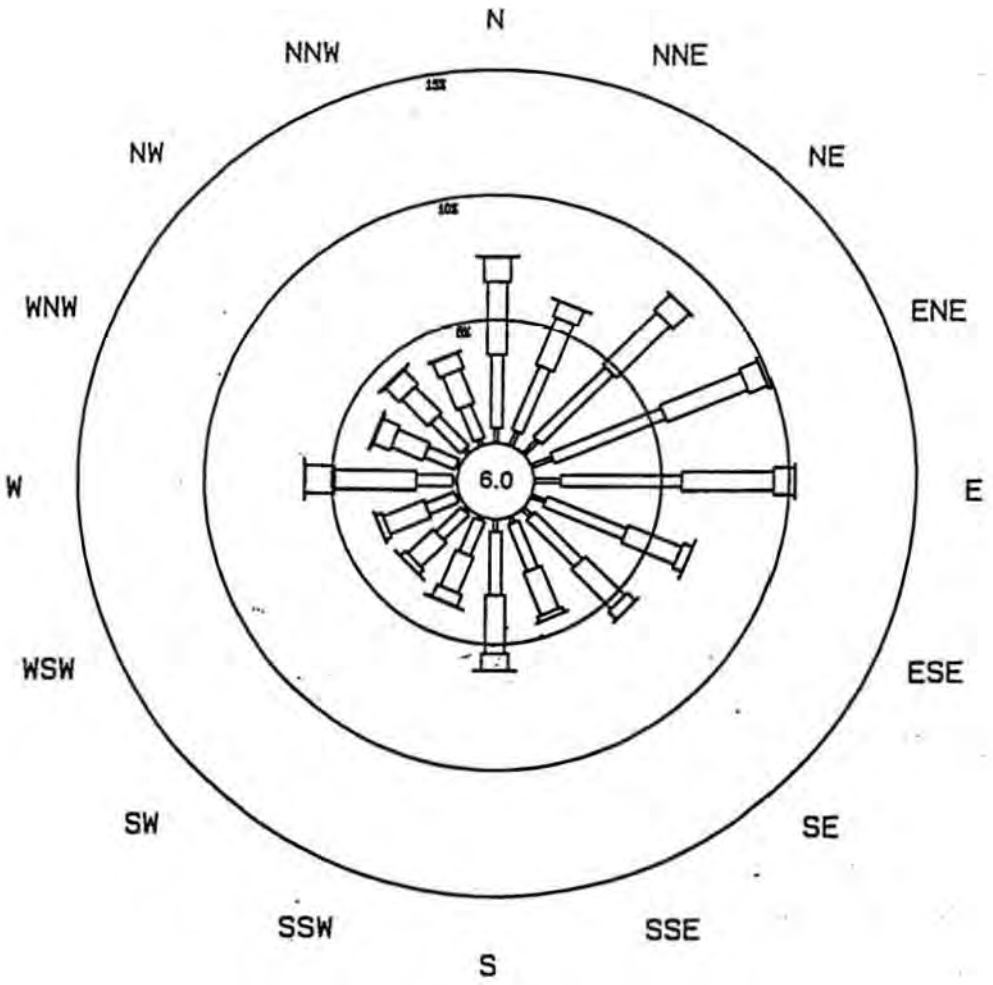
POLLUTANT	LOCATION	SITE #	CONCENTRATION (µg/m³)
			ANNUAL ARITHMETIC MEAN
NO_2	TAMPA	4360065G01	18
	ST. PETERSBURG	3980018G01	20
	HILLSBOROUGH BAY	1800081G03	12

POLLUTANT	LOCATION	SITE #	CONCENTRATION (ppm)				
			1-HOUR		8-HOUR		ANNUAL ARITHMETIC MEAN
			HIGH	2ND HI	HIGH	2ND HI	
CO	TAMPA	4360035G02	4	4	2	2	
	TAMPA	4360045G01	5	5	3	2	
	TAMPA	4360063G01	6	6	3	2	
	TAMPA	4360068G01	3	3	2	2	
	TAMPA	4360070G01	7	7	4	3	

POLLUTANT	LOCATION	SITE #	CONCENTRATION (µg/m³)		
			24-HOUR		ANNUAL ARITHMETIC MEAN
			HIGH	2ND HI	
PM_{10}	NICHOLS	3680010F02	41	36	20
	BRANDON	0370002G01	47	40	23

POLLUTANT	LOCATION	SITE #	QUARTERLY ARITHMETIC AVG (µg/m³)			
			JAN/ MAR	APR/ JUN	JUL/ SEPT	OCT/ DEC
Pb	RUSKIN	1800003603	0.0	0.0	0.0	0.0
	TAMPA	1800103G02	0.0	0.0	0.0	0.0

Source: FDEP, 1998



SCALE (KNOTS)

1-3 4-6 7-10 11-16 17-21 >21

CALM

TAMPA INTERNATIONAL AP
ANNUAL WINDROSE
1987 - 1991

Florida Power
CORPORATION

Hines Energy Complex

FIGURE 2.3.7 -1
TAMPA WIND ROSE

2.3.8 Noise

2.3.8.1 Introduction

A comprehensive noise monitoring program was conducted in January 1992 and presented in the 1992 SCA. The monitoring program characterized the existing noise levels at the nearest noise-sensitive receptor locations, as well as the Plant Island. The results of the survey are summarized in this Section and are used to evaluate the noise impacts for construction and operation of Power Block 2.

2.3.8.2 Study Area Description

Noise levels were monitored in 1992 at five locations in the vicinity of the Hines Energy Complex (see Figure 2.3.8-1). Four of the monitoring locations (Locations 1-4) were near areas considered to be noise-sensitive receptors; the fifth (Location 5) was in the approximate location of the Plant Island.

The highly industrialized nature of this mining region has limited residential development primarily in existing nearby communities of Homeland and Fort Meade. Thus, there are only a few isolated rural residences in the land areas surrounding the Hines Energy Complex. No residences exist within about 2.5 miles of the Plant Island where all of the plant generating equipment, which is the primary source of noise, will be located. Three or four isolated residences are located on the south side of CR 630 near the intersection of CR 555 about 2.5 miles south (Location 1), and one residence is located at the intersection of CR 640 and CR 555 about 3 miles to the north-northwest (Location 2). The communities of Homeland (Location 3) and Fort Meade (Location 4) are located about 3.5 miles northeast and 4.5 miles southeast from the power block, respectively.

Other potential noise-sensitive receptors in the area include one cemetery located on CR 555 south-southwest of the site (referred to as the Trinity Cemetery after the previous church at this location) (Location 7) and a church adjacent to Watson Cemetery at the intersection of CR 555 and CR 630 (Location 6). These receptors are about 1.5 miles and 2.5 miles from the site, respectively.

Existing sources of noise in the area include heavy truck traffic on all the roads, mining activities and several large agri-chemical processing plants. The agri-chemical processing plants were only audible at Locations 1, 2 and 5 late at night during brief lulls in truck traffic. Truck traffic, even late at night, was the most significant source of noise at receptor locations.

2.3.8.3 Noise Standards or Guidelines

Noise resulting from power plant activities can impact the health and welfare of both workers and the general public. The level of impact is related to the magnitude of noise, which is referred to as sound pressure level (SPL) with units in decibels (dB). Decibels are calculated as a logarithmic function of SPL in air to a reference effective pressure, which is considered the hearing threshold, or:

$$SPL = 20 \log_{10} (Pe/Po)$$

where: Pe = measured effective pressure of sound wave in micropascals (Pa), and

Po = reference effective pressure of 20 μPa.

To account for the effect of how the human ear perceives sound pressure, sound pressure level is adjusted for frequency. This is referred to as A-weighting (dBA), which adjusts measurements for the approximated response of the human ear to low-frequency SPLs [i.e., below 1,000 hertz (Hz)] and high-frequency SPLs (i.e., above 1,000 Hz).

There are no federal, state, or local noise standards applicable to the Hines Energy Complex site. The city of Fort Meade has a nuisance ordinance which prohibits unnecessary noise, but it is not applicable to the project site which is about four miles outside Fort Meade. The EPA has developed guidelines for noise levels to protect the public health and welfare with an adequate margin of safety (EPA, 1974). These criteria relate to short-term and day-night average SPLs. The L_{eq} is the equivalent constant SPL that would be equal in sound energy to the varying SPL over the same time period. The L_{dn} is the 24-hour average SPL calculated for two daily time periods, i.e., day and night, but has 10 dBA added to nighttime SPL. The equation for L_{dn} is:

Where: $L_{dn} = 10 \log 1/24 (15 \times 10^{(Ld/10)} + 9 \times 10^{(Ln+10/10)})$

Ld = daytime l_{eq} for the period 0701 to 2200 hours

Ln = nighttime L_{eq} for the period 2201 to 0700 hours.

For residential and farming areas, an outdoor L_{dn} of 55 dBA is recommended. For industrial areas, an L_{eq} of 70 is recommended.

2.3.8.4 Noise Monitoring Methodology

Both A-weighted and octave band sound levels were obtained at the five monitoring locations. The A-weighted scale was designed to account for the manner in which the

human auditory system responds to sounds of different frequencies. Very low and very high frequency sounds are attenuated electronically by the meter to produce an instrument response proportional to the subjective response of an average person. Octave band sound level measurements are taken at different frequencies to show the tonal characteristics of the overall sound.

The A-weighted sound level was measured continuously and simultaneously at the five locations over a complete 24-hour period using five Larson-Davis Laboratories Model LDL 700 precision sound level analyzers (LDL 700) with integral data loggers. The microphones were equipped with 3.5-inch diameter foam windscreens to reduce wind effects and they were mounted at a height of 5 feet above the ground.

The analyzer was set to the A-weighted scale such that the level measured in each band already contained the A-weighting adjustment. Use of this technique generally ensures that the most audible frequencies will also be those with the highest peaks on the plotted graph. This is seldom the case with non-weighted octave band data where low frequency sounds are generally high in level but low in audibility.

2.3.8.5 Data Analysis

The LDL 700 continuous analyzers were programmed to start automatically at 1600 on January 20, 1992, and to stop 24 hours later at 1600 on January 21, 1992. The analyzers were further programmed to compute and store the equivalent sound level (L_{eq}) occurring during each minute and each hour of the 24-hour period. The equivalent sound level is the energy averaged sound level occurring during the specified averaging period. Other hourly parameters computed and stored were the statistical sound levels exceeding 10, 50 and 90 percent of each 1-hour sample period (L_{10}, L_{50} and L_{90}, respectively). The L_{10} represents

the sound level where only 10 percent of the time the observed noise level is greater than or equal to that sound level. This sound level would closely correspond to the noise levels where truck traffic is occurring on nearby roads. The L_{90} represents the sound level where 90 percent of the time the observed noise level is greater than or equal to that sound level. This sound level would closely correspond to the noise levels in absence of truck traffic and would be the "background" or "baseline" noise level. Any noise impacts from a power plant would be most noticeable during "baseline" noise levels. The baseline noise level at each monitoring location was calculated using the L_{90} data provided in the 1992 SCA.

At the end of the sample period, the analyzers were connected to a computer to which the data were downloaded, stored and computations performed. The day/night sound levels (L_{dn}) and the 24-hour L_{eq} levels were computed from the hourly L_{eq} data. The L_{dn} computation, as noted in Section 2.3.8.3, requires the addition of a 10 dBA penalty to hourly L_{eq} levels occurring between the hours of 10 p.m. and 7 a.m. to account for the increased noise sensitivity during normal sleep hours. Adjusted nighttime levels were then energy averaged with unadjusted daytime hourly levels to compute resulting L_{dn} levels. The 24-hour L_{eq} level was computed by energy averaging actual hourly L_{eq} levels.

2.3.8.6 Survey Results

Following is a summary of 24-hour L_{eq} and L_{dn} levels and the L_{90} levels for each of the five monitored locations.

Monitoring Location	24 Hour L_{eq} (dBA)	24 Hour L_{dn} (dBA)	Baseline L_{eq} (dBA)	Baseline L_{dn} (dBA)
1	56.6	62.7	43.4	46.4
2	58.3	64.5	46.4	48.9
3	50.0	53.2	46.2	48.0
4	53.7	57.5	48.2	50.0
5	49.9	51.2	38.7	42.6

A comparison of the 24-hour L_{dn} levels with the EPA guideline level of 55 dBA indicates that Locations 1, 2 and 4 already exceed the recommended EPA criteria. In the three cases, the noise levels are due to heavy truck traffic. Location 2, about 150 feet from the intersection of CR 555 and CR 640, had the highest L_{dn} level at 64.5 dBA. The lowest measured levels were at Location 5 which was on-site and well away from any roads. When the effect of trucks are removed from the observed noise levels, as represented by the L_{90} or what has been referred to as "Baseline" in the above table, all noise levels are within the EPA criteria.

2.3.8.7 Summary

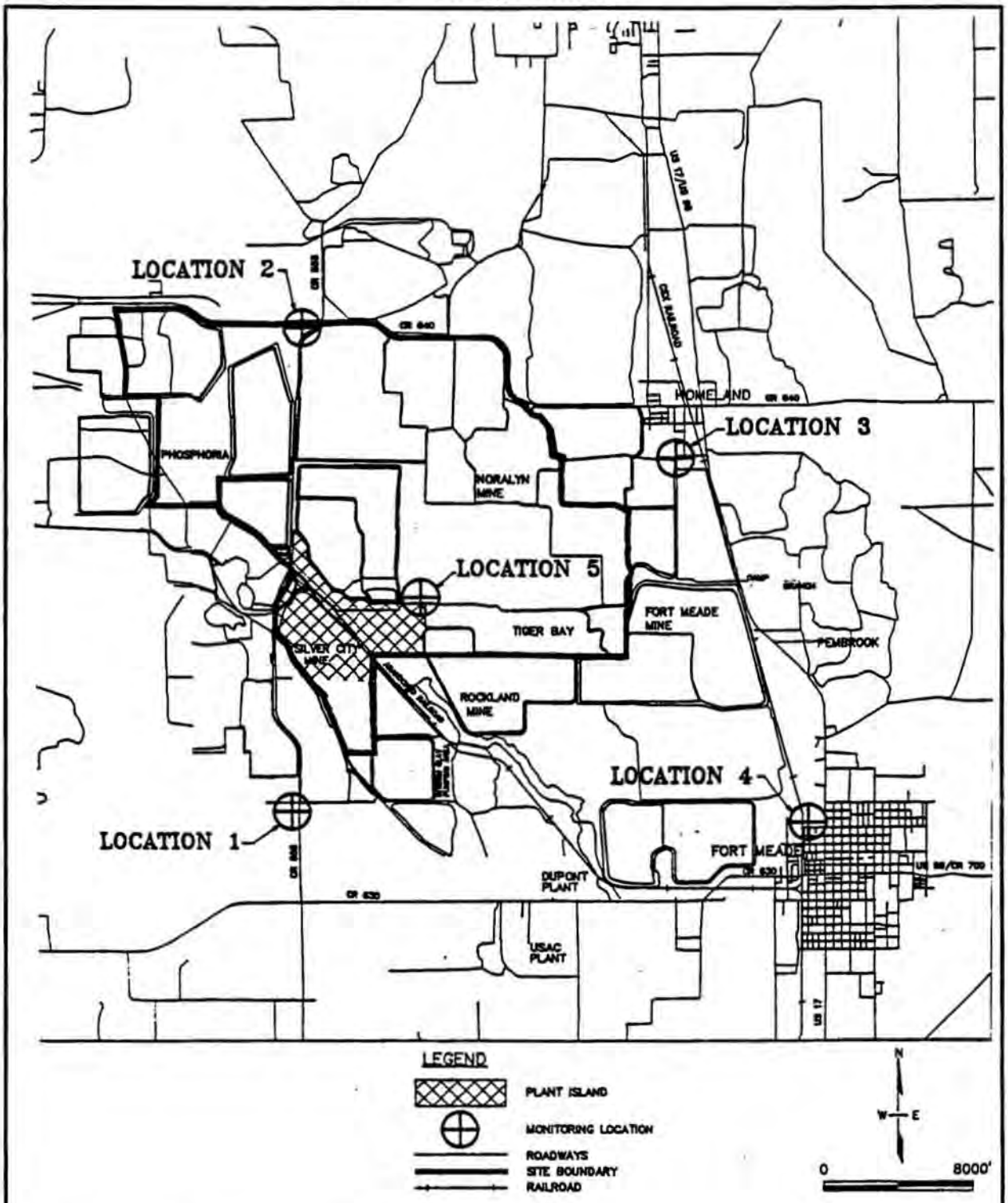
Noise levels at existing noise-sensitive receptors around the site are dominated by heavy trucks on the state and county roads. The truck traffic is associated with the industrial plants in the area which operate 24 hours a day. Thus, the truck traffic also exists

throughout the day and night. The noise environment at all of the land uses normally considered to be noise-sensitive (residences and churches) that exist adjacent to these roads around the site (Locations 1,2 and 4) is higher than the EPA guideline level. The locations which were far removed from the heavily traveled roads (Locations 3 and 5) were found to have noise levels within the EPA criteria. Existing industries were not audible in Homeland and Fort Meade but were audible at night at a very low level at the other three locations when there was a lull in truck traffic. Thus, these industries, except for the trucks associated with them, do not appear to contribute significantly to ambient noise levels. Noise levels in the absence of truck traffic is well within the EPA criteria.

2.3.8.8 References

EPA (U.S. Environmental Protection Agency). 1974. Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. 550/9-74-004. Washington, D.C.

Florida Power Corporation. 1992. Polk County Site. Site Certification Application.



SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 2.3.8-1
NOISE MONITORING LOCATIONS

c:\dwg\fpcsca\borders.dwg

2.3.9 Other Environmental Features

Several regulatory agencies and environmental organizations promote the concept of regional wildlife corridors to form an integrated habitat network (IHN). During the preparation of the 1992 SCA, FPC agreed to participate in this effort by assisting with the establishment of a wildlife corridor system in Polk County (FGFWFC, 1992). FPC followed through on this commitment in December 1994 by funding the acquisition of a 442-acre offsite Conservation Easement on behalf of the State of Florida. This property comprises a portion of the wildlife corridor connecting Hooker's Prairie to the forested floodplain of the Peace River.

2.3.9.1 References

FGFWFC (Florida Game and Fresh Water Fish Commission). 1992. Letter from T. King, FGFWFC, to K. Small, Florida Power Corporation, St. Petersburg, Florida. February 18, 1992.

Florida Power Corporation. 1992. Polk County Site. Site Certification Application.

CHAPTER 3

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3.8.6-1	DEMAND MODE	3.8-17
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3.1 BACKGROUND

FPC proposes to install and operate multiple generating units at the Hines Energy Complex over the next twenty years. The units will be brought on-line sequentially, with the scheduling of units to match the estimated growth of demand through the ultimate site capacity. Ultimate site capacity certification was granted in 1994 by the Siting Board for the Hines Energy Complex based on the assumption that the ultimate installation could include 12 CTs with associated HRSGs, STs, and coal gasification units for a total site capacity of 3,000 MW. The schedule of estimated generating capacity at the Hines Energy Complex, over time, is presented in Table 3.1.0-1. The filing of this SCA is consistent with FPC's original schedule proposed for the Hines Energy Complex. The actual sequence and timing of future units may vary somewhat from those shown in Table 3.1.0-1, depending on need, as determined by the PSC.

The initial phase of development at the Hines Energy Complex (Power Block 1) consists of natural gas-fired combined cycle (CC) units with distillate oil for backup. Power Block 1 consists of 2 combustion turbines, with associated HRSGs and a steam turbine with a generating capacity of 500 MW (nominal).

By this application, FPC is seeking approval for the construction and operation of Power Block 2, an additional 500 MW (nominal) of natural gas-fired combined cycle generation, with distillate oil for backup. Other than stormwater management improvements described in Section 3.8 to facilitate water cropping, construction activities will occur within an approximate 5-acre portion of the Plant Island adjacent to Power Block 1.

Associated facilities which have been certified and constructed to support the Hines Energy Complex include transmission lines, a gas pipeline within the site's boundaries and a

reclaimed water pipeline from the Bartow city limits to the Cooling Pond on site. The rebuild of the Barcola-Ft. Meade 230 kV transmission line with double circuit structures and the relocation of the Ft. Meade-Rockland 115 kV line has been completed. As already authorized by the 1994 Certification, the second set of conductors will be added to the Barcola-Ft. Meade 230 kV transmission line in 1999 or 2000. Natural gas is delivered to the Hines Energy Complex through a gas lateral that connects with Florida Gas Transmission's interstate pipeline. Reclaimed water supplied by the City of Bartow wastewater treatment plant is used as makeup for the Cooling Pond. The reclaimed water pipeline runs from Bartow along the CSX railroad and US Highway 17.

Circulating water for cooling of the plant auxiliary systems and steam turbine condenser is provided by the existing on-site Cooling Pond. The initial phases of generation do not require the build-out of the entire Cooling Pond area. A 722-acre portion of the ultimate 2250-acre Cooling Pond has been constructed and is sufficient to support Power Blocks 1 and 2. As additional generation develops, additional expansion of the Cooling Pond will be constructed as approved in the 1994 Certification. The facility is designed for zero discharge of industrial wastewaters to off-site surface waters. Process wastewater streams are treated on-site and are used as makeup for the Cooling Pond. The major consumption and/or loss of water occurs through evaporation from the Cooling Pond, both natural and from heat rejected by the CC units.

FPC has agreed to secure alternative sources of water, rather than the use of groundwater, for makeup cooling water for the first 940 MW of generation except, if approved by SWFWMD, in case of emergency. Reclaimed water from the City of Bartow, on-site stormwater runoff and water cropping (rainfall collection basins) and reuse of process water will be used to provide makeup water to the Cooling Pond during operation of Power Blocks 1 and 2. The existing site stormwater management system (detention pond) is located within the Plant Island area. This system is adequate for Power Blocks 1 and 2 and

provides overflow to the on-site Cooling Pond. Ground water is currently only used to meet the potable and sanitary needs of the facility.

In accordance with the existing Conditions of Certification, in order to enhance flows to Camp Branch and McCulllough Creek (and ultimately to the Peace River), FPC has modified the drainage systems on and off-site in order to contribute runoff to these surface water systems. No changes to these enhanced flows are required for Power Block 2.

Air emission control will be achieved using the best available control technology. Selective catalytic reduction (SCR) technology will be used to control nitrogen oxide (NO_x) emission levels while firing natural gas. While firing fuel oil as a back-up, water injection will be used to limit NO_x levels. The combustion of clean fuels to minmize sulfur dioxide (SO_2) and particulate mater emissions is accomplished by burning fuels low in ash and sulfur content in conjunction with good combustive practices to ensure complete combustion. These technologies will ensure compliance with applicable air quality standards.

Noise impacts from the full 3000 MW site were assessed for several residential receptors around the Hines Energy Complex site as part of the 1994 Certification. Fractional noise increases observed at any nearby residential receptor will not be noticeable or significant. The isolated location and buffer area around the Hines Energy Complex site results in the lack of a significant noise impact.

Vehicular access is provided by County Road 555 (CR 555), with rail access provided by existing CSX rail lines, including an on-site rail spur. A traffic impact analysis was completed to assess traffic impacts for the construction and operation of the full build out of the site (3000 MW) on Polk County roadways. Conditions of Certification addressing those impacts were included in the 1994 Certification. (See Appendix 10.4.1). Area roadways

have capacity to accommodate traffic from construction and operation of Power Block 2 as previously demonstrated.

All on-site fuel oil delivery, storage and handling facilities, including unloading areas, piping and storage tank systems and the tanks and containment are in place and adequate for Power Blocks 1 and 2.

The Hines Energy Complex site is comprised primarily of mined phosphate lands and includes both mandatory reclamation and non-mandatory reclamation areas. The reclamation plans for the site have been previously approved by the Siting Boards as part of the 1994 Certification.

TABLE 3.1.0-1
SCHEDULE OF ESTIMATED
SITE CAPACITY VS. TIME
3,000 MW

YEAR	MW	FUEL	TECHNOLOGY
1998	485	NATURAL GAS	COMBINED CYCLE1
1999	485	"	"
2000	485	"	"
2001	1,000	NATURAL GAS	COMBINED CYCLE
2002	1,000	"	"
2003	1,000	"	"
2004	1,000	"	"
2005	1,000	"	"
2006	1,530	NATURAL GAS	COMBINED CYCLE
2007	1,530	or COAL GAS	or IGCC[1]
2008	1,530	"	"
2009	2,065	"	"
2010	2,065	COALGAS	IGCC
2011	2,065	"	"
2012	2,600	"	"
2013	2,600	COAL GAS	IGCC
2014	2,600	"	"
2015	3,000	"	"
2016	3,000	COAL GAS	IGCC
2017	3,000	"	"
2018	3,000	"	"
		"	"

[1]. IGCC – Integrated Gasification Combined Cycle

Source: FPC, 1998

3.2 SITE LAYOUT

The Hines Energy Complex site contains a Plant Island and several ancillary areas that make up the balance of the site. The arrangement consists of an existing combined cycle unit with a second combined cycle unit being proposed adjacent to the first. This section provides a description of existing and future plant arrangements of the power generating facilities and associated facilities on-site.

3.2.1 Plant Island

The overall plant arrangement, shown on Figure 3.2.1-1, utilizes a Plant Island that is located in the southern portion of the site, east of CR 555. The Plant Island consists of areas that were previously part of the phosphate mining company parcels designated as SA-11, SA-12N and SA-13, for a total of 704-acres. These parcels were selected for the Plant Island because, although originally intended to be waste clay settling areas, they were never so utilized. Thus, there are no waste clays in these areas that could complicate the structural foundation design. Figure 3.2.1-1 shows existing Power Block 1 facilities with space reserved for Power Block 2.

Figure 3.2.1-2 shows the arrangement for the future Power Block 2 in bold lines, with the existing Power Block 1 and common facilities shown in light lines. The existing Power Block 1 equipment consists of combustion turbines, electrical generators, heat recovery steam generators, and a steam turbine, in addition to water and wastewater treatment. Power Block 2, consisting of similar equipment, will be constructed adjacent to Power Block 1 as shown Figure 3.2.1-2.

Figure 3.2.1-3 is a schematic of a typical combined cycle unit illustrating the type of equipment associated with Power Blocks 1 and 2.

3.2.2 Balance of Site

The balance of the site will be used as described below.

Cooling Pond

One of the requirements for combined cycle power plants is a reliable supply of process water and cooling water to allow condensation of the steam. A cost-effective device to achieve that supply, while minimizing the consumptive use of water, is a cooling pond. The existing 722-acre Cooling Pond, which was constructed within mine area N-16W as shown on Figure 3.2.2-1, is a varying level Cooling Pond capable of supporting Power Blocks 1 and 2. Detailed descriptions of the Cooling Pond design and operation are presented in Section 3.5.1.

Brine Pond

Two unique features of the Hines Energy Complex site are the availability of waste clays, and the presence of structurally sound dams remaining from the previous phosphate mining activities. These features accommodate the use of an evaporative Brine Pond to receive concentrated wastewaters from the reverse osmosis treatment process. The area designated as SA-9, comprising about 311 acres of the site area, is utilized as the Brine Pond. Waste clays serve as an impermeable liner along the bottom of this area. The Brine Pond location is shown on Figure 3.2.2-1. This pond will not be altered for Power Block 2.

Buffer/Mitigation Area

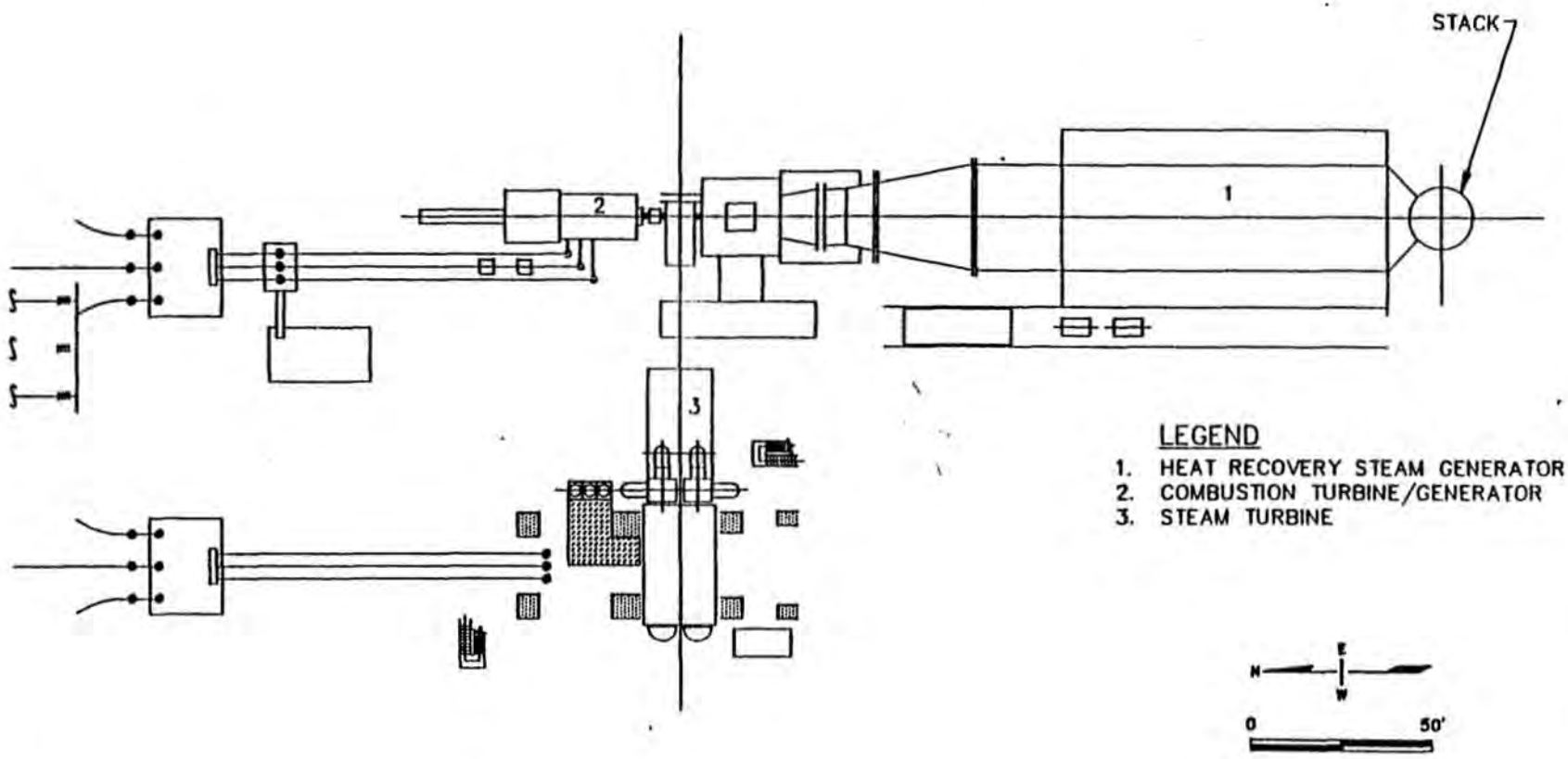
Buffer/Mitigation Areas on site include the areas designated as N-11A, N-11C, N-9B, N-13, SA-10 and Tiger Bay. These areas were selected because, with the exception of SA-10, they lie between the existing communities of Homeland and Fort Meade and the area of the site in which the actual generating and associated equipment will be placed, thus buffering those communities from the plant and its operations. The Buffer/Mitigation Area location is shown on Figure 3.2.2-1 and has a total area of 2136 acres.

Water Crop Areas

Potential water crop areas include areas designated as N-15, N-11B, N-11C, P-2, P-3, SA-8, Triangle Lakes, and Phosphoria. Areas N-11A, N-13, and N-9B will also temporarily serve as water crop areas. The water crop system is described in Section 3.8.

McCullough Creek Drainage Enhancement Project

As required by the 1994 Certification, SA-10 and SA-12S will be operated as a portion of the McCullough Creek drainage enhancement project. This requirement is described in Condition XXV.F.2.b and 3 of the 1994 Certification.



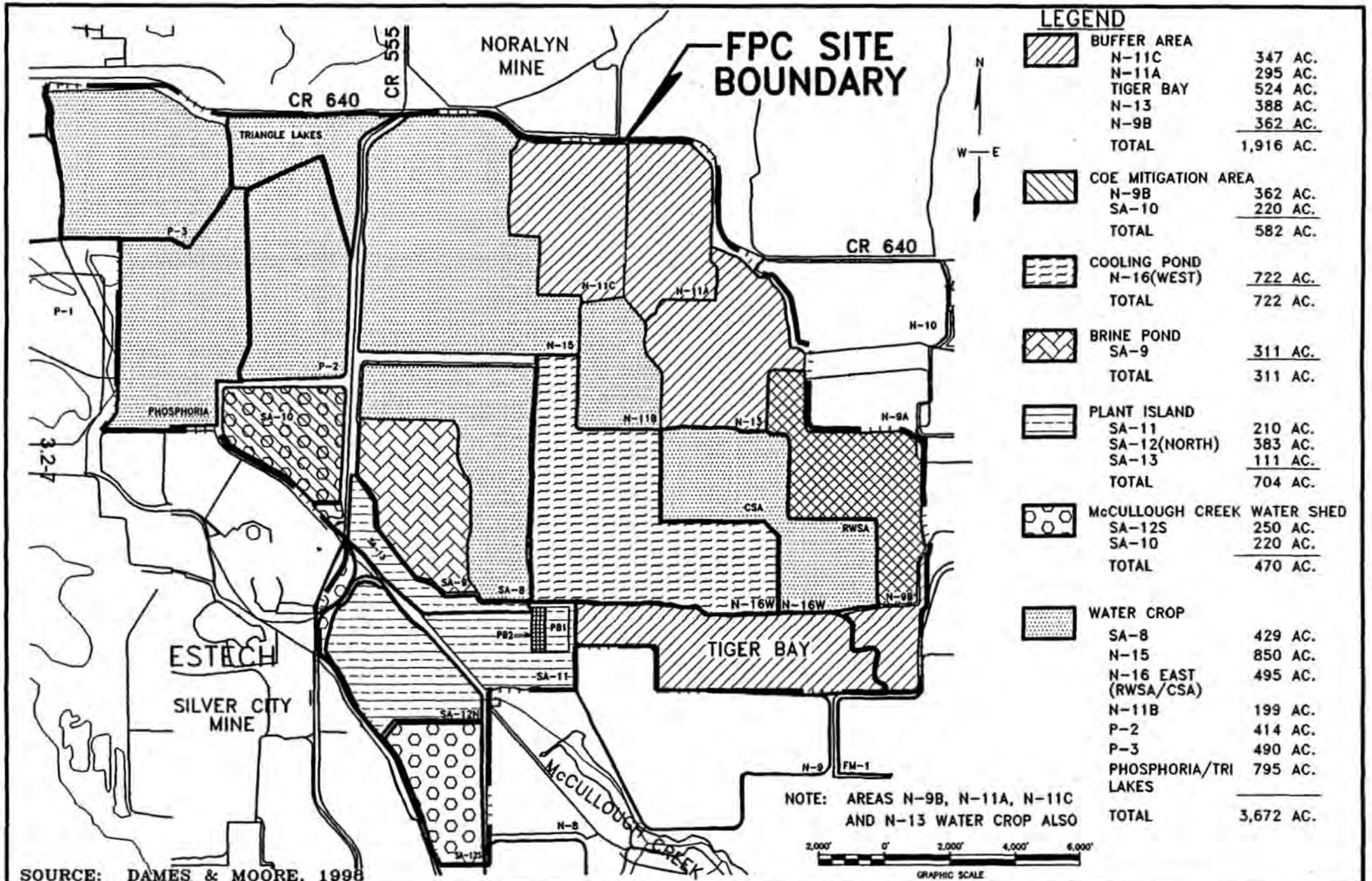
SOURCE: 1992 SCA

Florida Power CORPORATION

HINES ENERGY COMPLEX

FIGURE 3.2.1-3
TYPICAL COMBINED CYCLE SCHEMATIC
(235 MW)

c:\dwg\fpcsca\borders.dwg



SOURCE: DAMES & MOORE, 1998

Florida Power CORPORATION

Hines Energy Complex

FIGURE 3.2.2-1
HINES ENERGY COMPLEX 1000 MW SITE PLAN

c:\dwg\fpcsca\FIG3_2_2_1.DWG

3.3 FUEL AND FUEL HANDLING CHARACTERISTICS

Power Blocks 1 and 2 will utilize natural gas as the primary fuel and low sulfur fuel oil as the backup fuel.

Following is a description of the fuel characteristics, supply considerations, and storage concepts associated with each of the fuels.

3.3.1 Natural Gas

Power Block 2 will use natural gas at an approximate flow rate of 3,718,000 standard cubic feet per hour at full load, at an ambient temperature of 59°F. This is somewhat higher than Power Block 1 which uses approximately 3,586,000 standard cubic feet per hour. This flow rate is for two combustion turbines per power block. A typical fuel gas analysis is shown in Table 3.3.1-1.

Natural gas will be supplied via an existing pipeline to the Hines Energy Complex. Florida Gas Transmission (FGT) supplies natural gas to the site via a 20 inch main pipeline. Their main line terminates at the FGT meter and regulator station on-site. The FGT meter and regulator station is currently capable of supplying 4,500,000 standard cubic feet of gas per hour. This was installed to serve the needs of Power Block 1. The on-site station is readily expandable to 9,000,000 standard cubic feet of gas per hour through the addition of metering equipment to serve the additional needs of Power Block 2. FPC constructed the on-site pipeline from the FGT metering station to the Plant Island area. This line ranges in size from 16" at the on-site metering station to 8" at the combustion turbines. The line has the capacity to serve Power Blocks 1 and 2.

3.3.2 Fuel Oil

Fuel oil will be used as a backup fuel for the Power Blocks 1 and 2 at the Hines Energy Complex. Power Block 1 will use, at full load, approximately 24,000 gallons of fuel oil per hour, at an ambient temperature of 59°F. Power Block 2 will be at a slightly higher flow rate, at full load, of approximately 24,500 gallons of fuel oil per hour, at an ambient temperature of 59°F. A typical fuel oil analysis is shown in Table 3.3.2-1.

Fuel oil will be delivered to the site by truck.

The fuel oil unloading system and storage tank constructed for Power Block 1 is adequate to serve the requirements of Power Block 2. This system consists of four truck unloading stations and one 3.7 million-gallon storage tank. This arrangement will provide approximately 3 days of fuel oil supply for each Power Block, if the Power Blocks operate at full load. The fuel oil tank location is shown on the site arrangement drawings in Section 3.2.

TABLE 3.3.1-1
TYPICAL NATURAL GAS ANALYSIS

ANALYSIS	MOLE (%)
Carbon Dioxide	0.873
Ethane	2.824
Hexanes Plus	0.116
Iso-Butane	0.175
Methane	94.850
Nitrogen	0.235
Normal-Butane	0.148
Pentanes Plus	0.085
Propane	0.696
Total:	100.000
Specific Gravity (air at 1)	0.71
Quality Information	**Parameters**
Heating Value (HHV)	1050 Btu/cf
Total Sulfur (Maximum)	1 grain/100 SCF

Source: Florida Gas Transmission

TABLE 3.3.2-1
TYPICAL NO. 2 FUEL OIL ANALYSIS

NO. 2 DISTILLATE OIL	PERCENT (BY WEIGHT)
Carbon	85.5
Hydrogen	12.7
Nitrogen	0.2*
Oxygen	1.5
Sulfur	0.05**
Ash	0.01

Lower Heating Value: 18,550 Btu/lb
Higher Heating Value: 19,200 Btu/lb

*This is a typical FBN Value. FPC has requested an emissions allowance for FBN of up to 0.030 %, by weight.

**The sulfur content is the maximum, as required by permit.

Source: FPC, 1998

3.4 AIR EMISSIONS AND CONTROLS

Power Block 2 will consist of an additional two natural gas fired CC units capable of producing approximately 500 MW. Specific information about these units is presented in the Prevention of Significant Deterioration (PSD) application included as Appendix 10.1.5.

The remainder of this section will address the air emissions and controls for the proposed development.

3.4.1 Air Emission Types and Sources

Following is a description of the sources and types of air emissions at the Hines Energy Complex.

3.4.1.1 Sources

The primary sources of air emissions for this proposed development are the two Westinghouse combustion turbine (CT) units. The best available control technology (BACT) for these sources is presented in Section 3.4.3.

3.4.1.2 Emissions

Estimated maximum emissions from each of the air emission point sources noted in Section 3.4.1.1 are tabulated in Table 3.4.1-1. The estimated emissions represent full load operating conditions and are not inclusive of background ambient concentrations introduced into the particular processes. It is anticipated that higher emission rates will occur for short periods of time when a unit is started from a cold start or possibly during a malfunction. A comparison of the significant emission table rate thresholds given in the demonstrates that the project is subject to

PSD BACT review for nitrogen oxides (NO_x), sulfur dioxide (SO_2), sulfuric acid mist (H_2SO_4), carbon monoxide (CO), particulate matter (PM and PM_{10}) and volatile organic compounds (VOCs).

3.4.1.3 Emissions Inventory

For source specific emissions, DEP Form 62-210.900(1), "Application For Air Permit - Long Form", has been completed for Power Block 2, a copy of which is included in Appendix 10.1.5. These emissions are based on a 100 percent capacity factor at full load.

3.4.2 Air Emission Controls

The proposed control technologies and associated emission rates for the regulated pollutants emitted from each of the primary sources on the site are tabulated in Table 3.4.2-1. A detailed BACT analysis, including an economic evaluation, was performed and is presented in Appendix 10.1.5, Section 4.0.

3.4.3 Best Available Control Technology (BACT)

This BACT discussion provides a preliminary "worst case" scenario of generation alternatives and the corresponding analysis of the air quality control alternatives for controlling pollutant emissions from the Hines Energy Complex

Under the federal Clean Air Act (CAA), BACT represents an emission limitation based on the maximum degree of pollutant reduction determined on a case-by-case basis considering technical, economic, energy, and environmental considerations. However, BACT cannot be less stringent than the emission limits established by the applicable New Source Performance Standards (NSPS) for stationary sources.

This BACT analysis follows the general requirements of the EPA's draft "top down" BACT guidance document, which requires that the BACT analysis start by assuming the use of the most stringent control alternative. Other less efficient emission control technologies are evaluated if this most stringent alternative is determined to be technologically infeasible or unreasonable considering economic, energy, and environmental factors.

As discussed in Section 3.4.1, the following regulated pollutants exceed the PSD significant emission rate thresholds and are, therefore, subject to PSD review:

- Carbon Monoxide (CO)
- Nitrogen oxides (NO_x)
- Sulfur dioxide (SO_2)
- Particulate (PM and PM_{10})
- Volatile organic compounds (VOC)
- Sulfuric acid mist (H_2SO_4)

Consequently, the BACT analysis for Power Block 2 presented in Appendix 10.1.5, Section 4.0, addresses the control of emissions of these pollutants. Also included are discussions of the effects of the BACT systems selected on the emissions of other regulated pollutants.

3.4.4 Design Data for Control Equipment

Control equipment design information is included as part of the BACT analyses discussed in Section 3.4.3. Pollutant emission rates and specific control technologies are summarized in Table 3.4.2-1.

The CC units will be designed to minimize NO_x formation by the use of combustion controls, low NO_x burners and selective catalytic reduction (SCR). Water will be injected into the combustion zones to lower combustion temperatures and limit NO_x formation during oil firing. The annual emissions of other regulated pollutants which might be emitted from the CC units in quantities subject to PSD review (SO_2, CO, particulate matter [PM_{10}], VOCs and H_2SO_4,) will be controlled by limiting the amount of fuel oil burned annually, limiting the sulfur content of the fuel, efficient operation of the CC facility, and utilizing good combustion control of the units.

3.4.5 Design Philosophy

Air quality control system designs are determined based on conservative design parameters. The parameters are developed to ensure that the air quality control system performance meets or exceeds the requirements specified by state and federal regulatory NSPS. Critical equipment that may affect the overall system reliability will have spare units in place to assure continuous operation. In addition, the application of top-down BACT (i.e., the evaluation of technical/engineering, economic, and environmental considerations) is used to determine appropriate air emission control technologies. The BACT analysis, discussed in Section 3.4.3, results in the selection of the best air quality control system for the particular site.

TABLE 3.4.1-1
MAXIMUM POTENTIAL ANNUAL EMISSIONS (500 MW)
AND PSD SIGNIFICANCE VALUES

Pollutant	Emissions (TPY) *	PSD Significant Emission Rate (TPY)	PSD Review Required (Yes/No)
Carbon Monoxide	756	100	Yes
Nitrogen Oxides	499	40	Yes
Sulfur Dioxide	93	40	Yes
Particulate Matter (PM_{10})	98	15	Yes
Total Suspended Particulates (TSP)	98	25	Yes
Volatile Organic Compounds	143	40	Yes
Lead	0.016	0.6	No
Sulfuric Acid Mist	9.5	7	Yes

* TPY = Tons per year for the proposed Power Block 2 project.

Basis: Full-load operation; 100% capacity factor; 59°F; 1,000 total hours on fuel oil between the two CTs; 8,260 hours per CT on gas.

Table 3.4.2-1.
Summary of Proposed BACT Control Technologies and Emission Limits

Pollutant		Control Technology	Proposed BACT Emission Limits (ppmvd)[a]	(lb/hr)
Siemens-Westinghouse 501FD CTs				
PM/PM_{10}	(gas)	Natural gas and limited use of low-sulfur	10%[b]	NA
	(oil)	fuel oil	20%[b]	NA
		Efficient and complete combustion		
CO	(gas)	Efficient and complete combustion	25	86
	(oil)		30	92
VOC	(gas)	Efficient and complete combustion	8	16
	(oil)		11	22
NO_x	(gas)	Use of dry low-NO_x burners and SCR	6	42[c]
	(oil)	Water injection	42	303[c,d]
$S0_2/H_2SO_4$ mist		Natural gas and limited use of low-sulfur fuel oil	NA	NA

[a] - the ppmvd values are the computational basis for the lb/hr numbers; the lb/hr numbers are the actual emission limitations.

[b] - percent opacity, a surrogate for PM limits

[c] - based on a 24 hr block average as measured by CEMS

[d] - based on a FBN content of 0.015% or less; the emission limit for NOx is adjusted for higher FBN contents up to a max of 0.030%

3.5 PROJECT WATER USE

At ultimate site buildout (3000 MW), the Hines Energy Complex site will require a total of 32 MGD of water from a combination of sources, including reclaimed water, internal reuse of wastewater, water cropping, offsite non-potable water sources and ground water. Water will be needed for makeup requirements of the Cooling Pond, personal and sanitary needs of employees and visitors, and various plant processes associated with 3000 MW of power generation and ancillary facilities. With the exception of quantities needed to support potable and sanitary needs of the proposed facility, ground water will not be used during the initial phase of site development (940 MW), except upon approval of SWFWMD in the case of an emergency. (SWFWMD's approval of potable and domestic water use, consistent with conditions XV and XVI of the 1994 Certification, are included in Appendix 10.4.7.)

FPC will install and operate units at the Hines Energy Complex site incrementally, to match growth demand through ultimate site capacity. The site is a zero surface water discharge for industrial wastewaters. The key feature of this design is the Cooling Pond, which will serve not only as the heat dissipation sink but also as a water storage impoundment. The initial phase of generation (940 MW) does not require full buildout of the Cooling Pond area. Currently, a 722-acre Cooling Pond is in place and adequate to support Power Blocks 1 and 2. For the initial 940 MW of generating capacity, FPC has agreed that makeup water will come from onsite water cropping, reclaimed water or other alternative water supplies, in lieu of ground water. Ground water may only be used for the first 940 MW if approved by SWFWMD, in case of an emergency. See 1994 Certification XXVI.A.14.b.i.

As required by Conditions of Certification XXVI.A.15 and XXX.21, FPC evaluated the availability of alternative water resources (i.e., reclaimed water) for this SCA. A

summary of potential reclaimed water sources located in Polk County is provided in Table 3.5-1. The locations of these potential sources are shown on Figure 3.5-1.

An evaluation of those facilities which might potentially provide reclaimed water of sufficient quantity and quality for the Cooling Pond follows:

- The City of Bartow Wastewater Treatment Facility has a permitted design capacity of 4.0 MGD. An agreement between FPC and Bartow allows FPC to receive up to 3.5 MGD of reclaimed water, with a provision which allows the City of Bartow to use up to .6 MGD for irrigation of its own facilities, if needed. Presently, measured averaged daily flows to the Hines Energy Complex from Bartow are only 1.5 MGD to date. Monthly Operating Reports (MORs) filed by Bartow with DEP indicate that average daily flows from its Wastewater Treatment Facility are 2.0 MGD. This level of total flows indicates that additional reclaimed water is not available for FPC at this time.

- The City of Lakeland W. Carl Dicks Wastewater Treatment Facility, located approximately 15 miles from the Hines Energy Complex, currently has a permitted design capacity of 10.8 MGD. DEP MOR data indicate that average daily flows of 9.8 MGD are currently reused by the City of Lakeland. Flows of sufficient quantity are therefore not available for FPC at this time.

- The City of Lakeland Northside reclaimed effluent outfall, which is located approximately 8 miles from the Hines Energy Complex, has a permitted design capacity of 6.25 MGD. DEP MOR data indicate that average daily flows are 3.5 MGD, with wetland discharge and/or reuse by Lakeland. FPC has initiated discussions with the city of Lakeland for the use of excess reclaimed water, potentially for use to support future generation. Typical costs for pipeline

construction are approximately $500,000 - $1 million/mile. Negotiations to secure an agreement between Lakeland and FPC are ongoing.

- The City of Winter Haven #3 Wastewater Treatment Facility, located approximately 20 miles from the Hines Energy Complex, has a permitted design capacity of 5.0 MGD with discharge via overland flow. DEP MOR data indicate that average daily flows are approximately 3.1 MGD. Although quantities of reclaimed effluent are potentially available, the distance to the source of the reclaimed effluent discharge renders this source uneconomical.

No other wastewater treatment facilities in the vicinity of the Hines Energy Complex have adequate capacity to generate reclaimed effluent sufficient to justify economic feasibility, when compared to the availability of adequate on-site water supplies from water cropping.

Additional potential water sources, such as deeper aquifer groundwater, were not considered at this time due to the 1994 Certification ruling that groundwater is not to be used generally as Cooling Pond makeup for the first 940 MW and due to the adequacy of water cropping to provide water for makeup to the Cooling Pond.

The primary water uses for Power Blocks 1 and 2 can be categorized under the following four major subheadings which are discussed individually in subsections 3.5.1 through 3.5.4, respectively:

- Heat Dissipation
- Domestic/Sanitary Wastewater
- Potable Water System
- Process Water System

Based on current data, total actual water needs for the operation of Power Blocks 1 and 2 will be approximately 7.9 MGD. An agreement with the city of Bartow allows FPC to receive up to 3.5 MGD of reclaimed water, although measured average daily flows are only 1.5 MGD to date. Additional sources currently include direct precipitation in the Cooling Pond (2.9 MGD), runoff from the Plant Island stormwater retention pond SA-12N (0.67 MGD), reuse of process water, and as described in Section 3.8, approximately 2.79 MGD will be derived from water cropping. For reference, the current water balance for Power Block 1 is included on Figure 3.5-2. Figure 3.5-3 indicates the detailed water balance which illustrates the annual average and peak flows for water uses for Power Blocks 1 and 2.

3.5.1 Heat Dissipation System

As described above, the key feature of the plant water and wastewater systems will be the Cooling Pond system. Following is a description of that system.

3.5.1.1 System Design

HEAT DISSIPATED

Based on data from Power Block 1, the estimated heat rejection rate for Power Blocks 1 and 2 (nominal 1000 MW) is 2,550 mmBtus/hr.

The existing Cooling Pond will provide sufficient heat sink capacity for Power Blocks 1 and 2 at the Hines Energy Complex.

SIZE AND LOCATION

The existing 722-acre Cooling Pond was constructed within mine area N-16W as shown on Figure 3.5.1-1. The existing Cooling Pond is capable of supporting the generating capacities of Power Blocks 1 and 2. The Cooling Pond was constructed during initial site development and the As-Built drawings, dated November 1, 1996, were submitted to the appropriate agencies following completion of construction. The perimeter impoundment dam crest elevations are constructed to elevation 172 ft NGVD and the interior Cooling Pond phasing and dividing dams are constructed to a crest elevation of 167 feet NGVD. The interior phasing dams were constructed to create the initial phase 722-acre Cooling Pond, which falls entirely within the larger 1200-acre N-16 mine area.

RATE OF EVAPORATION OF WATER

Total evaporation from the Cooling Pond includes both natural and forced evaporation. Forced evaporation is that extra evaporation above and beyond natural evaporation that is caused by the heat rejected from the plant. The total annual average evaporation rate from the Cooling Pond is estimated to be 6,484,000 gallons per day for Power Blocks 1 and 2. This evaporation rate is included in Figure 3.5-3, which illustrates the water balance for both power blocks.

DESIGN OF DAMS

Design of the Cooling Pond dams was addressed in the 1992 SCA. As-Built drawings of completed and accepted designs are currently on file with DEP. No new Cooling Pond dam construction is proposed for the Power Block 2 construction.

CONCEPTUAL DESIGN/LOCATION OF INTAKE STRUCTURES

The Hines Energy Complex will have no intake structures within any waters of the state or U.S. A new cooling water intake structure for Power Block 2 will be installed adjacent to Power Block 1's existing cooling water intake structure within the Cooling Pond bank. Power Blocks 1 and 2 each will have two vertical circulating water pumps. Design intake velocity will be a maximum of 2 feet per second.

MAXIMUM PREDICTED DISCHARGE TEMPERATURE AT POD

The project does not have a Point of Discharge (POD) to the waters of the state or U.S.

TRAVEL TIME FROM CONDENSER INLET TO POD

The project does not have a POD to the waters of the state or U.S.

3.5.1.2 Source of Cooling Water

The source of plant cooling water for Power Blocks 1 and 2 will be the existing Cooling Pond. The Cooling Pond level will be maintained by using makeup from the following sources:

- Reclaimed treated municipal effluent
- Recycle of blowdown
- Treated low volume wastewaters
- Water cropping (as needed)

Water cropping is defined as the capture and storage of rainfall runoff to create an alternative water supply as authorized in the 1994 Certification. Water crop water will be added as required to maintain an adequate level within the Cooling Pond. The water crop system is discussed in detail in Section 3.8.

3.5.1.3 Dilution System

Power Blocks 1 and 2 have no dilution systems.

3.5.1.4 Blowdown, Screened Organisms, and Trash Disposal

The project does not have a blowdown system with an off-site discharge. Disposal of debris and trash from coarse bar screens at the circulating water pumps intake is described in Section 3.7. There are no off-site makeup water pumps.

3.5.1.5 Injection Wells

Like Power Block 1, Power Block 2 does not have any injection wells for waste disposal.

3.5.1.6 References

Florida Power Corporation. 1992. Polk County Site. Site Certification Application.

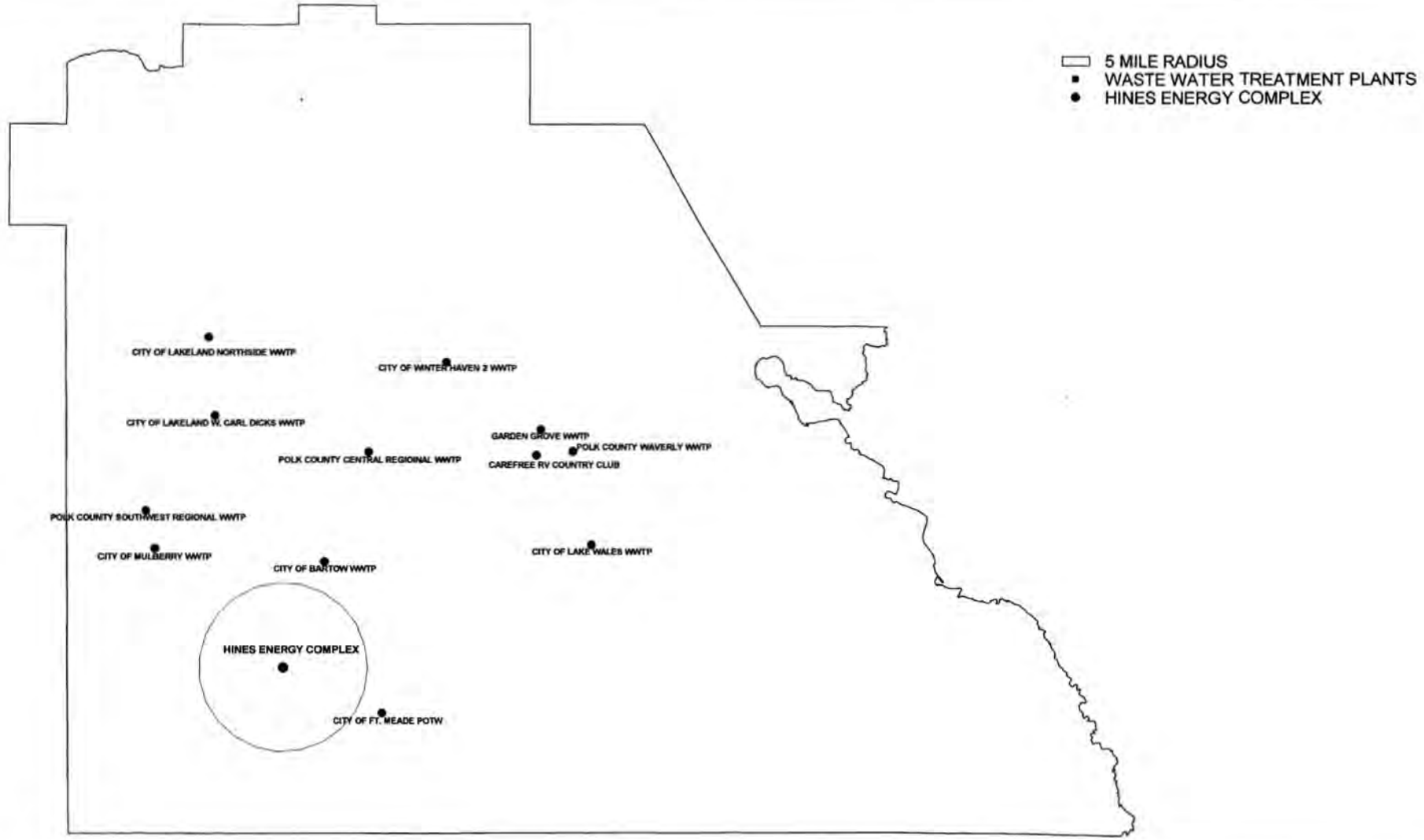
TABLE 3.5-1

POLK COUNTY RECLAIMED WATER SOURCES

Reclaimed Water Source WWTP	Treatment Level	Permitted Design Capacity (MDG)	Main Effluent Disposal Method	Average Daily Flow (MGD)	BOD (mg/l)	TSS (mg/l)	Nitrate (mg/l)	Total Phosphorus (mg/l)
City of Bartow	Secondary	4.00	Reuse by Florida Power Corporation	2.00	2.0	1.0	1.4	6.9
Carefree RV Country Club	Modified AWT	0.75	Irrigation	0.04	2.2	1.7	5.5	7.5
City of Ft. Meade	Secondary	1.00	Reuse by Cargill Mine	0.50	1.6	11.4	10.4 *	2.2
Garden Grove	AWT	2.00	Irrigation	0.80	2.5	1.6	8.2	**
City of Lakeland W. Carl Dicks	Secondary	10.80	Reuse by Power Plant	9.80	7.2	6.6	4.2	4.6
City of Lakeland Northside	Secondary	6.25	Wetland App. & Reuse by Power Plant	3.50	5.3	2.9	7.9	2.3
City of Lake Wales	Modified AWT	1.90	Discharge to Peace Creek	1.20	3.6	1.6	4.9	**
City of Mulberry	AWT	0.75	Discharge to Alafia River	0.50	2.3	2.2	3.0 *	**
Polk County CRWWTF	Secondary	1.10	P/E Ponds	0.60	2.7	7.4	3.4	**
Polk County SWRWWTF	Modified AWT	2.00	Irrigation	1.00	1.7	1.8	2.6	**
Polk County Waverly	Secondary	0.13	P/E Ponds	0.04	6.5	5.9	0.6	**
City of Winterhaven #3	Secondary	5.00	Overland Flow	3.10	5.3	18.4	3.7 *	3.8

* Reported as Total Nitrogen

** Data not reported

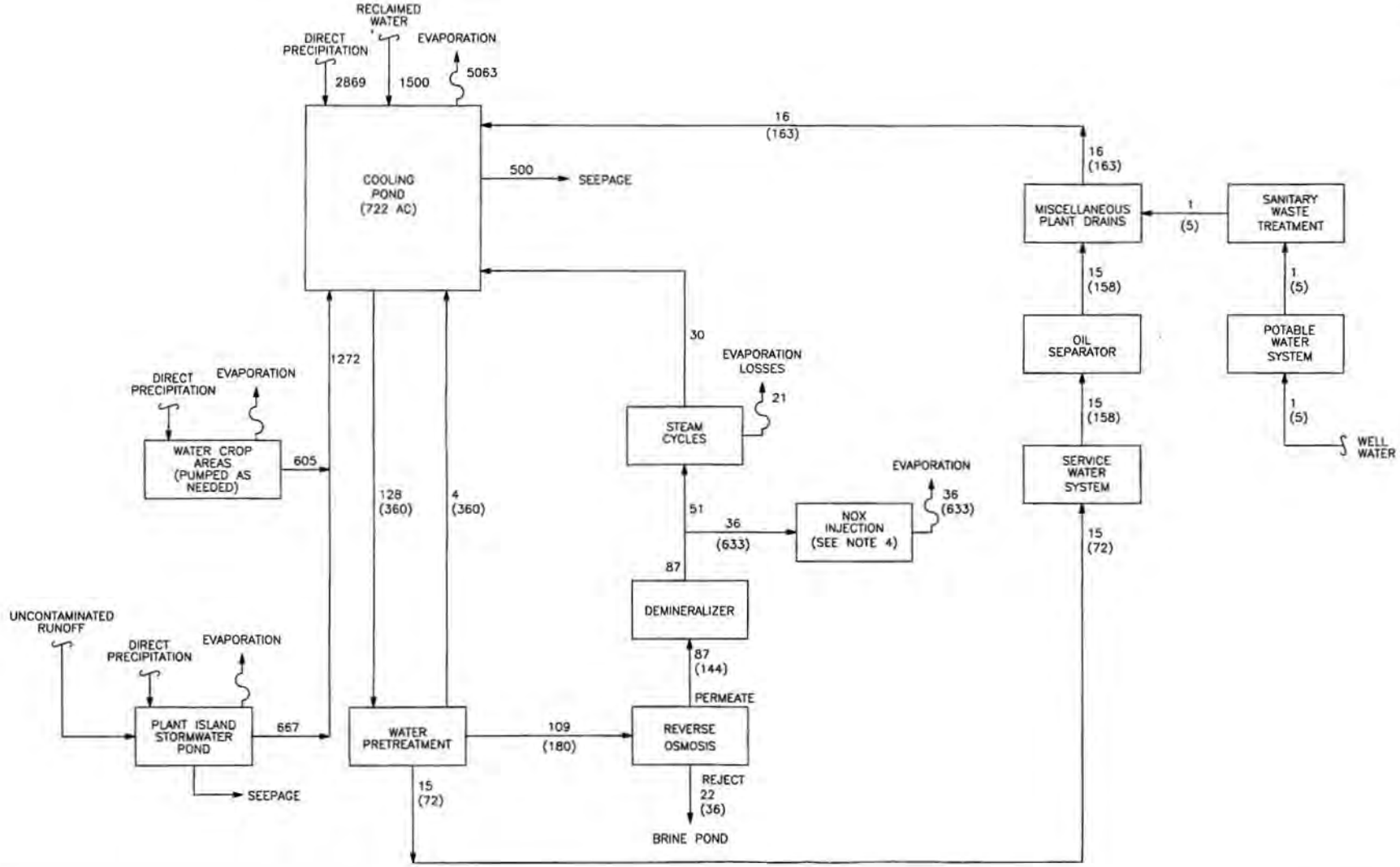


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FIGURE 3.5 -1
POLK COUNTY WASTE WATER TREATMENT PLANT LOCATIONS

NOTES:

1. ALL FLOWS IN 1000'S OF GAL/DAY.
2. BASED ON 85% LOAD AND ANNUAL A PRECIPITATION AND EVAPORATION.
3. 500 MW NOMINAL, BLOCK 1.
4. BASED ON TWO COMBUSTION TURBINE OPERATING 500 HOURS PER YEAR O NORMALLY NO FLOW.
5. PEAK INSTANTANEOUS FLOWS BASED EQUIPMENT CAPABILITY ARE INCLUDED PARENTHESIS. PEAK FLOWS DO NOT NECESSARILY BALANCE.



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FIGURE 3.5-2
WATER BALANCE DIAGRAM – POWER BLOCK 1

NOTES:

1. ALL FLOWS IN 1000'S OF GAL/DAY.
2. BASED ON 85% LOAD AND ANNUAL A PRECIPITATION AND EVAPORATION.
3. 1000 MW NOMINAL, BLOCK 1 AND 2
4. BASED ON FOUR COMBUSTION TURBI OPERATING 500 HOURS PER YEAR O NORMALLY NO FLOW.
5. PEAK INSTANTANEOUS FLOWS BASED EQUIPMENT CAPABILITY ARE INCLUDE PARENTHESIS. PEAK FLOWS DO NO NECESSARILY BALANCE.

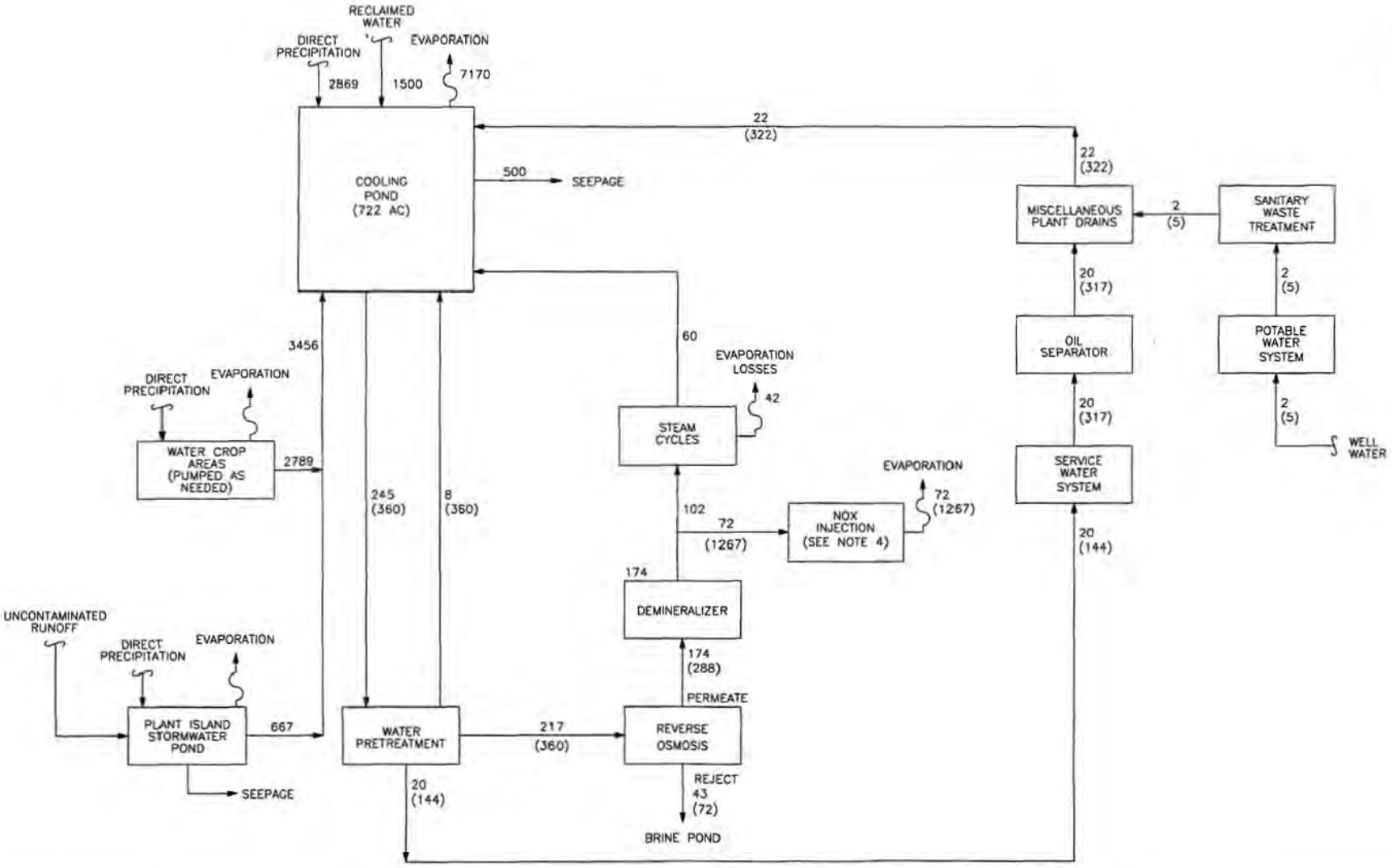
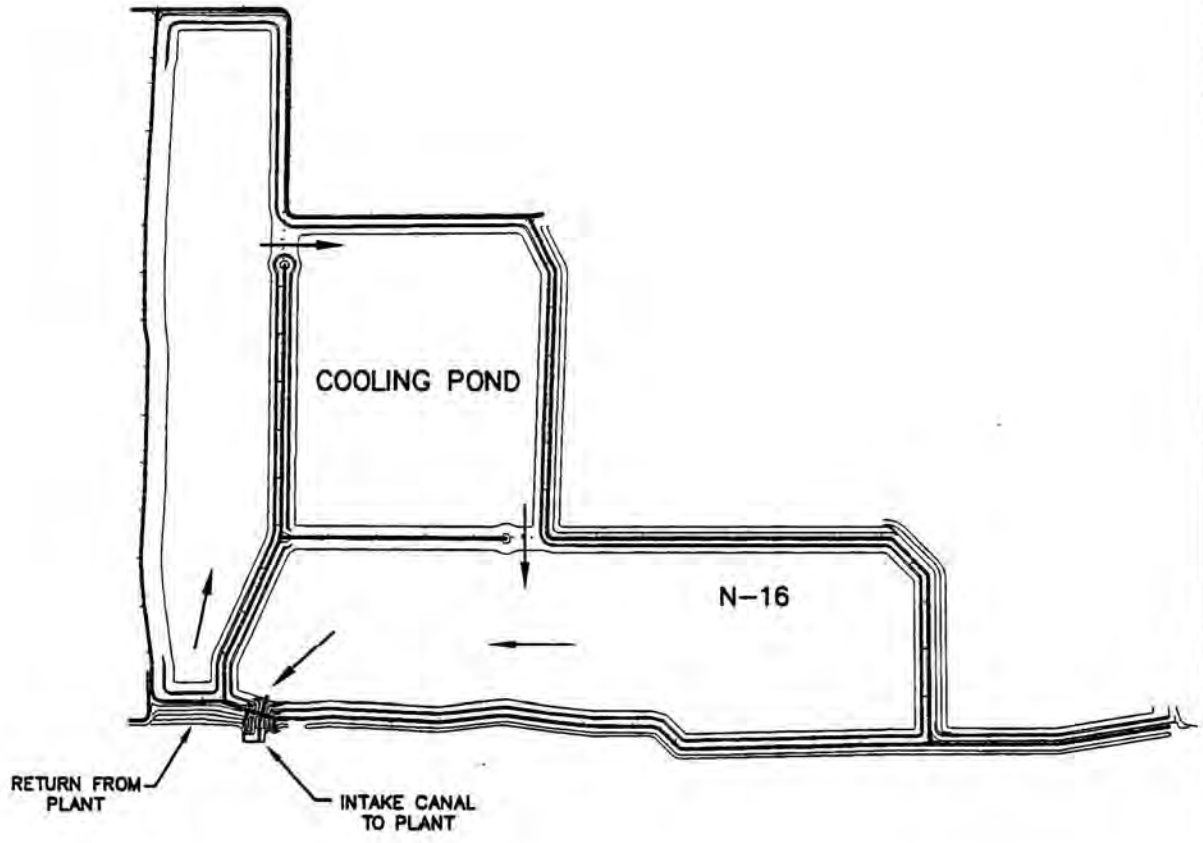


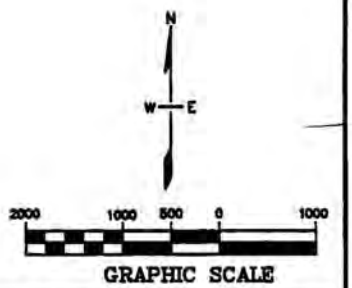
FIGURE 3.5-3
WATER BALANCE DIAGRAM – POWER BLOCKS 1 AND 2



LEGEND

COOLING POND BOUNDARY

DIRECTION OF WATER FLOW



SOURCE: DAMES & MOORE, 1998

Florida Power CORPORATION

Hines Energy Complex

FIGURE 3.5.1-1
COOLING POND CONFIGURATION

c:\dwg\fpcsca\coolpond.dwg

c:\dwg\fpcsca\borders.dwg

3.5.2 Domestic/Sanitary Wastewater

Plant domestic/sanitary wastewater is generated by showers, lavatories, sinks, toilets, urinals, and drinking fountains. These wastewaters are collected and treated in on-site domestic/sanitary waste treatment facilities. The effluent from the sanitary waste treatment system is used as makeup water for the Cooling Pond.

A treatment plant capacity of 10,000 gallons per day (gpd) has been permitted to serve the permanent population to accommodate full build out. The estimated peak sanitary waste flows for Power Blocks 1 and 2 is expected to occur with 25 permanent personnel and 50 construction management employees. At 35 gpd per person, average flows will be approximately 2,625 gpd.

Permit #FLA017408-001-DW3P authorizes Hines Energy Complex to operate a 0.010 MGD (million gallons per day) Type III domestic waste water treatment plant consisting of aeration, secondary clarification and chlorination. Chlorinated effluent is directed to the 722-acre Cooling Pond. (See Appendix 10.4.8 for Permit #FLA017408-001-DW3P).

3.5.3 Potable Water Systems

Potable water uses at the plant will include water for drinking, washing, showers, urinals, and toilets. Potable water for the plant is provided from the on-site service water system, supplied by well water. The well water is being treated using lime softening pretreatment and filtration in the service water pretreatment system, and chlorination.

The average potable water demand is estimated to be 19,000 gpd for plant operations at ultimate site capacity (3000 MW). The peak demand for Power Blocks 1 and 2 is expected to occur with 25 permanent personnel plus 250 construction workers on-site. At 35 gpd per person for plant personnel and 20 gpd per construction worker, peak potable water demand is estimated to be approximately 5,875 gpd.

PWS# 6535433 authorizes potable water for the Hines Energy Complex. The system is a non-transient non-community water system. The permitted capacity of the plant is 0.005 MGD, adequate for Power Blocks 1 and 2. (See Appendix 10.4.9 for PWS# 6535433).

3.5.4 Process Water Systems

The major process water uses for Power Blocks 1 and 2 are as follows:

DEMINERALIZED WATER. Demineralized water is required for use as makeup to the steam-condensate-feedwater cycle associated with the heat recovery steam generators in Power Blocks 1 and 2. The makeup is required to replace cycle losses and boiler blowdown. In addition, demineralized water will be used when firing the combustion turbines on fuel oil to control NO_x emissions, as well as for demineralizer regeneration. Demineralized water storage for Power Block 1 consists of a 2,200,000-gallon storage tank. A similar sized storage tank will be required for Power Block 2.

Demineralized water treatment consists of reverse osmosis (RO) equipment and mobile ion exchange demineralizer units which are regenerated off-site. The source of demineralized water is the Cooling Pond water which is filtered and pumped as needed through the RO unit. RO permeate is transferred to the demineralizer inlet. As the water passes through the RO and demineralizer exchangers, it will be progressively demineralized until the effluent contains essentially no dissolved solids. RO brine reject is routed to the existing on-site Brine Pond. The mobile demineralizer vessels are regenerated off-site, therefore no regeneration wastes require on-site neutralization and disposal. The existing treatment equipment for Power Block 1 is sized to provide 100 gpm of demineralized water. Additional equipment of a similar size will be required for Power Block 2.

SERVICE WATER. Service water is provided throughout the plant for washdown purposes and for pump and equipment seal water and flushing as necessary. Service water may also be used to supplement the fire water supply described below. Service water is obtained from the Cooling Pond and is filtered and chlorinated before storage.

The existing service water storage tank provides 26,000 gallons of storage for Power Block 1. An additional 26,000-gallon service water storage tank will be installed to serve the needs of Power Block 2.

FIRE WATER. A dedicated supply of water from the existing Cooling Pond is treated by filtration and provided to the existing service/fire water storage tank dedicated for Power Blocks 1 and 2. The tank provides a dedicated supply of 244,000 gallons of fire protection water to the electric driven fire pumps for Power Blocks 1 and 2. Backup fire water is supplied from the Cooling Pond via diesel-driven fire pumps located at the cooling water intake structure. The fire water is distributed throughout the site by means of an underground piping loop which serves fire hydrants, hose racks and reels, and automatic suppression systems.

PROCESS WASTEWATER. Process wastewater potentially contaminated with oil is treated by the existing oil/water separator prior to being recycled to the Cooling Pond. The existing separator is rated for 2,000 gpm and will serve both Power Blocks 1 and 2.

A summary of the existing annual average and peak flows for Power Block 1 is presented in Table 3.5.4-1. A summary of the anticipated annual average and peak process water flows for both Power Blocks 1 and 2 is presented in Table 3.5.4-2.

Table 3.5.4-1
Process Water Demand
Power Block 1

Process Stream	Flow (1,000 gpd)	Average Peak
RO Unit Inlet	109	180
Service Water System	15	72
Potable Water System	1	5

Table 3.5.4-2
Process Water Demand
Power Blocks 1 and 2

Process Stream	Flow (1,000 gpd)	Average Peak
RO Unit Inlet	217	360
Service Water System	20	144
Potable Water System	2	5

3.6 CHEMICAL AND BIOCIDE WASTE

The Hines Energy Complex is a zero surface water discharge facility with respect to the National Pollutant Discharge Elimination System (NPDES) program for industrial wastewaters. The key feature of this design is the Cooling Pond, which will serve not only as the heat dissipation device but also as a treated wastewater collection and reuse storage device. All plant wastewater will be treated for reuse or evaporated as described in Section 3.5.1. The water balance in Figure 3.5-3 illustrates the wastewater flows associated with Power Blocks 1 and 2.

The following subsections address the potential sources for chemical and biocide wastewaters.

3.6.1 Cooling Pond Circulating Water Treatment and Other Biocide Treatment

Intermittent shock biocide treatment will be used to prevent biofouling of the circulating water system. An oxidizing biocide will be fed within the intake structure to the circulating water pump suctions. The feed rate will be based on obtaining a total residual oxidant at the condenser outlets of 0.5 mg/l. The frequency and duration of each treatment cycle will be adjusted seasonally to provide the necessary biofouling control to keep the condensers clean. Total residual oxidant levels in the Cooling Pond are expected to be, on average, below the limits of detectability because of the large volume of water in the Cooling Pond, the biocide demand, and the short duration of treatment.

3.6.2 Process Water Treatment

All process water is supplied by the Cooling Pond. This water is filtered before use or storage. The filter backwash is returned to the Cooling Pond.

Demineralized water is produced by treatment through reverse osmosis and an ion-exchange process. The reverse osmosis system treats process water to produce a low dissolved solids permeate suitable for treatment by an ion-exchange process. Between 70 and 80 percent of the Cooling Pond water entering the reverse osmosis system will be recovered as permeate. The remaining 20 to 30 percent (reject) will leave the system with roughly three to four times the inlet dissolved solids concentration and will be routed to the Brine Pond for evaporation. Mobile ion-exchange vessels, which are regenerated off-site, perform final demineralization, therefore no demineralizer regeneration wastes are disposed of on-site.

3.6.3 Potable Water Treatment

Well water will be chlorinated for potable uses as described in Section 3.5.3.

3.6.4 Sanitary Waste Treatment

The on-site sanitary waste treatment system is described in Section 3.5.2. The collected treatment system solids will be periodically removed from the sludge holding tank and disposed as described in Section 3.7.

3.6.5 Steam Cycle Chemical Feed

The steam cycle will be treated with an oxygen scavenger, such as a dilute hydrazine solution, for dissolved oxygen control and with an amine, such as ammonia solution, for pH control. Hydrazine will break down to ammonia at the system operating temperature. Di- and tri-sodium phosphate solutions will be fed to control scaling and corrosion in the boiler drums. The phosphate will react with calcium hardness in the steam generators to form a non-adherent precipitate, which is removed with boiler blowdown. Boiler blowdown will be high purity water with small amounts of suspended solids and sodium phosphate, and will be routed to the Cooling Pond for reuse.

3.6.6 Chemical Cleaning Wastes

Steam generators and boiler steam cycle components will be chemically cleaned initially during commissioning, and periodically during the life of the plant. Chemicals used for these cleanings will not be permanently stored on-site and will be administered utilizing a temporary system. Typical cleaning chemicals include the following:

Di- and tri-sodium phosphate
Chelates, such as ammoniated EDTA and citric acid
Nonfoaming wetting agents

As authorized by Condition of Certification XVII.L. (modified August 1997), chemical cleaning wastes resulting from the acid cleaning wash and successive rinses may either be collected and characterized individually to determine if they are hazardous wastes or commingled prior to characterization to determine if the mixture is a hazardous waste. Based on the analytical results, the wastes will be handled in accordance with applicable

state and federal rules and Conditions of Certification, either on-site in the Brine Pond, on-site in the Cooling Pond, or off-site, as appropriate. Chemical boiler cleaning wastes will be routed to the neutralization basin or to neutralization tanks for hazardous waste characterization. The mixture will then be neutralized and the residual wastes disposed of appropriately. Any residual non-hazardous wastewaters resulting from on-site treatment may either be recycled to the Cooling Pond, disposed of in the Brine Pond or shipped off-site for disposal. Any residual hazardous waste will be transported off-site by a licensed hazardous waste disposal contractor for appropriate treatment and disposal at a licensed hazardous waste facility.

If hazardous wastes are treated on-site in tanks or containers regulated under 40 CFR 262.34, FPC will comply with applicable waste analysis plan and notification requirements under 40 CFR 268.7 (a)(4) and 268.9(d). Boiler cleaning wastes treated in a wastewater treatment unit as defined in 40 CFR 260.10 are not subject to these requirements.

3.6.7 Oil Spill Prevention

Oil separators will be provided for separation of oil and grease from contaminated wastewater. Treated wastewater effluent is discharged to the Cooling Pond. Any accumulated oil will be removed from the separator and recycled or disposed off-site by a licensed waste management contractor. Oil separators will be sized to contain the volume of oil produced by the total failure of the single largest source serviced by that separator.

Secondary containment is provided for site facilities containing significant amounts of oil. In the event of a spill, oil will be contained within the secondary containment area and removed for recycling or disposal by a licensed contractor. Drains within the containment

area may be directed to the central oil/water separator and will normally be closed. After visual inspection of runoff within the containment area to ensure that no significant release of oil has occurred, the valves are opened to drain collected runoff to the oil/water separator.

3.6.8 Reference

Florida Power Corporation. 1992. Polk County Site. Site Certification Application.

Siting Board. Final Order Modification Conditions of Certification. In Re: Application for Plant Certification of Florida Power Corporation Polk County Site. DEP Case No. PA 92-33B.

3.7 SOLID AND HAZARDOUS WASTES AND BY-PRODUCTS

The solid and hazardous wastes to be generated at the Hines Energy Complex and their associated methods of treatment, handling, storage, and disposal are discussed in the following sections.

3.7.1. Solid Wastes

General solid wastes such as grass clippings, other yard wastes, and circulating water system screenings, will be recycled to the extent possible. Sanitary waste solids are disposed offsite at a licensed facility. Remaining wastes will be transported off-site to a licensed facility for disposal.

Filter backwash solids from service water pretreatment will be returned to the Cooling Pond.

The use of on-site clay settling areas for solid waste disposal as authorized by the 1994 Certification represents a major advantage for this particular power plant site. After ordinary mining reclamation, clays within the settling areas will form an effectively impermeable liner. No additional development of onsite solid waste disposal facilities are proposed for Power Block 2.

FPC has a corporate-wide commitment to waste minimization. This commitment includes extensive recycling of waste products, reduction at the source, and elimination of most hazardous product usage. This corporate commitment will be implemented on a continuing basis at the site.

3.7.2 Hazardous Wastes

Hazardous wastes will be treated and disposed as discussed in Section 3.6.6.

3.7.3 By-Products

As authorized by the 1994 Certification, FPC currently utilizes the existing clay settling area (SA-9) for brine disposal. No additional brine disposal area is needed to support Power Block 2.

3.7.4. References

Florida Power Corporation. 1992. Polk County Site. Site Certification Application.

Siting Board. 1994. Final Order Approving Certification. In Re: Application for Power Plant Certification of Florida Power Corporation. Polk County Site PA 92-33. DOAH Case No. 92-5308 EPP.

3.8 ON-SITE DRAINAGE SYSTEM

3.8.1 Introduction

Consistent with the concept approved in the 1994 Certification, stormwater runoff will be managed in all areas within the Hines Energy Complex site. These areas will be managed as either closed basin systems, stormwater management systems, externally drained watershed areas, or water crop areas. Water cropping is defined as the capture and storage of runoff in designated areas to create an alternative water supply as authorized in the 1994 Certification. Figure 3.8.1-1 identifies component areas within the site.

The following sections describe in greater detail the various components of the on-site drainage systems.

3.8.2 Closed Basin Systems

The Brine Pond (SA-9), and the Cooling Pond (N-16W) will be managed as closed basins. These systems are designed to retain runoff up to and including the Probable Maximum Precipitation (PMP) runoff volume. The PMP is defined as the rainfall volume that represents an envelopment of maximized intensity-duration values obtained from all types of storms which, judged by present knowledge, appears to be the limit of nature's capabilities. Information concerning PMP volumes is provided in Design of Small Dams, Bureau of Reclamation, U.S. Dept. of the Interior, 2nd Edition, 1973. Based upon this source, the PMP is estimated to be about 31 inches within 6 hours for the Hines Energy Complex site.

Each of the closed basin systems within the Hines Energy Complex site were approved in the 1994 Certification and have been developed sufficiently to support Power Blocks 1 and 2. These system are as follows:

- SA-9 has been developed as a Brine Pond. As authorized by the 1994 Certification, runoff generated within this area is retained for storms up to and including the PMP event.

- N-16W has been developed as the Cooling Pond. As authorized by the 1994 Certification, water levels within the Cooling Pond are controlled through the addition of makeup water as necessary. There will be no discharge from this facility for storms up to and including the PMP event.

3.8.3 Stormwater Management Systems

The Plant Island (SA-11, SA-12N, and SA-13) is served by a stormwater management system. As authorized by the 1994 Certification, runoff in this area is collected and conveyed to a stormwater detention pond located in SA-12N. Water within the detention pond is presently pumped to the Cooling Pond as necessary. The normal pool elevation of the detention pond is 156 ft-NGVD. Under normal conditions, the Plant Island area has adequate storage volume to retain the entire runoff volume from a PMP event.

3.8.4 Watershed Areas

As authorized by the 1994 Certification, several areas within the Hines Energy Complex are designed to drain to adjacent external drainage systems. This drainage is

designed to enhance flows to the McCullough Creek and Camp Branch drainages. These areas include SA-10, SA-12S, N-11A, N-13, N-9B, and Tiger Bay.

The McCullough Creek drainage enhancement project is composed of SA-10 and SA-12S with an interconnecting drainage conveyance. This system is designed to collect and convey runoff generated by storms up to, and including, the 25-year, 24-hour storm event. Runoff from these areas is detained in SA-12S and released slowly over time to provide baseflow to McCullough Creek.

Runoff from N-11A, N-13, N-9B, and Tiger Bay will ultimately be discharged offsite to enhance drainage in Camp Branch. Presently under reclamation, N-11A, N-13, and N-9B act as temporary water crop catchments which collect and convey runoff. Once reclamation is complete, runoff from these areas will be conveyed instead to Camp Branch.

3.8.5 Water Crop System

As part of the Power Block 2 development, a water crop system will be constructed to collect, convey, and temporarily store runoff. The proposed water crop system will utilize site lands to provide necessary stormwater production rates to supplement other sources of alternative water supply. Water cropping at the site will be accomplished in accordance with the water crop management-operating plan as described in Section 3.8.6.

The water crop system design will focus on long-term management of runoff and rely on temporary storage of excess runoff to supply adequate flows when required. The water crop system will be designed to capture and manage runoff from the contributing areas under conditions of normal precipitation as well as storm conditions. Under

conditions of normal precipitation, relatively small runoff volumes will be captured and stored within the system. For storm conditions, the system will be designed to capture runoff volume up to the required detention volume, and to release the excess volume to an adjacent drainage system. Water stored within the system will be conveyed as necessary to other locations within the Hines Energy Complex. The primary use of water crop is as makeup for the Cooling Pond. When excess water is available, water will be released to the Six Mile Creek drainage to enhance flows to the Peace River as suggested by the Siting Board in the 1994 Certification.

3.8.5.1 Water Crop System Components

The water crop system consists of a number of components including runoff collection (catchments), conveyance, and storage facilities. Catchments are those areas from which runoff will be captured. Conveyance facilities will include gravity control structures, pumps, culverts, pipes, ditches, and berms. Storage facilities are those areas where stormwater will be temporarily stored for later use. The following table lists areas within the Hines Energy Complex that will be used for water cropping, together with their present and proposed uses. These areas are illustrated on Figure 3.8.1-1.

TABLE 3.8.5-1

WATER CROP SYSTEM COMPONENT AREAS

Area Designation	Present Use	Proposed Use
N-15	Under Reclamation	Catchment/Storage
N-11B	Under Reclamation	Catchment/Storage
N-11C	Idle/Buffer Area	Catchment/Storage
SA-8	Idle	Catchment/Storage
SA-11	Plant Island	Catchment
SA-12N	Plant Island (Stormwater Detention)	Catchment
SA-13	Plant Island	Catchment
N-11A	Buffer Area (Under Reclamation)	Catchment (temporary)
N-13	Buffer Area (Under Reclamation)	Catchment (temporary)
N-9B	Buffer Area (Under Reclamation)	Catchment (temporary)
N-16E (RWSA,CSA)	Idle	Catchment/Storage
P-2	Idle/Reclaimed	Catchment/Storage
P-3	Active Mining/Future Reclamation	Catchment/Storage
Triangle Lakes	IMC Mine Recirculation System	Catchment/Storage
Phosphoria	Active Mining/Future Reclamation	Catchment/Storage

3.8.5.2 Water Crop Production Analysis

This section presents an assessment of the water crop production potential for the Hines Energy Complex. The required volume of makeup water coming from water crop depends upon demand and the availability of water from other sources such as reclaimed water. It is estimated that approximately 3.46 MGD will be the average required water crop production rate for the operation of Power Blocks 1 and 2. Section 3.5 provides details concerning the water balance for the Hines Energy Complex.

The estimated average water crop production rate of 3.46 MGD equates to 3,103 acre-feet annually. The total water crop catchment area based on hydrologic boundaries for the Hines Energy Complex site is 4,661 acres. Based upon the above production rate and catchment area available, the required average annual runoff to produce 3.46 MGD is ten (10) watershed inches. As indicated in Section 2.3.3.1, the average annual precipitation volume for the Hines Energy Complex area is 53.43 inches. Based upon the required average annual runoff of ten watershed inches and average precipitation of 53.43 inches, the required watershed yield for the water crop system is approximately 19 percent of average annual precipitaion. Watershed yield is expressed as runoff as a percentage of precipitation.

Hydrologic analyses were conducted in order to assess whether an average annual runoff of 10 watershed inches and a watershed yield of 19 percent were reasonable for the Hines Energy Complex site. These analyses included a determination of streamflow for systems within the region based upon available data, and a preliminary site water crop production estimate. These analyses are discussed in detail below.

Streamflow Assessment

The Hines Energy Complex is located within the Peace River Basin. U.S.G.S. streamflow data for the Peace River and its tributaries were examined to determine the average annual runoff in the system. For the Peace River Station at Arcadia, Florida, Gauge No. 02296750, the annual runoff is given as 10.71 watershed inches for the period-of-record 1932 to 1995.

Daily streamflow values for the Payne Creek Station near Bowling Green, Florida, Gauge No. 02295420, were acquired from the U.S.G.S. Internet web site. The period-of-record for these data is water year 1979 to 1996. Payne Creek is a tributary of the Peace River, which is located within 10 miles of the Hines Energy Complex. This system has a basin area of 121 square miles, a portion of which is occupied by phosphate mine areas. The hydrologic response of this system is similar to the Hines Energy Complex site vicinity due to similar physical features within the watersheds. The Payne Creek data were analyzed to determine annual streamflow for the period-of-record. Figure 3.8.5-1 illustrates the results of the analysis. As shown, annual runoff for Payne Creek varied between approximately 5 inches to approximately 23 inches with the average annual runoff of 11.8 inches.

This annual runoff of 10.71 inches for the regional system and 11.8 inches for a similar system in the vicinity of the Hines Energy Complex exceeds the required average annual runoff of 10 inches for the water crop system. These values are therefore considered representative of the potential water crop production for the site.

Site Water Crop Production Assessment

A preliminary analysis of the Hines Energy Complex site was conducted to determine its potential water crop productivity. The analysis considered long-term water crop productivity from those areas of the site identified in Section 3.8.5-1 as catchment areas. The temporary catchment areas (N-11A, N-13, and N-9B) were not included in the analysis.

To assess the potential water crop production of the Hines Energy Complex, a model was developed to determine long-term runoff from the water crop areas. To improve the simulation of runoff volume, the model was calibrated with site precipitation data and actual runoff data for the Plant Island area. The site hydrologic model considered precipitation, evaporation from lakes, evapotranspiration from upland areas, and infiltration in the determination of runoff volume.

The average precipitation volume was selected to represent long-term conditions in the vicinity of the Hines Energy Complex. Daily precipitation volumes for an average annual precipitation year were utilized in the model. A similar analysis was conducted for pan evaporation data from the Lake Alfred Station (Station No 8-4707) for a 15-year period-of-record. Daily pan evaporation data for the average year were used in the model.

Precipitation and runoff data available for the Plant Island stormwater management system were used to calibrate the site runoff model. Daily site precipitation data for one year were incorporated into the model. The model was calibrated to simulate an annual runoff volume similar to the known runoff volume calculated from the runoff data. Once calibrated, the model was used to simulate runoff volume from the water

crop catchments utilizing precipitation data representing long-term average hydrologic conditions.

Results of the preliminary site water crop production assessment indicate that the potential annual runoff is simulated to be 12.6 watershed inches. Based upon a total water crop catchment area for the Hines Energy Complex of 4,661 acres, the annual volume is equivalent to 4,891 acre-feet. This annual runoff volume translates to a water crop production rate of 4.37 MGD. Additionally, watershed yield is estimated to be approximately 24 percent based on an average annual precipitation of 53.43 inches.

Simulated annual runoff from this analysis is consistent with regional and local measured streamflow which are 10.71 inches and 11.8 inches respectively. As indicated above, the required demand for water crop is approximately 10 inches, based upon 3.46 MGD average daily flow. The area dedicated to the water crop system should be adequate to meet the demand for water crop.

3.8.6 Water Crop System Operation

Operating plans will be developed for the on-site water crop system, which will address operation of the system under normal flow conditions and storm flow conditions. In general, the water crop system will be managed to produce the quantity of runoff necessary to provide a reliable alternative water supply. This will be accomplished through the capture and storage of runoff and use of that water as necessary. Additionally, the system will be managed to safely handle storm flows to prevent flooding of the Plant Island area.

3.8.6.1 Normal Conditions

Under conditions of average precipitation, the proposed water crop system will provide more than sufficient yield to meet makeup Cooling Pond water needs for Power Blocks 1 and 2. However, this will not be the case when precipitation rates are well below average. Therefore, the water crop system will be managed to temporarily store a portion of the excess runoff from average and above average precipitation years to partially or totally offset deficits during relatively dry years. Any runoff from the water crop system that is not retained within the water crop system to support plant operations will be discharged from the system, such as to the Six Mile Creek drainage.

Runoff from N-11A, N-13, N-9B will be temporarily captured and stored within the water crop system. After reclamation of these areas is complete, they will be reconnected to the Camp Branch drainage, as required in the 1994 Certification.

Runoff from N-15, N-11B, N-11C, N-16E, and SA-8 will be collected within their respective areas. This water will either be conveyed to the Cooling Pond as necessary for use as makeup water, stored as necessary, or discharged from the system.

Runoff from the Plant Island stormwater management detention pond (SA-12N) will be conveyed on a regular basis to the Cooling Pond, as authorized by the 1994 Certification. This system is operated to maintain a normal water level in the Plant Island detention pond of 156 ft-NGVD.

Runoff from P-2 and the Triangle Lakes area will be collected in the Triangle Lakes water crop storage area. This water will either be conveyed to the Cooling Pond as necessary for use as makeup water, stored as necessary or discharged from the system.

Runoff from P-3 and the Phosphoria area will be collected in the Phosphoria water crop storage area. This water will either be conveyed to the Cooling Pond as necessary for use as makeup water, stored as necessary or discharged from the system.

3.8.6.2 Storm Conditions

The Hines Energy Complex site is located completely within areas which were formerly mined for phosphate ore. The Hines Energy Complex is comprised principally of waste clay settling areas, with some mined-out areas also present. These mined land forms possess a significant quantity of storage volume. For waste clay settling areas, this volume is due to the differential in elevation between the top of their surrounding embankments and the clay surface. For the mined-out areas, this volume is due to the differential in elevation between ground surrounding the area and the pit bottom.

This readily available volume will be utilized in the management of storm flows by the water crop system. In general, following large storm events, water will be released over a relatively long period of time from the water crop catchment areas at a much reduced flow rate. This is due to the size of these systems, the available depressional storage which typically develops on the surface of waste clay settling ponds and the extremely dense vegetative cover that typically occurs in these areas. Areas which have been designated for use as water crop storage areas will have control facilities, which will allow the water to be stored and released over a longer period of time. Given the massive storage volume available site-wide, flow rates and impoundment depths within the system will be relatively low.

A portion of the runoff generated from larger storm events may be retained in storage as necessary to provide an alternative water supply for plant operations over the long

term. This water will be used to off-set any deficit in the required storage volume either real or anticipated. Any runoff which is not retained in the water crop system to support plant operations will be discharged from the system to off-site water bodies, including the Six Mile Creek drainage.

Operation of the water crop system during storm events will be similar to operation of the system under normal conditions. This is possible due to the significant volume of storage within the system, which allows runoff to be conveyed at relatively low flow rates.

The singular difference in operation of the system during normal and storm conditions is for the Plant Island area. Stormwater runoff from the Plant Island area will be captured in the stormwater management detention pond (SA-12N). This pond has been designed to retain the runoff from back-to-back 25-year, 24-hour storm events, under the conservative assumption that 100 percent of precipitation becomes runoff. Given this back-to-back storm condition, water levels in the Plant Island stormwater management system will not exceed the ditch top-of-bank elevation. The system, however, will be operated to maintain a normal pool level of 156 ft-NGVD within the SA-12N pond.

3.8.6.3 System Operation

The water crop system will be operated in two modes. These modes are:

- Demand Mode
- Storage/Release Mode

Demand Mode

At times, water crop will be utilized as an alternative water supply to support plant operations. Primarily, it will be used as makeup water for the Cooling Pond. When demand exceeds runoff volume, water will be drawn from storage to meet the demand. Figure 3.8.6-1 illustrates the directional flow of drainage within the Hines Energy Complex during the demand mode.

Storage/Release Mode

At times, water crop will not be needed as an alternative water supply. Under this operating mode, runoff from catchment areas will be conveyed to storage areas for temporary storage. Figure 3.8.6-2 illustrates the location of these areas and the directional flow of drainage within the Hines Energy Complex during the storage release mode.

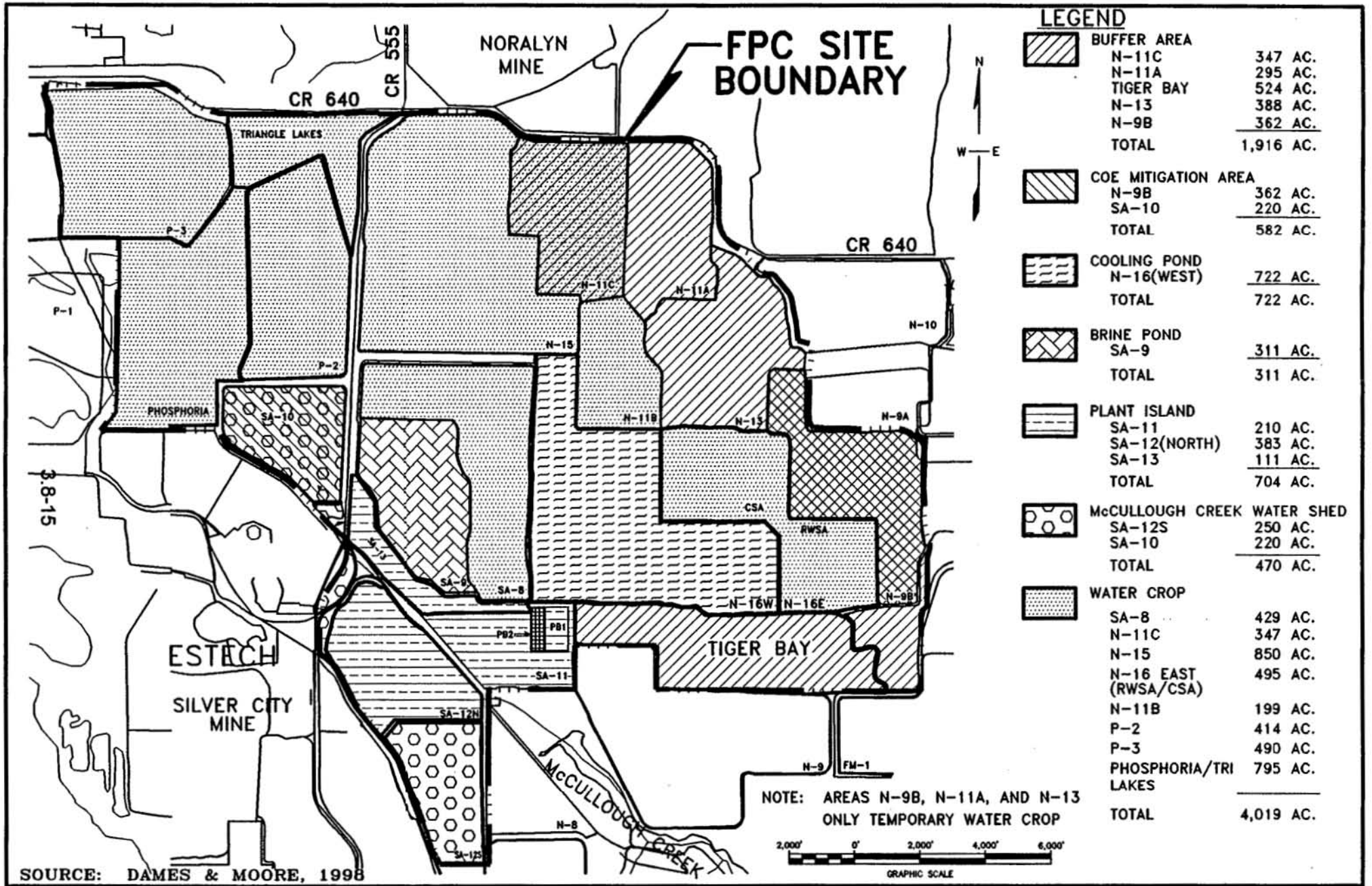
When water crop supply is adequate to meet demand and storage requirements, excess water will be discharged from the system. Figure 3.8.6-2 illustrates the location of the Six Mile Creek discharge point in Triangle Lakes.

3.8.7 References

Florida Power Corporation. 1992. Polk County Site. Site Certification Application.

Siting Board. 1994. Final Order Approving Certification. In Re: Application for Power Plant Certification of Florida Power Corporation, Polk County Site PA 92-33. DOAH Case No. 92-5308 EPP.

USGS. 1995. Water Resources Data – Florida, Southwest Florida Surface Water. USGS. Tampa, Florida.



SOURCE: DAMES & MOORE, 1998

LEGEND

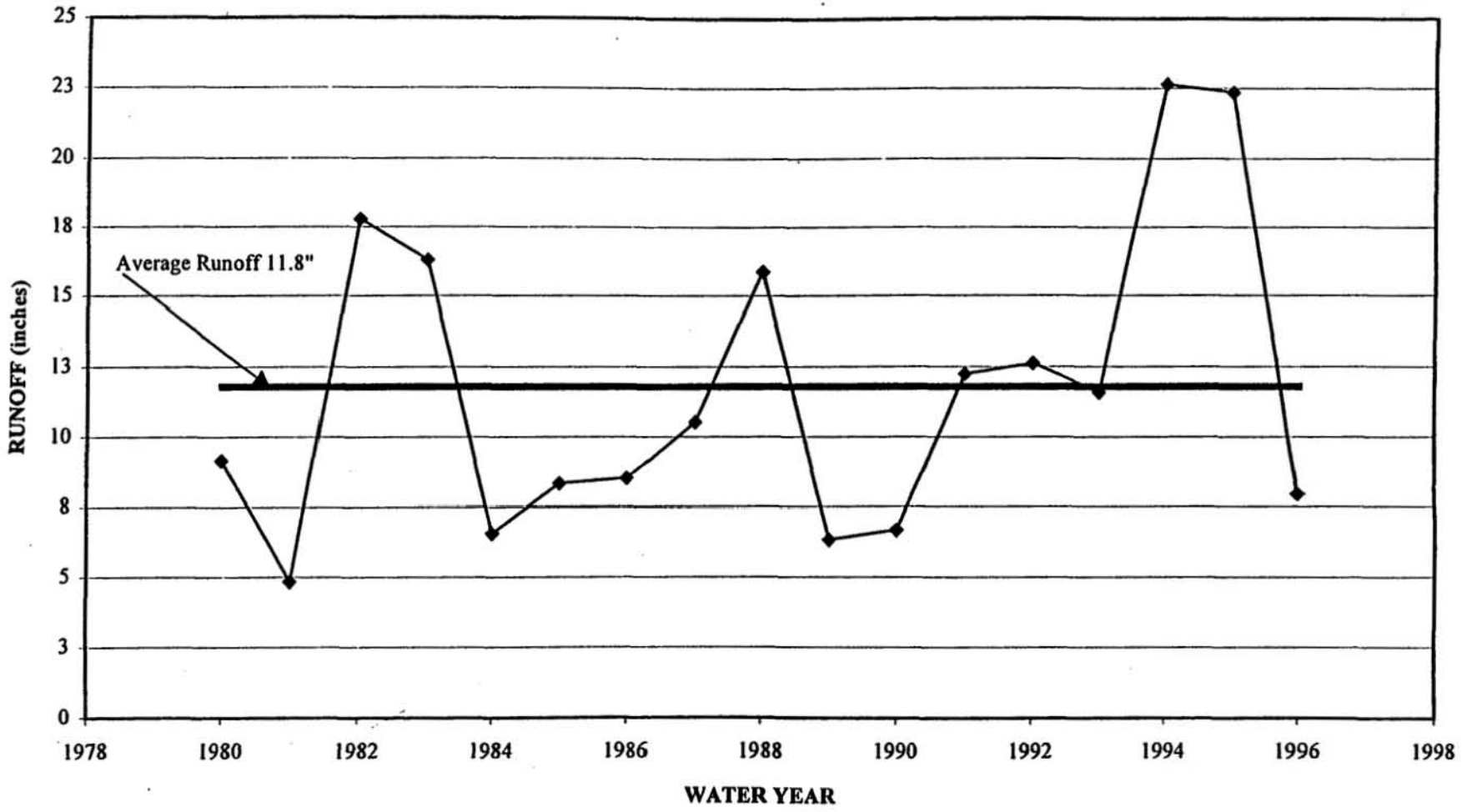
BUFFER AREA		
	N-11C	347 AC.
	N-11A	295 AC.
	TIGER BAY	524 AC.
	N-13	388 AC.
	N-9B	362 AC.
	TOTAL	1,916 AC.
COE MITIGATION AREA		
	N-9B	362 AC.
	SA-10	220 AC.
	TOTAL	582 AC.
COOLING POND		
	N-16(WEST)	722 AC.
	TOTAL	722 AC.
BRINE POND		
	SA-9	311 AC.
	TOTAL	311 AC.
PLANT ISLAND		
	SA-11	210 AC.
	SA-12(NORTH)	383 AC.
	SA-13	111 AC.
	TOTAL	704 AC.
McCULLOUGH CREEK WATER SHED		
	SA-12S	250 AC.
	SA-10	220 AC.
	TOTAL	470 AC.
WATER CROP		
	SA-8	429 AC.
	N-11C	347 AC.
	N-15	850 AC.
	N-16 EAST (RWSA/CSA)	495 AC.
	N-11B	199 AC.
	P-2	414 AC.
	P-3	490 AC.
	PHOSPHORIA/TRI LAKES	795 AC.
	TOTAL	4,019 AC.

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Hines Energy Complex

FIGURE 3.8.1-1
HINES ENERGY COMPLEX 1000 MW SITE PLAN

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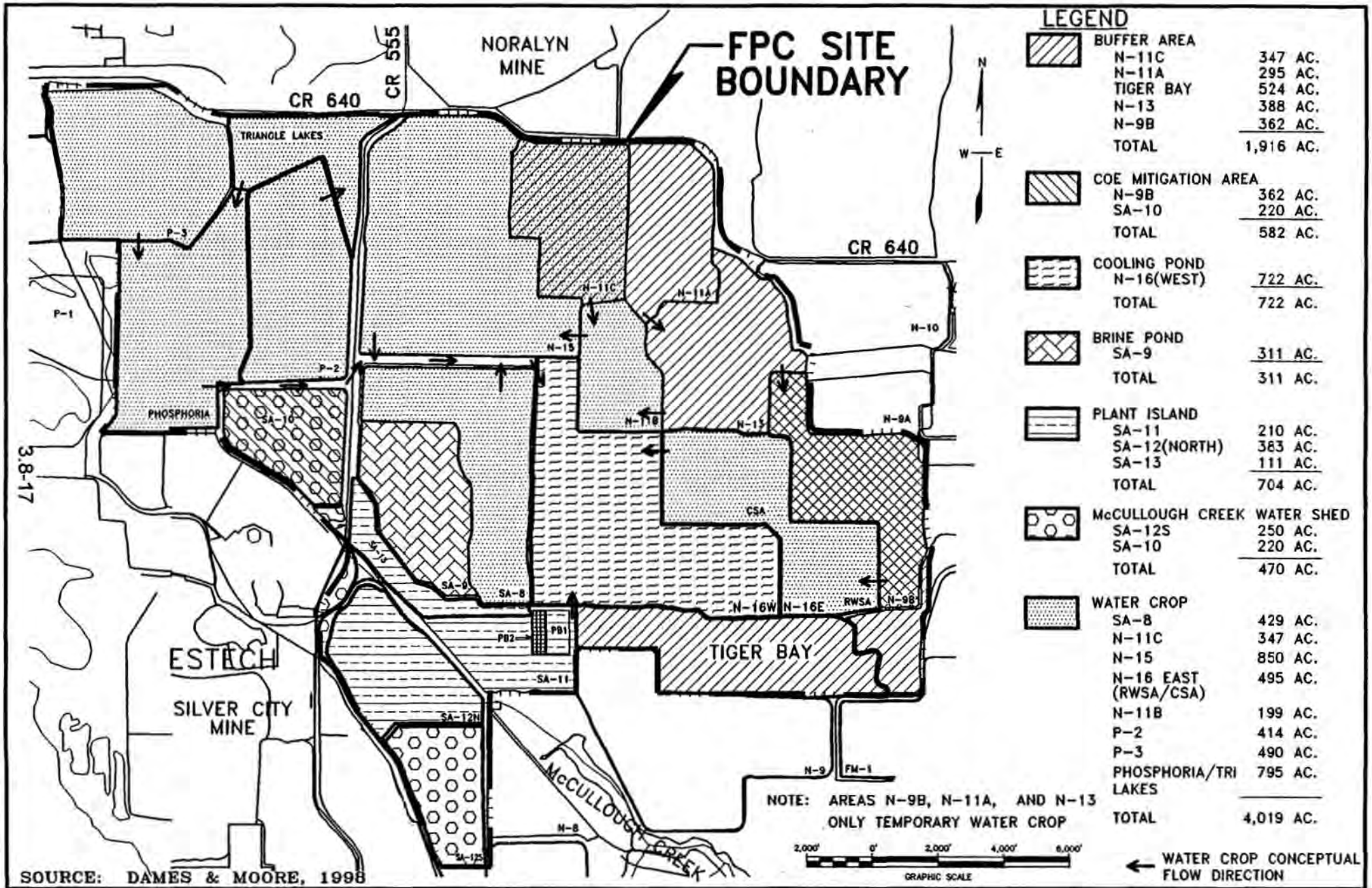
SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 3.8.5-1
ANNUAL RUNOFF - PAYNE CREEK STATION NEAR BOWLING GREEN, FLORIDA - STATION No. 02295420

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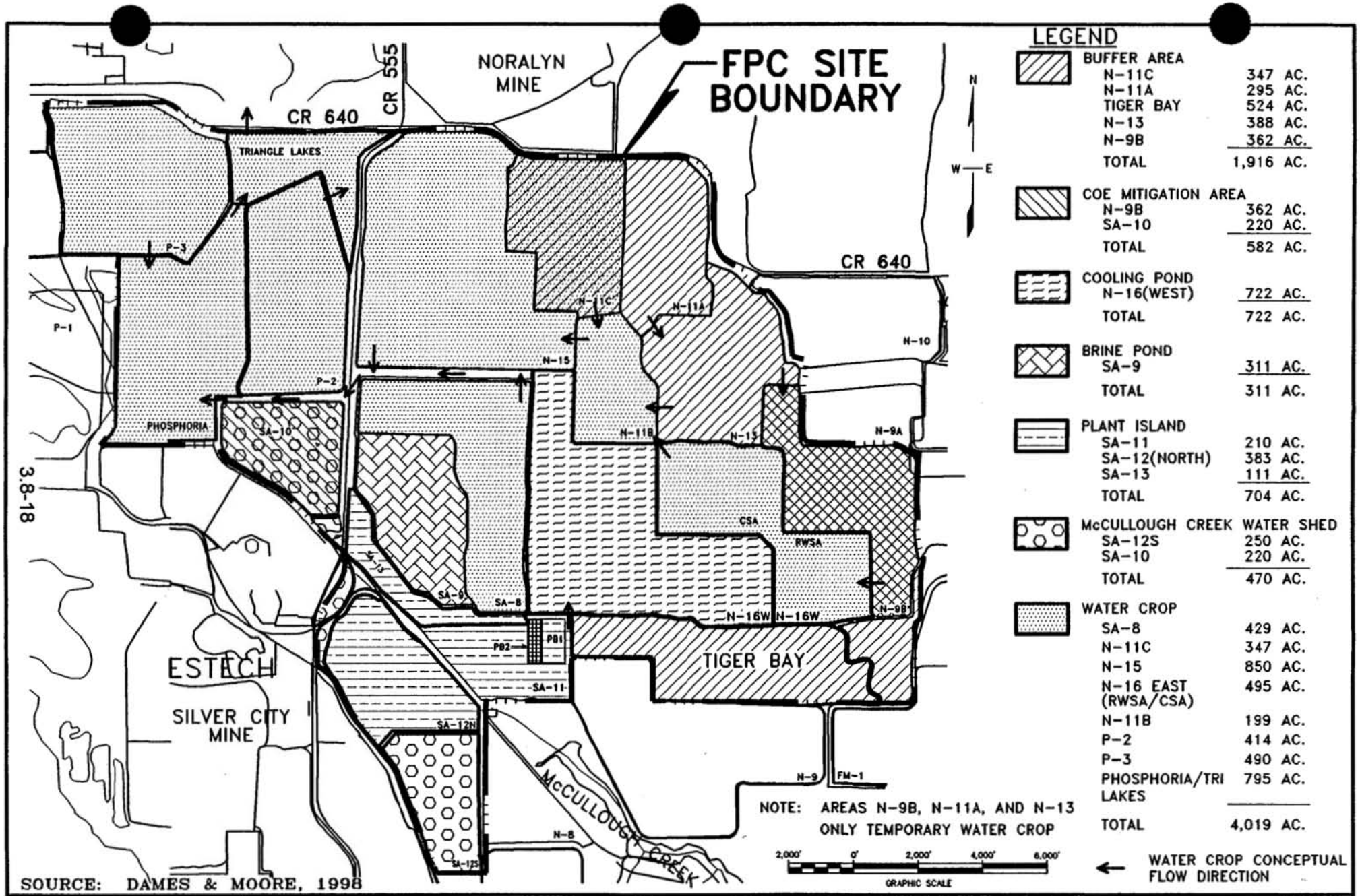


Florida Power CORPORATION

Hines Energy Complex

FIGURE 3.8.6-1
DEMAND MODE (Conceptual Flow Direction)

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Florida Power CORPORATION

Hines Energy Complex

FIGURE 3.8.6-2
STORAGE/RELEASE MODE (Conceptual Flow Direction)

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3.9 MATERIALS HANDLING

3.9.1 Construction Materials

Major components to be constructed at the Hines Energy Complex for Power Block 2 include the following:

- 2 Combustion turbines
- 2 Combustion turbine electrical generators
- 2 Heat recovery steam generators
- 1 Steam turbine electrical generator
- Transformers
- Bridge cranes

These components are expected to be delivered to the site by rail or truck. No off-site or on-site upgrading of either rail or road facilities is expected to be necessary to facilitate delivery of construction materials, if required. All oversized deliveries will receive necessary DOT approvals.

Once on site, materials will be unloaded and transported using mobile cranes and trucks. Some of the heaviest items will require rail delivery, multi-axle transport haul trailers, and special rigging for on-site handling.

Fuels for construction vehicles will be stored in fuel storage drums within a bermed area in accordance with regulations. Gasoline and diesel fuel for cars and trucks used during construction and operation will be stored in tanks with appropriate secondary containment. Spent lubricants, paints, and solvents will be removed from the site for recycling or for disposal.

The construction sanitary wastewater system will consist of portable, self-contained chemical toilets. Wastes from these chemical toilets will be removed periodically by an off-site service, as needed. The sewage treatment plant constructed for Power Block 1 described in Section 3.5.2 may also be utilized during the construction period.

Fugitive dust, surface water runoff, and waste disposal associated with material handling during construction will be controlled using the following techniques:

- Dust suppression will be accomplished by watering the unpaved roads, parking lots, and laydown areas, as needed.

- The Plant Island stormwater retention pond described in Section 3.2 will be used to settle suspended sediment from rainfall runoff.

- Construction trash and other nonhazardous debris will be recycled, or will be collected for off-site disposal by a licensed disposal contractor in a permitted disposal facility.

- Commercial salvage of metal wastes will be implemented. If salvage is not feasible, these wastes will be removed from the site by a licensed contractor for recycling or disposal in a permitted disposal facility.

3.9.2 Operational Materials

The handling and storage of fuels and fuel additives for Power Block 2 (natural gas, fuel oil) are discussed in Section 3.3. Handling and storage of wastewater treatment sludges and other lesser-volume wastes are discussed in Section 3.7.

Other operational materials include gaseous and liquified oxygen, water and wastewater treatment chemicals, lubrication oils, combustion and ST coolant and purge gases, and HRSG blanketing gas.

Water and wastewater treatment chemicals (e.g., sulfuric acid and sodium hypochlorite) will be stored in tanks adjacent to the water treatment systems. The chemical tanks will be located within containment areas.

Lubrication oil and greases will be stored in lube oil storage drums. The drums will be located within an enclosed curbed area designed to detain 110 percent of the stored material. A (normally closed) emergency drain system will route any spills within the curbed area to the plant oil/water separator.

Lubricating oil also will be stored in equipment-associated lube oil tanks and system piping. This equipment and piping will either be enclosed in a containment area or will be within an area protected by a drain system to the oil/water separator.

Hydrogen, oxygen, nitrogen and carbon dioxide gases may be stored in bottles adjacent to the gas distribution system which serves the units.

CHAPTER 4

ENVIRONMENTAL EFFECTS OF SITE PREPARATION, AND PLANT AND ASSOCIATED FACILITIES CONSTRUCTION

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4.1 LAND IMPACT

As described in Chapter 3, the Hines Energy Complex site has been divided into six areas for Power Blocks 1 and 2 as listed below and as detailed on Figure 3.2.2-1.

- Plant Island Area
- Cooling Pond Area
- Water Crop Areas
- Brine Pond Area
- Buffer/Mitigation Areas
- McCullough Creek Watershed

4.1.1 General Construction Impacts

4.1.1.1 Plant Island Area

The Plant Island area is described in Section 3.2.1. There are no impacts to land except for minor grading in the 5-acre parcel which will contain Power Block 2. Mass earthwork activities necessary for construction of the Power Block 2 area were performed during initial site development activities which were completed in August 1996. The resultant topography was presented in the As-Built Drawings for Earthwork Construction dated November 1996 which are on file with the DEP. Only localized impacts are expected from installation of foundation systems and infrastructure piping systems to support Power Block 2.

The discussion of the impacts to surface water bodies by the topographical changes is presented in Section 4.2, and a discussion of impacts to biota is presented in Section 4.4.

4.1.1.2 Cooling Pond Area

The existing 722-acre Cooling Pond constuction was completed in August 1996 and is capable of supporting Power Blocks 1 and 2. Expansion of the existing Cooling Pond, therefore, is not required for Power Block 2. The description of the Cooling Pond area is provided in Section 3.2.2. There will be no land impacts associated with the Cooling Pond during the construction of Power Block 2.

4.1.1.3 Water Crop Areas

Runoff from all of the Hines Energy Complex site areas, with the exception of SA-9, SA-10, SA-12 South, and Tiger Bay, will be used as an alternative water supply, primarily for Cooling Pond makeup water. As described in Section 4.1.1.5, some Buffer/Mitigation Areas (N-9B, N-11A and N-13) will only be used temporarily within the water cropping system. As detailed in Section 3.8, the water cropping system will employ presently disturbed site areas as catchments, storage areas and conveyances. Existing site areas will be utilized and improved as necessary to support the water cropping system. Necessary improvements may include the installation of pumps, pipes, culverts, ditches, berms and dam improvements. Construction activities will be limited to land which has been previously cleared during the site preparation phase of the project or on previously mined land.

4.1.1.4 Brine Pond Area

The Brine Pond was constructed during the summer/fall of 1997 within former clay settling area SA-9. Brine enters the pond near the southwestern corner of the area. The Brine Pond utilizes the existing waste phosphatic clays as its liner system. No additional construction is anticipated in the Brine Pond during Power Block 2 construction.

4.1.1.5 Buffer/Mitigation Areas

Construction of the Buffer/Mitigation Area (N-9B, N-11A, N-11C, N-13, and Tiger Bay) was authorized by the 1994 Certification and is proceeding on schedule. N-9B, N-11A and N-13 will be used temporarily as water crop areas until Buffer/Mitigation Area construction is complete. N-11C will remain part of the on-site water cropping system. No new construction authorization in the Buffer/Mitigation Area is being sought to support Power Block 2. Reclamation activities authorized by the 1994 Certification will proceed concurrent with development of Power Block 2.

4.1.1.6 McCullough Creek Watershed

SA-10 and SA-12 South are considered headwater areas for McCullough Creek. Runoff from these areas is released slowly into the McCullough Creek system with a control weir at the northeast corner of SA-12 South. No new construction impacts are anticipated for these areas.

4.1.2 Roads

There will be no new roads constructed to support Power Block 2. The existing plant access road which will service Power Blocks 1 and 2, presently connects to CR 555 and is paved and striped. There will be no land impact due to construction of roads.

4.1.3 Flood Zones

The Federal Emergency Management Agency (FEMA) delineation of flood zones within the Hines Energy Complex is presented in Figure 4.1.3-1. The Flood Insurance Rate Map

panels used for the delineation are dated 1983, the most current maps available. The isolated Zone-A flood areas within the Hines Energy Complex area were removed by mining prior to FPC acquiring the property. No impacts beyond those addressed as part of the 1992 SCA will occur during the construction phase of Power Block 2.

4.1.4 Topography and Soils

Impacts to soils and topography by power plant construction have been addressed in Section 4.1.1.

4.1.5 References

Florida Power Corporation. 1992. Polk County Site. Site Certification Application.

IMAGE QUALITY

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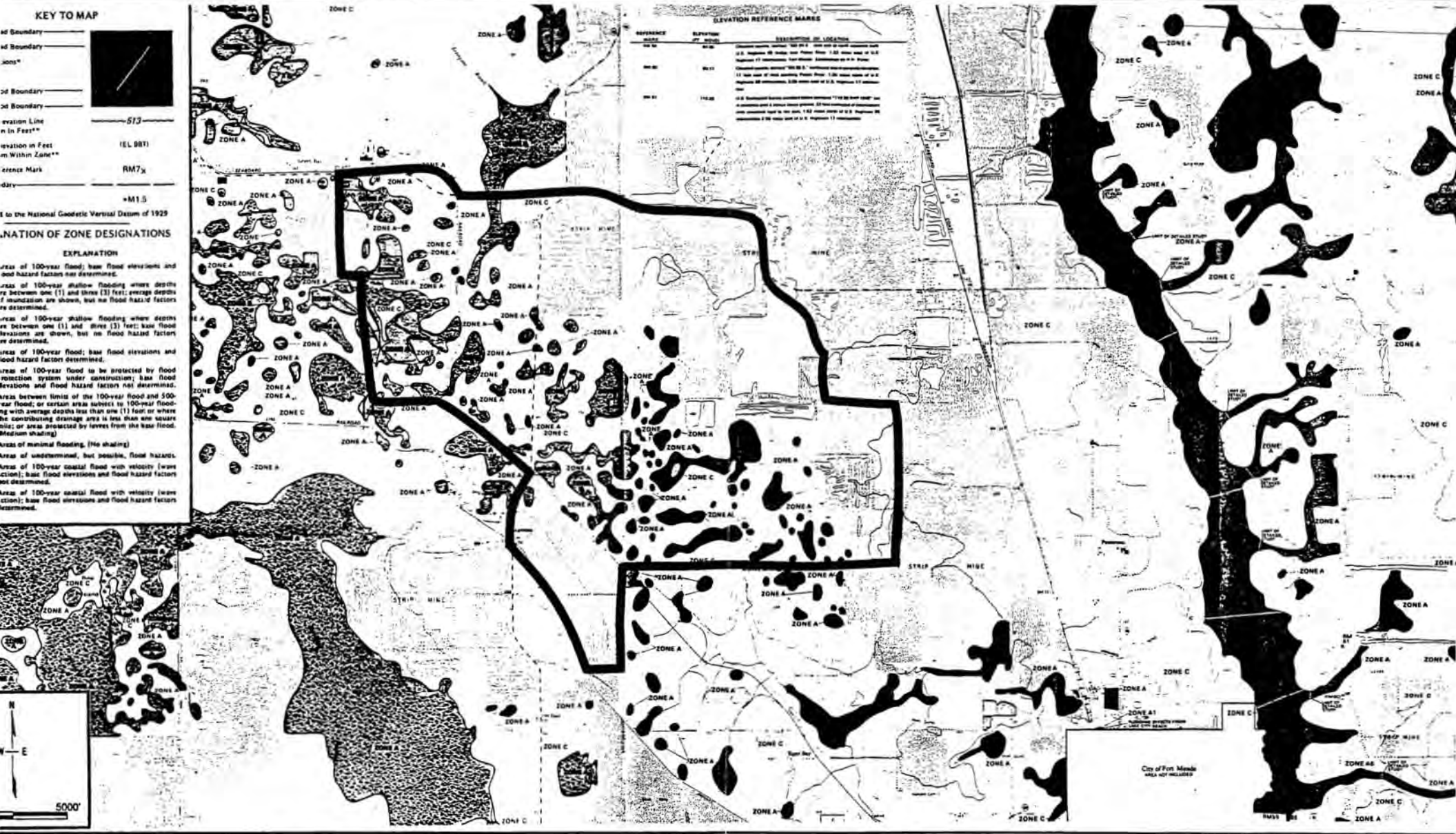


FIGURE 4.1.3-1
100 YEAR SITE FLOOD ZONE DESIGNATIONS

Florida Power CORPORATION

Energy Complex

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4.2 IMPACT ON SURFACE WATER BODIES AND USES

4.2.1 Impact Assessment

4.2.1.1 Off-Site Water Bodies

The off-site water bodies in the vicinity of the Hines Energy Complex include the Peace River, Camp Branch and McCullough Creek. Barber Branch, formerly located within and adjacent to the northeast corner of the site, has been mined through and no longer exists in the site vicinity. The Six Mile Creek drainage has also been mined through in the vicinity of the site. However, a substantial portion of the Six Mile Creek drainage has been or will be proposed to be reestablished through mine reclamation activities.

Site development activities associated with Power Block 2 include construction of Power Block 2 and construction activities associated with the development of the on-site water cropping system. Section 3.8 provides details of the proposed water cropping system.

Only minimal (if any) localized dewatering for foundation and infrastructure installation will be utilized for the construction activities for Power Block 2. As a result, no construction impacts to off-site water bodies are anticipated from dewatering. Section 4.3 provides details of construction dewatering impacts. .

On-site development activities associated with the water cropping system are also not expected to adversely impact off-site water bodies. A portion of the site's water cropping system is located within areas which historically drained to McCullough Creek. This includes the Plant Island area's drainage system which was developed during construction of Power Block 1 as authorized in the 1994 Certification. No impacts to McCullough Creek

beyond those approved in the 1994 Certification will occur as a result of the construction of Power Block 2.

A portion of the site's Buffer/Mitigation Area will temporarily be used for the water cropping system. These areas, which were previously part of the Camp Branch drainage, will be reconnected to the Camp Branch drainage following reclamation. No impacts to these areas beyond those approved in the 1994 Certification will occur during the construction phase of Power Block 2.

Elements of the proposed water cropping system will be constructed in areas of the site which periodically drain to the area which was formerly the Six Mile Creek basin. This area is now part of the IMC Noralyn and Phosphoria mine water recirculation system and discharges through the NPDES outfall for the mine water recirculation system. When excess water is available onsite, water is released to the Six Mile Creek drainage to enhance flows to the Peace River as suggested in the 1994 Certification No adverse impacts to off-site water bodies are anticipated during construction of the water cropping system. Erosion control measures will be implemented for all newly disturbed areas to ensure water quality criteria are met for all waters discharged off-site. Details concerning the design and operation of the on-site water cropping system are presented in Section 3.8.

4.2.1.2 On-Site Water Bodies

Because only minimal, if any, localized dewatering in and around Power Block 2 will be required during Power Block 2 construction activities, no impacts are anticipated to Tiger Bay, the only onsite water body over which DEP, SWFWMD, and Polk County have claimed jursidiction.

Development of the water crop storage system will not impact on-site jurisdictional water bodies over which DEP, SWFWMD or Polk County have claimed jurisdiction because no construction activities will occur in those waters. Any required dewatering will be minimal and contained on-site as explained in Section 4.3.

4.2.2 Measuring and Monitoring Programs

Since the potential for any impacts to surface water bodies is minimal, no new measuring or monitoring programs are proposed.

4.2.3 References

Florida Power Corporation. 1992. Polk County Site. Site Certification Application.

4.3 GROUND WATER IMPACTS

4.3.1. Construction Dewatering Impact Assessment

Temporary dewatering activities may be required during the construction of Power Block 2 and associated facilities. The following is a list of structures and/or equipment that may require dewatering activities due to the depth of the installation:

- Circulating Water Intake Structure (27 feet deep)
- Circulating Water Pipe Lines (15 feet deep)
- Circulating Water Discharge Structure (10 feet)
- Oil Water Separator & Waste Water Lift Station (20 feet deep)
- Two Boiler Blowdown Sumps (10 feet deep)
- Miscellaneous Water Crop Structures (10 feet deep)

Dewatering for these structures and equipment will be performed using well points or open pit sump pumps. This type of dewatering will only affect the ground water in a very localized area, thereby, minimizing the impact on the ground water table.

Other than for the miscellaneous water crop structures, the areas where dewatering may be required are all within the Plant Island. The soils at the Plant Island consist of engineered, compacted fill soil. The hydraulic conductivity of the engineered fill

material in the Power Block area typically will be lower than found in the natural, undisturbed Surficial aquifer. As reported by Hutchinson (1978) the transmissivity of the Surficial aquifer averaged 1,900 ft^2/day. Using an aquifer thickness of 35 feet, the hydraulic conductivity of the Surficial aquifer in an undisturbed condition will typically be on the order of 50 ft/d (feet per day) or less. Where compacted, engineered fill material is located in the Plant Island, the hydraulic conductivity of the backfilled soil is expected to be much lower. Based on grain size analyses and compaction data, the hydraulic conductivity of the engineered fill is expected to be less than 50 ft/d.

Two temporary piezometers were installed in the engineered fill material near the proposed excavation locations. Piezometer 1 was installed in the Plant Island south of the Cooling Pond and piezometer 2 was installed near the northwest corner of proposed Power Block 2. The piezometers were installed to measure the depth to the water table near the locations proposed for subsurface placement of the equipment and structures. Ground water levels were measured on November 19, 1998. The depth to ground water in piezometer 1 was 19.2 feet below grade while the water level in piezometer 2 was 25.6 feet below grade.

The proposed excavation depths will range up to approximately 30 feet. Because of the depth to the water table, as measured in the piezometers, lowering of the water table for excavation and construction will be minimal and localized.

The dewatering will be accomplished using standard construction dewatering techniques. Either well points will be installed surrounding the area to be excavated or the excavation itself will be dewatered by pumping from the excavation. Discharge from dewatering systems will be localized and remain on-site, with the possible exception of

dewatering that occurs in areas outside the Plant Island followed by an extreme storm event.

SWFWMD Rule 40D-2.051(1)(f) states that no permit is required for temporary dewatering for construction of buildings or other foundations and roadways or for installation of utility pipeline, cables, culverts, and catch basins. The dewatering for the structures and equipment listed above would not require a dewatering permit from SWFWMD.

4.3.2 References

Hutchinson, C.B. 1978. Appraisal of Shallow Ground-Water Resources and Management Alternatives in the Upper Peace and Eastern Alafya River Basins, Florida. U.S. Geological Survey, Water Resources Investigation 77-124.

SWFWMD, 1998. Consumptive Use of Water, Rule 40D-2.051(1)(f). July, 1998.

Florida Power Corporation. 1992. Polk County Site. Site Certification Application.

4.4 ECOLOGICAL IMPACTS

4.4.1 Impact Assessment

The 1992 SCA addressed impacts associated with full site buildout. Impact assessment in this Supplemental SCA is based on whether the addition of Power Block 2 results in any additional ecological impacts not already reviewed and approved by the 1994 Certification.

4.4.1.1 Site Construction

The construction of Power Block 2 will be limited to land already cleared and prepared for this project. Water crop system facilities as described in Section 3.8 will be constructed in other areas of the Hines Energy Complex site, as needed. Construction will be limited to land which has been previously cleared during the site preparation phase of the project, or to previously mined land of low ecological functional value. No ecological impacts beyond those approved by the 1994 Certification are anticipated.

4.4.1.2 Environmental Management and Protection Plans for Construction

The FPC Construction Compliance Manual will be used to maintain compliance during construction activities. This manual contains all necessary permits and procedures which must be followed.

Because construction of Power Block 2 will occur within the Plant Island area, and all runoff will be contained within the onsite retention pond, no further protective measures are necessary.

To minimize erosion and protect water quality within the water crop areas, the job site guidelines for implementation and enforcement of soil erosion and sedimentation control procedures are shown below:

- Barriers will be installed and maintained to serve a continuing functional role in erosion control throughout construction. The barriers will consist of hay bales or a filter fabric such as Mirafi or other suitable material.

- Stabilization techniques will be used to establish a stabilized working surface for construction where necessary.

- Contractors will be required to implement temporary stabilization measures to minimize loss of topsoil, excess sedimentation in drainage ditches, and deterioration of water quality.

- Prior to construction, contractors will be required to submit plans for accomplishment of temporary and permanent erosion control work.

- Disturbed areas not otherwise stabilized will be mulched and/or seeded as soon as practicable. Areas to be seeded will employ quick-germinating plants such as rye grass which will provide temporary cover and soil retention properties.

- Exposed drainages will be sodded or mulched and seeded immediately after each phase of disturbance.

- Physical soil stabilizers will be used where appropriate to protect exposed soil from rainfall or runoff; these might include straw, wood chips, netting or hay.

- Sediment filter devices will be installed to prevent siltation or accumulation of debris.

4.4.1.3 Aquatic Ecology

Negative impacts to aquatic habitats are not expected because the site preparation work has already taken place and because native aquatic habitats are separated from construction areas on the site.

4.4.1.4 Vegetation Communities

No adverse impacts to important native vegetation communities are expected with development of Power Block 2 because all construction will take place in lands previously mined or cleared and prepared for this and additional units. Though not specifically related to the new unit, construction of aquatic, wetland and upland vegetation communities as part of approved reclamation plans will occur in the Buffer/Mitigation area concurrent with this phase of the project.

4.4.1.5 Enhancement Plan

As a part of the 1994 Certification, an environmental enhancement plan was proposed for development of the Hines Energy Complex site. The plan consisted of three major features: the acquisition of a portion of the Hooker's Prairie/Peace River Wildlife Corridor,

the planting of native vegetation communities in the Buffer/Mitigation area, and the construction of the McCullough Creek drainage enhancement project.

The wildlife corridor component was acquired and a conservation easement was granted to the FGFWFC in 1994.

Nonmandatory reclamation areas N-11A, N-13, and N-9B will provide a Buffer/Mitigation area of almost 900 acres. Rather than being converted to pasture or citrus groves following clay consolidation, upland and wetland vegetation communities will be established according to requirements of the 1994 Certification.

The post-reclamation vegetative cover in the Buffer/Mitigation Area will consist of a combination of various upland, and wetland communities designed to represent naturally occurring systems and provide a wide variety of wildlife habitat. Emphasis has been put on the creation of habitat for floral and faunal species considered endangered, threatened or species of special concern by the FGFWFC, FWS and DACS.

4.4.1.6 Threatened or Endangered Animal and Plant Species

Only land cleared during the initial site preparation phase of the project or by previous mining will be affected by construction activities associated with Power Block 2. This land is planted in grasses, is bare ground, or has been allowed to vegetate to old field vegetation. This land cover is infrequently used by threatened or endangered animal species. Therefore, the project will not affect threatened or endangered species populations. Prior to construction of Power Block 2 facilities, a survey will be conducted in lands to be developed to determine if threatened or endangered species are present at that time. Results of this survey will be transmitted to the FWS and the FGFWFC.

4.4.2 Monitoring Programs

Because construction will occur in limited areas and mostly on land recently cleared and graded, no significant impacts are expected to occur to important ecological resources and no monitoring program is needed.

4.4.3 References

Florida Power Corporation. 1994. Construction Compliance Manual.

Florida Power Corporation. 1992. Polk County Site. Site Certification Application.

4.5 AIR IMPACT

4.5.1 Air Quality Impacts

During the construction period, unavoidable air pollutant emissions are likely to occur from various construction-related activities. The most prevalent construction emissions are fugitive dust. However, minor emissions of nitrogen oxides (NO_x), sulfur dioxide (SO_2), carbon monoxide (CO), particulate matter, and volatile organic compounds (VOCs) are also likely during construction. Emissions of these pollutants generally are minimized through standard control measures.

4.5.1.1 Fugitive Dust

Fugitive dust is generally defined as natural and/or man-associated dusts that become airborne due to the forces of wind or human activity. Construction-phase fugitive dust emissions will be generated during site grading, excavation, vehicular activity, and production activities at an on-site concrete batch plant.

The quantities of fugitive dust emitted by the site construction vehicular traffic will be dependent on a number of factors, including the frequency of operations, specific operations being conducted, weather, and soil conditions. During construction, dust control measures will be used and will typically require moisture conditioning of the construction areas and along the defined roadways between these areas.

4.5.1.2 Other Air Pollutant Emissions

It is anticipated that total gaseous emissions during construction will be extremely small. Potential sources of VOC emissions include evaporative losses associated with on-site

painting, refueling of construction equipment, and the application of adhesives and waterproofing chemicals. The frequency and extent of these activities are limited and they will have minimal impact on air quality.

Exhaust emissions from construction equipment will also contain small amounts of NO_x, SO_2, CO, particulate matter, and VOCs resulting from incomplete combustion of fuel. However, due to the nature of heavy-duty diesel-powered construction vehicles, which allow for more complete combustion and less volatile fuels than spark-ignited engines, these emissions are relatively low.

Open burning will emit particulate matter, CO, hydrocarbons, sulfur oxides, and NO_x. Open burning of construction debris may occur if the composition of that debris consists of wood products and other relatively clean-burning components. Pollutant emissions from debris burning will depend upon the amount and moisture content of the debris.

4.5.2 Air Quality Control Methods

The impact of heavy construction activities and site preparation on air quality will be short term and confined to the immediate vicinity of the construction activity. This is primarily because most of the fugitive dust created by construction traffic and earth-moving operations consists of relatively large particles. These large particles tend to settle quickly rather than remain suspended for transport over long distances.

Job site guidelines for minimizing emissions of fugitive dust from identifiable construction sources will include a combination of the following techniques:

- Contractors will be instructed to comply with any applicable state and local regulations governing open-bodied trucks hauling sand, gravel, or soil between

on-site and off-site areas. This could include providing covers or moistening the load with water and wheel washing to reduce dusting.

- Areas disturbed during construction will be stabilized by mulching or seeding as soon as practicable.

- When construction occurs on bare ground, water (possibly together with wetting agents) will be used as necessary to suppress dust.

- Temporary vehicular surfaces of crushed rock may be used in high traffic areas. Areas not subject to heavy traffic or continual disturbance will be wetted down using nontoxic substances to suppress dust.

- On-site concrete batch plants will be equipped with dust control systems which effectively mitigate off-site impacts.

- Sandblasting operations will be located in isolated areas to minimize effects on adjacent work areas. Protective covers will also be utilized where practicable.

Only minor short-term air quality impacts are expected to result from open burning since these operations will be conducted in compliance with Florida Division of Forestry air pollution control regulations (Chapter 5I-2 F.A.C.) which are applicable in rural areas.

Because of the mitigative measures that will be employed, it is not expected that vehicular emissions, fugitive dust, or smoke from open-burning operations will present any significant air quality problems during the construction period.

4.5.3 Ambient Air Quality Monitoring Program

Air quality monitoring for construction-related fugitive dust or other air pollutants is not being proposed. Periodic visual inspections of the job site will be conducted to ensure compliance with guidelines for minimizing emissions of fugitive dust during construction of the proposed facility.

4.6 IMPACT ON HUMAN POPULATIONS

The construction site is located in southwestern Polk County. The city of Fort Meade, which is located approximately 3.5 miles southeast of the Plant Island, is the largest population center in the vicinity. The unincorporated community of Homeland is approximately 2 miles northeast of the construction site (Plant Island). Since the entire area around the site has historically been dominated by phosphate mining, operation of heavy machinery and large volumes of truck traffic in the area are common. Construction activities on-site are not expected to have a significant impact on these communities.

4.6.1 Construction Traffic Impacts

The employment of construction workers will create traffic impacts on the external roadway network. The magnitude of the traffic impact will be directly related to the number of construction workers. Traffic generated during the construction of Power Block 2 will not exceed the traffic levels generated by the construction of the Hines Energy Complex-Power Block 1.

A traffic impact analysis was completed and submitted with the 1992 SCA. That traffic analysis addresses anticipated peak construction employment in the year 2010 and full buildout in the year 2018. (See Appendix 10.5.1.2).

The traffic impact analysis was reviewed by Polk County and the Florida Department of Transportation. As a result, a series of improvements became the subject of conditions of the Polk County CUP and the 1994 Conditions of Certification. The conditions relate the need for roadways or intersection improvements to a level of employment and provide for monitoring of employment and traffic conditions to determine the timing of improvements.

Traffic monitoring was conducted during the construction of Power Block 1. All necessary roadway/traffic control improvements required by the 1994 Conditions of Certification (XXIX and XXX.8) and the Polk County CUP have been completed. No increased construction traffic impacts are anticipated for the construction of Power Block 2, therefore, additional improvements are not required.

4.6.2 Socioeconomic Impacts

Construction of Power Block 2 is scheduled to begin in late 1999 and end by mid 2001. The construction workforce is expected to range between 60 and 250, and will not have a significant impact on Polk County's public services or housing market.

A study of the socioeconomic impacts of power plant construction was conducted by the Electric Power Research Institute (EPRI) in 1982 to provide an understanding of the nature of the socioeconomic impacts of constructing a power plant. One of the findings in the study was that construction workers are likely to relocate to larger cities and commute to the construction site daily rather than relocate to a small town nearer to the site. Therefore, it is anticipated that those construction workers from outside the area who temporarily relocate are likely to relocate to a large metropolitan area like Tampa or Lakeland and then commute on a daily basis. Since there are only a few trades which are not available within commuting distance, the number of workers who may relocate to these metropolitan areas is likely to be small.

4.6.3 Construction Noise Impacts

Construction noise impacts from construction of all phases up to 3000 MW of ultimate site capacity were analyzed and shown to comply with applicable noise criteria as part of the 1992 SCA. The 1994 Certification finds these noise criteria will be met during construction

of each future phase, including the proposed Power Block 2. This noise impact analysis is presented to reaffirm that earlier analysis and demonstration of no adverse impacts.

The construction of a power plant can be divided into five distinct phases for purposes of assessing potential noise impacts (Barnes et al., 1976). These include:

- Site preparation, including grading and excavation
- Concrete pouring
- Steel erection
- Machinery installation
- Site cleanup and plant start-up.

During the initial site preparation and foundation excavation phase, heavy diesel-powered earth moving equipment is the major source of noise. This equipment includes bulldozers, graders, roller compactors, dump trucks, backhoes, and front-end loaders. With the completion of Power Block 1 and the associated Cooling Pond, much of the site preparation activities have been completed. For Power Block 2, these activities will be minimal and primarily associated with the foundations for Power Block 2.

Equipment used during the concrete pouring stage includes concrete trucks, cranes, and some earth moving equipment for backfilling foundations. The steel erection phase requires the use of cranes in varying sizes, air compressors, welders, material delivery trucks, concrete trucks, and front-end loaders. The machinery installation phase requires the same types of equipment as the steel erection phase.

The final phase, consisting generally of site cleanup and plant start-up activities, is typically about 10 decibels quieter than the other phases (Barnes et al., 1976), except during the short periods of time when the steam lines are being cleaned. High pressure steam is blown through the lines to remove scale or welding debris to prevent such material from

passing through the turbines, where they could damage the turbine blades. The steam is vented directly to the atmosphere through a temporary bypass line constructed specifically for that purpose. During the construction of Power Block 1, continuous low pressure "wet" steam was used. This procedure, which is expected to be used for Power Block 2, produced much lower noise levels than conventional steam venting and resulted in noise levels of 90 dBA at about 50 feet. In contrast, conventional steam venting results in a peak sound pressure level at 50 feet of approximately 129 dBA. In setting the steam safety valves, steam will be released for about 6 minutes with a corresponding sound pressure level at 50 feet of approximately 121 dBA.

The temporary steam line blow out activity will produce noise levels less than 42 dBA at the nearest residences for a short duration. This impact is not considered significant because it will occur only during the day, the duration is very short, the frequency of occurrence is low and the sound level produced is about the same as noise from a truck passing by on the highway.

Noise impacts have been assessed for Power Block 2 construction activities combined with the operation of Power Block 1. Because of the large separation between the plant site and the nearest residences (about 2.8 miles), the construction noise levels will be reduced to less than 40 dBA at the residences. This level is significantly below the existing 24-hr equivalent noise level of about 57 dBA measured at Location 1 near the residences closest to the Plant Island (see Section 2.3.8). Noise from construction activities and the operation of Power Block 1 would raise the noise level by about 0.1 dBA at Location 1, an increase in the existing noise level that would not be noticeable. Consequently, normal construction activities associated with the construction of Power Block 2 will have an insignificant effect on the noise levels at residences in the vicinity of the Hines Energy Complex.

The construction work force, material delivery vehicular traffic levels and, consequently, the traffic noise impact levels, will vary in relation to the size of the work force. The peak work

force stage of the maximum impact scenario is expected to occur when approximately 250 construction workers will be on-site. Traffic count information contained in Appendix 10.5.1.2 indicates that the greatest increase in traffic during construction will occur on CR 555 during the afternoon shift change. The increase in traffic volume is expected to result in a temporary increase in traffic noise levels from 3 to 5 dBA on CR 555 between CR 630 and CR 640. Increases on other area roads will be significantly lower. Generally, increases of this low level are only slightly noticeable and they are particularly insignificant in this case since there are no noise receptors on this portion of the road. Sunday services at the church on CR 555 near CR 630 will not be impacted because construction activities are not normally expected to take place on Sundays. The majority of construction is expected to take place from 7 a.m. to 3 p.m., 5 to 6 days/week for the entire construction period although work at reduced levels could occur at any time. Consequently, because of the mostly day-time schedule, the expected low increase in traffic noise levels, and a lack of receptors, no significant noise impact is anticipated from the construction of Power Block 2.

4.6.4 References

Barnes, J.D., L. N. Miller and E. W. Wood. 1976. Prediction of Noise from Power Plant Construction. Bolt Beranek and Newman, Inc. Report No. 3321.

Submittal to Empire State Electric Energy Research Corporation, Schenectady, New York.

Florida Power Corporation. 1992. Polk County Site. Site Certification Application.

4.7 IMPACT ON LANDMARKS AND SENSITIVE AREAS

The proposed site is located in an area which has been dominated by phosphate mining operations for the past several decades. There are no regional scenic, cultural, or natural landmarks within 5 miles of the site. Therefore, there will be no impact on landmarks or sensitive areas.

4.8 IMPACT ON ARCHAEOLOGICAL AND HISTORIC SITES

The Florida Department of State, Division of Historical Resources (DHR) has stated that because of the project location and/or nature, it is unlikely that any significant archaeological or historical sites will be affected. A letter from DHR is included in Appendix 10.4.10.

4.9 SPECIAL FEATURES

No special features such as described in the SCA guidelines are expected to be associated with the construction of Power Block 2.

4.10 BENEFITS FROM CONSTRUCTION

The Hines Energy Complex site is located on lands which have been previously disturbed by phosphate mining activities. The project site contains both mandatory and nonmandatory lands.

Construction of plant faciltiies will result in a higher assessed value on the property than would otherwise be expected for reclaimed or unreclaimed phosphate lands. The assessed value of mined phosphate lands depends on when the lands were mined, the current land use, and the location of the lands. The reclamation of the mined phosphate lands for use as a power plant and associated facilities results in an increase in Polk County's property tax base and property tax revenues.

Construction at the Hines Energy Complex site will also result in increased employment and wages in Polk County, both through direct jobs and indirect jobs created as a result of the project. Construction of natural gas-fired combined cycle units will result in an average of 176 jobs per year over 25 years, with construction salaries averaging $8.1 million per year. In addition to the direct construction jobs, construction of the project will result in the creation of indirect jobs in associated industries and support (retail and service) industries throughout Polk County.

4.11 VARIANCES

No construction related variances are expected to be required. Construction of the site will meet all applicable local, regional, state, and federal guidelines.

CHAPTER 5

EFFECTS OF PLANT OPERATION

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5.1 EFFECTS OF THE OPERATION OF THE HEAT DISSIPATION SYSTEM

5.1.1 Temperature Effect on Receiving Body of Water

There will be no discharge of heated effluent to surface water from the Power Block 2 Cooling Pond. This section is not applicable.

5.1.2 Effects on Aquatic Life

There will be no discharge of heated effluent to marine or fresh waters from the Power Block 2 Cooling Pond. Additionally, there will be no intake or discharge structures located in off-site surface waters. This section is not applicable.

5.1.3 Biological Effects of Modified Circulation

The only water bodies which would have their circulation modified as a result of Power Block 2 operation would be those in the Six Mile Creek watershed. These water bodies will receive water from the on-site water crop system when excess water is available.

5.1.4 Effects of Offstream Cooling

The Cooling Pond is expected to operate at temperatures not significantly higher than ambient air and water temperatures, therefore, the Cooling Pond is not expected to produce fog in greater than normal amounts. Due to the elevation of the Cooling Pond (above nearby roadways CR 555 and CR 640), any fog produced would not be expected to manifest within the roadways.

5.1.5 Measurement Program

Since no additional adverse effects are anticipated from operation of the heat dissipation system, FPC does not propose any new measurement or monitoring programs.

5.2 EFFECTS OF CHEMICAL AND BIOCIDE DISCHARGES

5.2.1 Industrial Wastewater Discharges

There will be no industrial wastewater discharge from the Hines Energy Complex. Consequently, this section is not applicable.

5.2.2 Cooling Tower Blowdown

There will be no cooling tower blowdown from the Hines Energy Complex. Consequently, this section is not applicable.

5.2.3 Measurement Program

Since there is no potential for any industrial wastewater discharge from the Hines Energy Complex, no new measuring or monitoring programs are proposed.

5.3 IMPACTS ON WATER SUPPLIES

Operation of the generating facilities at the Hines Energy Complex has been designed to minimize the withdrawal of water from the Upper Floridan aquifer and to maintain appropriate water quality in off-site water bodies. Key concepts included in the Power Block 2 project design to achieve these aims include the following:

- Recycle of process wastewaters within the generating units and associated processes.
- Use of reclaimed water.
- Water crop of all available onsite areas.

5.3.1 Surface Water

The off-site surface water bodies in the vicinity of the Hines Energy Complex include the Peace River, Camp Branch and McCullough Creek. Barber Branch, formerly located within and adjacent to the northeast corner of the site, has been mined through and no longer exists in the site vicinity. The Six Mile Creek drainage has also been mined through in the vicinity of the site. However, a portion of this drainage has been, or will be, reestablished through mine reclamation activities. Operational activities associated with Power Block 2 include the implementation of Power Block 2 and the operation of the on-site water cropping system. Section 3.8 provides details of the proposed water cropping system. No impacts to off-site surface water bodies due to the operation of Power Block 2 are expected.

Operation of the water cropping system will involve the interception, storage and use of a portion of the surface water runoff available from selected areas within the site. This system will be operated to consider normal flow operations as well as storm flow operations. Details concerning the design and operation of the on-site water cropping system are presented in Section 3.8.

5.3.1.1 Peace River

In all of the Peace River Basin, only two surface water withdrawals have been identified. These include the Peace River-Manasota Regional Water Supply Authority (PRMRWSA) water treatment plant near Ft. Ogden, approximately 35 miles south of the site, (see Figure 5.3.1-1), and, in Charlotte County, the site of Punta Gorda reservoir on Shell Creek, a tributary of the Peace River. In the future, Southwest Florida Water Management District (SWFWMD, 1992) recommends that an additional 25.0 million gallons per day (MGD) (34.3 MGD maximum) of withdrawal be developed from the Peace River, also at Ft. Ogden. The total withdrawal by 2020 would then be 37.0 MGD (average) or 48.7 MGD (peak), equivalent to withdrawals of about 57.3 cfs (average) or 75.4 cfs (peak), respectively. The average flows are the appropriate quantity to compare because the withdrawal includes pumping water during high flows and storing it until needed. Average flows at Arcadia and Fort Meade are 1,084 cfs and 155 cfs, respectively. Therefore, runoff to the Peace River downstream of Fort Meade (929 cfs) is more than sufficient to supply the recommended surface water withdrawal for downstream public supply uses.

As noted in Section 4.2.C.2 of the Basis of Review for Water Use Permit Applications (SWFWMD, 1989), the central component of SWFWMD's rules for stream withdrawals is a 10 percent guideline for evaluation of environmental impacts. The goal of this technical criterion is to allow for consumptive withdrawals of flowing waters, while protecting the ecological qualities of streams and estuaries. This has particular importance in southwest

Florida where economically important sport and commercial marine fisheries are ecologically dependent on freshwater flows to coastal estuaries. Selection of the 10 percent guideline by SWFWMD was based on numerous hydrologic and ecological studies conducted on rivers and estuaries in southwest Florida.

The Peace River at Fort Meade has a drainage basin of 480 square miles (USGS, 1990). As authorized by the 1994 Certification, development of the 7,800 acre (12.2 square miles) Hines Energy Complex site directly removes approximately 3,280 acres (5.1 square miles) from the Peace River basin. The entire Hines Energy Complex site encompasses approximately 12 square miles, or about 2.5 percent of the Peace River basin at Fort Meade. The operation of Power Block 2 on the Hines Energy Complex site will have no significant impact on flows in the Peace River, or to either existing or potential future users.

5.3.1.2 Tributaries

The effects of operation of the on-site water cropping system on tributaries to the Peace River are discussed in the following sections. These tributaries include:

- Camp Branch
- McCullough Creek
- Six Mile Creek

CAMP BRANCH

A portion of the site's Buffer/Mitigation Area, which was historically part of the Camp Branch drainage, will temporarily be part of the on-site water cropping system. Upon completion of reclamation, these areas will be removed from the water cropping system and reconnected to the Camp Branch drainage. These areas are being developed as described in the 1992

SCA. No impacts to Camp Branch beyond those addressed in the 1994 Certification will occur due to the operation of Power Block 2.

MCCULLOUGH CREEK

A portion of the site's water cropping system is located within areas which historically drained to McCullough Creek. FPC has implemented the McCoullough Creek drainage enhancement project to provide supplemental base flow. No impacts to McCullough Creek beyond those approved in the 1994 Certification will occur during the construction phase of Power Block 2.

SIX-MILE CREEK

The former Six Mile Creek basin has been mined through and is now part of the IMC mine complex. Prior to mining, the headwaters for this basin originated on the western Hines Energy Complex site areas within the IMC Noralyn and Phosphoria mine area. Most of the Six Mile Creek watershed is now occupied by phosphate mine land forms such as above-grade clay settling areas or mine pits. Portions of the Six Mile Creek basin, both within the Hines Energy Complex site and off-site, have already been reclaimed.

Elements of the proposed water cropping system will be constructed in areas which formerly drained to the Six Mile Creek basin. The water cropping system consists of catchment areas, conveyance features, and water crop storage areas. Section 3.8 provides details for the proposed on-site water cropping system.

The catchment areas will provide runoff to the water crop storage areas. Catchment areas will be developed on the site of former clay settling areas using methods similar to reclamation methods for clay settling areas. The primary difference between a reclaimed

clay settling area and the proposed catchment areas is that the catchment area will be maintained over time to drain to the water crop conveyance facilities. This will provide a reliable, long-term alternative source of water for plant operations. Typically reclaimed clay settling areas continue to consolidate over time, and an increasing percentage of their runoff will be retained on the clay surface within depressional storage areas which have formed. In this fashion, unmaintained clay settling areas become internally drained and do not discharge to the external drainage system over time.

The proposed on-site water crop areas will be developed consistent with conceptual reclamation plans for the Noralyn and Phosphoria mines. The proposed water cropping system will be operated to capture and store runoff to provide an alternative supply of water for plant operations. The largest percentage of stored water will come from storm events. The excess water from storm events and normal flows will be released to the remnant Six Mile Creek basin. No adverse off-site impact to the Six Mile Creek system, above the impacts incurred due to mining and subsequent reclamation, are expected due to the operation of the water cropping system.

5.3.2 Ground Water

In 1992, SWFWMD declared all of Manatee, Sarasota, Hardee and DeSoto Counties and portions of Hillsborough, Charlotte, Polk and Highlands Counties the Southern Water Use Caution Area (SWUCA). The declaration was made because water resources are or will become critical in the next twenty years. The Hines Energy Complex is within the SWUCA. No ground water withdrawals other than for domestic and sanitary purposes are planned as part of the operation of Power Block 2.

The Floridan aquifer system supplies about 85 percent of ground water use within the SWUCA (SWFWMD, 1998). SWFWMD (1998) also states in recent years, the actual

water pumped and used has been below the 650-700 million gallons per day (mgd) that the District has identified as the approximate sustainable amount the aquifer can yield. Water use dropped each year from 1991-95, averaging 616 mgd, while 1996 use was up about 10 percent over the prior year. Current projections to 2020 indicate water use will be about 760 mgd, creating the likely need for 50 to 100 mgd from alternative sources to meet projected regional demands.

FPC's water use plans for the Hines Energy Complex, as authorized in the 1994 Certification, incorporate all of the aspects of the District's long term and overall strategy. The Hines Energy Complex has refined and continues to refine its understanding of the water resources available to the plant through previous extensive ground water investigations and previous and ongoing surface water studies. Water use plans for the facility incorporate alternative water supply sources including use of reclaimed water, water cropping, and water conservation.

Ground water withdrawals for domestic and sanitary purposes are authorized in the 1994 Certification for Power Blocks 1 and 2. No additional ground water withdrawal impacts are proposed for development of Power Block 2.

5.3.2.1 Cooling Pond

No ground water withdrawals for makeup water to the Cooling Pond are planned as part of the operation of Power Block 2. Consequently, operation of Power Block 2 will not impact ground water resources.

5.3.2.2 Brine Pond Water Seepage

A unique feature of the Hines Energy Complex is the availability of waste clays and dam impoundments resulting from the previous phosphate mining. These features accommodate an evaporative pond that will receive the brine concentrated from the blowdown recycling treatment process. The mining area designated SA-9 is being used to store the brine as authorized under the 1994 Certification.

The 1994 Certification required that a brine-clay interaction study be undertaken: 1) to characterize the hydraulic conductivity of the Brine Pond sediments (clay) in association with the existing reverse osmosis RO reject water; and, 2) to determine the interaction of the RO reject water with these sediments. Upon completion of the study, which is currently underway, the results will be submitted to the DEP.

5.3.2.3 Impacts of On-Site Solid Waste Disposal

The impacts associated with on-site solid waste disposal for the plant were presented in the 1992 SCA. No changes in those impacts are anticipated as a result of operation of Power Block 2, since there will be no on-site disposal of solid waste.

5.3.3 Drinking Water

5.3.3.1 Impacts of Withdrawal from a Drinking Water Source

Up to 5,000 gpd of ground water withdrawals for drinking and sanitary water are authorized in the 1994 Certification. No additional impacts are expected to drinking

water sources due to the operation of Power Block 2. As a condition of the Polk County CUP, FPC will provide Polk County with annual reports summarizing water use and conservation measures.

5.3.3.2 Impacts of Discharge to a Drinking Water Source

A zone of discharge was authorized for the future solid waste disposal area, the Brine Pond, and the Cooling Pond at the Hines Energy Complex under the 1994 Certification. The zone of discharge extends horizontally 100 feet out from the outside toe of the earthen dam along a consolidated boundary surrounding these facilities. The vertical extent of the zone of discharge is to the top of the Tampa member of the Hawthorn Group.

No impacts of ground water discharge are expected to a drinking water source due to the operation of Power Block 2. Discharges to groundwater from the Cooling Pond, Brine Pond, and solid waste disposal area for full site buildout (3000 MW) were addressed in the 1992 SCA.

5.3.4 Leachate and Runoff

Brind Pond leachate is discussed in Section 5.3.2.2. Due to the development of the Brine Pond in a former clay settling area, no runoff will be generated. No impacts to groundwater due to runoff from other areas is anticipated.

5.3.5 Measurement Program

As required by Condition XVIII.A.9. of the 1994 Certification, FPC has established a ground water monitoring program at the Hines Energy Complex. FPC has implemented a ground water monitoring program which consists of the collection and analysis of ground water samples from six (6) Intermediate aquifer monitor wells and one (1) Upper Floridan aquifer monitor well. The location of the monitor wells and a summary of the results from the initial sampling event are included in Appendix 10.5.2.

5.3.6 References

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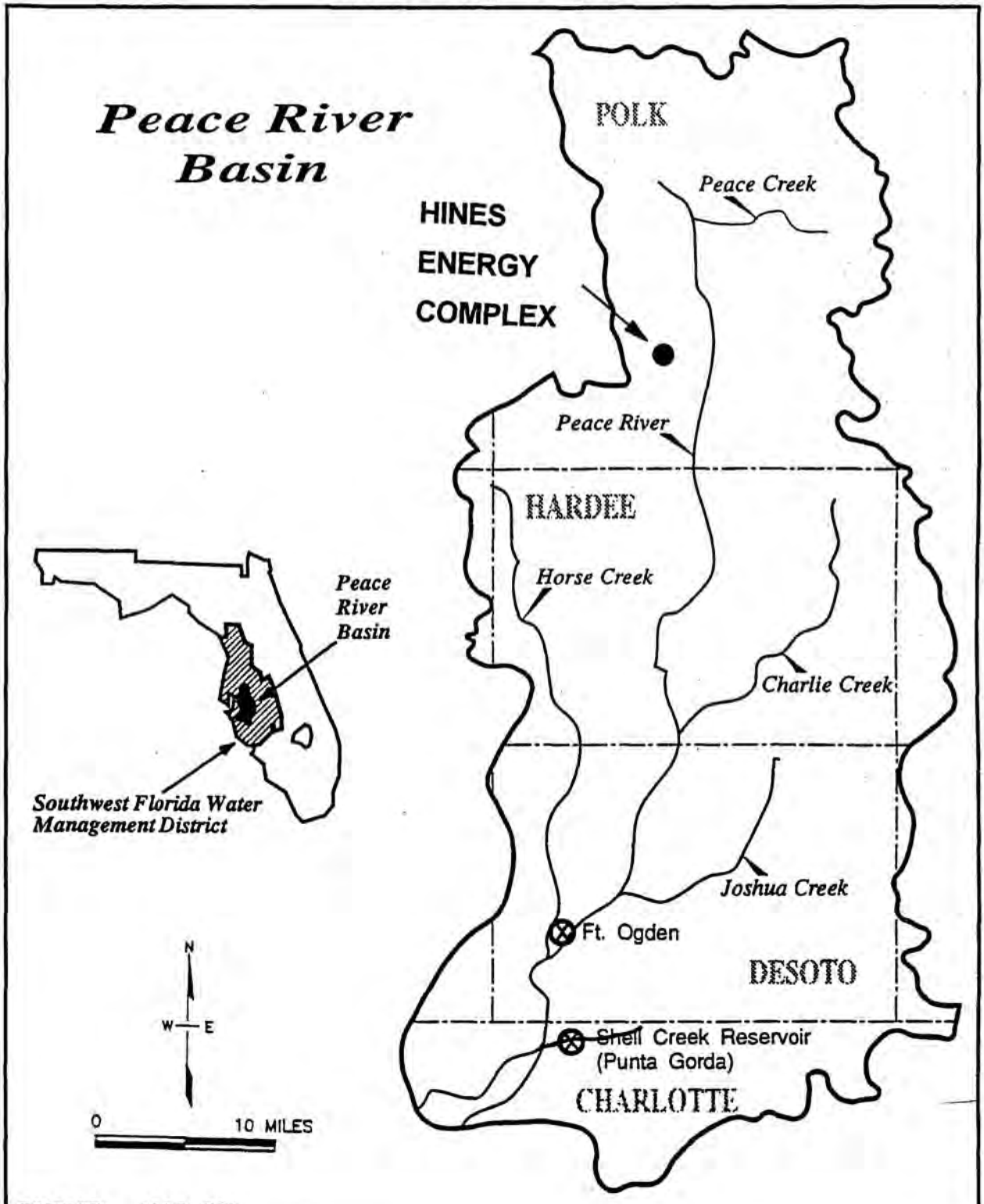
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SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 5.3.1-1
PEACE RIVER BASIN MAP

c:\dwg\fpcsca\borders.dwg

5.4 SOLID / HAZARDOUS WASTE DISPOSAL IMPACTS

5.4.1 Solid Waste

Solid wastes to be generated during plant operations are discussed in Section 3.7. General solid wastes, such as grass clippings, yard wastes and circulating water system screenings, will be recycled to the extent possible. Waste paper will be recycled where practical. Remaining solid wastes, such as office waste, will be transported off-site for disposal at a licensed waste disposal facility. No other solid waste generation is anticipated. No disposal of solid waste will occur on-site due to the operation of Power Block 2.

FPC has a corporate-wide commitment to waste minimization. This commitment includes extensive recycling of waste, source reduction, and elimination of most hazardous waste product usage. The corporate commitment will be implemented on a continuing basis at the site.

Due to FPC's significant recycling efforts and the minimal amount of solid waste to be generated by operation of Power Block 2, impacts related to off-site landfill operations and landfill space are negligible.

5.4.2 Hazardous Waste

No hazardous waste will be disposed on the Hines Energy Complex site.

Handling and disposal of hazardous waste during plant operations will be in accordance with state and Federal regulations, specifically 40 CFR Part 262: Standards Applicable to Generators of Hazardous Wastes. If hazardous wastes are generated during the

cleaning of steam generators and boiler steam cycle components, the wastes will be handled as discussed in Section 3.6.6.

The Hines Energy Complex uses mercury containing lamps and batteries that are regulated as Universal Wastes under RCRA. FPC complies with handling and disposal requirements for all Universal Wastes.

5.5 SANITARY AND OTHER WASTE DISCHARGES

Treatment of sanitary wastes generated during operation of Power Block 2 is discussed in Section 3.5.2. After treatment in the permitted on-site treatment plant, wastewater is routed to the Cooling Pond as an alternative makeup water source. Biodegradable solids collected in the treatment system are collected in a holding tank and disposed off-site at a licensed facility. No other related waste discharges will occur.

Wastewater reuse results in a slight reduction of water demand from other sources. No significant impacts are expected from the off-site disposal of the biodegradable solids.

5.6 AIR QUALITY IMPACTS

The air quality impacts of Power Block 2 are fully discussed in Sections 6, 7, and 8 of the PSD permit application provided as Appendix 10.1.5. Therefore, that analysis is not repeated in its entirety in this section. A summary of the results follows.

A complete air quality dispersion modelling analysis of the potential impacts of air emissions from the proposed Power Block 2 was performed. The EPA SCREEN3 model was used to determine the worst-case load and temperature conditions with respect to potential ambient air quality impacts. The worst-case conditions identified were full load and 105°F for particulate matter (PM), SO_2, NOx, and H_2SO_4. For CO, the worst-case conditions were 105°F and 50% load.

The worst-case conditions were then evaluated with the refined ISCST3 model to determine whether Power Block 2 will have a significant impact on the ambient air quality in the area surrounding the plant site. A large network of receptors, covering an area out to 50 kilometers from the site, was utilized in the model along with the emissions data and five years of meteorological data. The meteorological data were, as prescribed by the FDEP, from the Tampa National Weather Service station for the years 1987 through 1991.

In addition, receptor locations were placed at the boundary of the Chassahowitzka National Wilderness Area (NWA), which is located 118 kilometers from the plant site and is the nearest PSD Class I area.

The results of the ISCST3 modelling analysis are summarized in Tables 5.6-1 and 5.6-2. In Table 5.6-1, highest predicted concentrations for each pollutant are compared with the corresponding PSD Class II significance levels, increments, and ambient air quality

standards. In Table 5.6-2, highest predicted concentrations at the NWA are compared with the PSD Class I significance levels. All concentrations are less than the EPA PSD significance levels. Therefore, Power Block 2 will not have a significant impact on the ambient air quality of central Florida. In addition, the modelling results demonstrate that the impact of Power Block 2 will not cause or contribute to an exceedance of any PSD increments or ambient air quality standards. Finally, since the impact of Power Block 2 on the NWA is less than significant, there will not be an impact to the visibility in the NWA.

TABLE 5.6-1
SUMMARY OF SIGNIFICANT IMPACT ANALYSIS CONCENTRATIONS
PSD CLASS II AREAS

Pollutant	Averaging Period	Maximum [1] Predicted Concentration from Power Block 2 (ug/m^3)	PSD Class II Sig. Level (ug/m^3)	PSD Class II Increment (ug/m^3)	Ambient Air Quality Standard[3] (ug/m^3)	Significant Impact (Yes/No)
Carbon Monoxide	1-Hour	345.6	2,000	N/A	40,000	No
	8-Hour	114.4	500	N/A	10,000	No
Nitrogen Dioxide	Annual	0.36	1	25	100	No
Sulfur Dioxide	3-Hour	12.7	25	512	1,300	No
	24-Hour	3.55	5	91	260	No
	Annual	0.02	1	20	60	No
Particulate Matter (PM_{10}) [2]	24-Hour	2.89	5	30	150	No
	Annual	0.07	1	17	50	No
Sulfuric Acid Mist	24-Hour	0.36	N/A	N/A	N/A	N/A

(1) Short-term values are highest values for this analysis.

(2) As a conservative approach, all project emissions of particulate matter were assumed to be in the form of PM_{10}.

(3) Florida AAQS, Rule 62-204.240

N/A = Not applicable

FPC, 1998

TABLE 5.6-2
SUMMARY OF MAXIMUM MODELED IMPACTS VS.
PSD CLASS I SIGNIFICANCE VALUES

Pollutant	Averaging Period	Highest Modeled Concentration from Power Block 2 (ug/m^3)	PSD Class I Signif. Level (ug/m^3)	Significant Impact
Sulfur Dioxide (SO_2)	3-Hour	0.79	1.0	NO
	24-Hour	0.17	0.2	NO
	Annual	0.001	0.1	NO
Particulate Matter (PM_{10})	24-Hour	0.07	0.3	NO
	Annual	0.003	0.2	NO
Nitrogen Dioxide (NO_2)	Annual	0.014	0.1	NO

5.7 NOISE

Noise impacts from operation of all phases up to 3000 MW of ultimate site capacity were analyzed and shown to comply with applicable noise criteria as part of the 1992 SCA. The 1994 Certification finds these noise criteria will be met during operation of each future phase, including the proposed Power Block 2. This noise impact analysis is presented to reaffirm that earlier analysis and demonstration of no adverse impacts.

The potential noise impacts for the addition of Power Block 2 were determined based on the manufacturer's far-field noise guarantee of 70 dBA at 400 feet for Power Block 1. Since the equipment will be substantially similar for Power Blocks 1 and 2, the noise levels for Power Block 2 were assumed to be the same as Power Block 1. This would produce a worst case far-field noise level of 73 dBA at 400 ft from both Power Block 1 or 2. The noise impacts were determined by decreasing the far-field noise level for Power Blocks 1 and 2 by 6 dBA for each doubling of distance from the Plant Island. This noise reduction accounts for hemispheric spreading, but does not account for molecular absorption, terrain, vegetation, and barriers (including portions of the Power Block such as the HRSG). Therefore, the estimated noise impacts for Power Blocks 1 and 2 are conservative. The noise contribution of Power Blocks 1 and 2 were determined for 6 locations which corresponded to the 4 noise monitoring locations where noise levels were determined at sensitive receptors (Locations 1 through 4) and two additional locations considered to be sensitive receptors in the 1992 SCA. These locations included several residences along County Road 630 (CR 630) and east of CR 555 (Location 6), and the Watson Cemetery located on CR 555 south of the Hines Energy Complex entrance road. A survey of the area performed in November 1998 found no additional noise-sensitive receptors from that reported in the 1992 SCA. The estimated project noise impacts were appropriately added to the observed noise levels at the nearest noise-sensitive receptor locations.

The results of the noise impacts analyses are summarized in Table 5.7-1 through 5.7-4. Tables 5.7 -1 and -2 present the predicted impacts of Power Block 1 and 2 together with the observed L_{eq} and L_{dn} noise levels, respectively. As shown by the column titled "Combined Impacts", the additional noise from Power Block 1 and 2 together with the existing L_{eq} and L_{dn} that result from noise from trucks is, for most of the receptors, above the EPA criteria of 55 dBA for residential and agricultural areas. However, the noise increase due to Power Blocks 1 and 2 is generally less than 0.5 dBA for all locations. An increase in noise levels of 3 dBA or less is not noticeable. Further, noise levels at these locations are already above the EPA criteria. The predicted impacts of Power Block 1 and 2 together with the calculated baseline L_{eq} and L_{dn} noise levels based on L_{90} values are presented in Tables 5.7-3 and -4, respectively. As shown in the tables, the additional noise from Power Block 1 and 2 together with the baseline L_{eq} and L_{dn}, is well below the EPA noise criteria for all locations. The additional noise from Power Blocks 1 and 2, even during time when truck traffic is not present, will be less than 3 dBA and not noticeable at any of the sensitive receptors.

5.7.1 References

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Table 5.7-1
Noise Impacts
Power Blocks 1 and 2
24-Hour L_{eq} Monitoring Data

Location	Description	Distance (Miles)[1]	Predicted Impacts	Observed L_{eq}	Combined Impacts
1	CR 555 & CR 630	2.9	41.82	56.6	56.74
2	CR 555 & CR 640	3.1	41.33	58.3	58.39
3	Homeland	3.4	40.59	50.0	50.47
4	Fort Meade	4.7	37.37	53.7	53.80
5	On-Site			49.9	
6	CR 630; East CR 555	2.8	42.07	56.6[2]	56.75
7	Trinity Cemetery	1.9	45.60	58.3[3]	58.53

Notes:
1. Distance (Miles) from Plant Island.
2. Monitoring data for Site 6 was assumed to be similar to Site 1.
3. Monitoring data for Site 7 was assumed to be similar to Site 2.

Table 5.7-2
Noise Impacts
Power Blocks 1 and 2
24-Hour L_{dn} Monitoring Data

Location	Description	Distance (Miles)[1]	Predicted Impacts	Observed L_{dn}	Combined Impacts
1	CR 555 & CR 630	2.9	41.82	62.7	62.74
2	CR 555 & CR 640	3.1	41.33	64.5	64.52
3	Homeland	3.4	40.59	53.2	53.43
4	Fort Meade	4.7	37.37	57.5	57.54
5	On-Site			51.1	
6	CR 630; East CR 555	2.8	42.07	62.7[2]	62.74
7	Trinity Cemetery	1.9	45.60	64.5[3]	64.56

Notes:
1. Distance (Miles) from Plant Island.
2. Monitoring data for Site 6 was assumed to be similar to Site 1.
3. Monitoring data for Site 7 was assumed to be similar to Site 2.

Table 5.7-3
Noise Impacts
Power Blocks 1 and 2
Calculated Background L_{eq}

Location	Description	Distance (Miles) [1]	Predicted Impacts	Observed L_{eq}	Combined Impacts
1	CR 555 & CR 630	2.9	41.82	43.4	45.72
2	CR 555 & CR 640	3.1	41.33	46.4	47.54
3	Homeland	3.4	40.59	46.2	47.26
4	Fort Meade	4.7	37.37	48.2	48.56
5	On-Site			38.7	
6	CR 630; East CR 555	2.8	42.07	43.4[2]	45.82
7	Trinity Cemetery	1.9	45.60	45.4[3]	48.53

Notes:
1. Distance (Miles) from Plant Island.
2. Monitoring data for Site 6 was assumed to be similar to Site 1.
3. Monitoring data for Site 7 was assumed to be similar to Site 2.

Table 5.7-4
Noise Impacts
Power Blocks 1 and 2
Calculated Background L_{dn}

Location	Description	Distance (Miles) [1]	Predicted Impacts	Observed L_{dn}	Combined Impacts
1	CR 555 & CR 630	2.9	41.82	46.4	47.68
2	CR 555 & CR 640	3.1	41.33	48.9	49.57
3	Homeland	3.4	40.59	48.0	48.72
4	Fort Meade	4.7	37.37	50.0	50.23
5	On-Site			42.6	
6	CR 630; East CR 555	2.8	42.07	46.4[2]	47.75
7	Trinity Cemetery	1.9	45.60	48.4[3]	50.22

Notes:
1. Distance (Miles) from Plant Island.
2. Monitoring data for Site 6 was assumed to be similar to Site 1.
3. Monitoring data for Site 7 was assumed to be similar to Site 2.

5.8 CHANGES IN NONAQUATIC SPECIES POPULATIONS

5.8.1 Impacts

The effects of long-term (chronic) exposure of plants and wildlife to predicted ambient concentrations of SO_2, NO_2, O_3, a mixture of SO_2 and NO_2, a mixture of SO_2 and O_2, fugitive dust, and other pollutants can only be generally estimated. The effects of long-term exposures to concentrations of these air contaminants, below those concentrations that result in acute injury symptoms, is not thoroughly documented in the literature. It is reported in the literature that chronic injury symptoms do occur when plants are exposed to concentrations below acute injury threshold levels. Even if chronic injury symptoms were to be manifested by vegetation and wildlife, it is not anticipated that the injury will be severe enough to result in changes in species diversity and composition (see Section 5.6.). Other factors, such as water availability, light, and soil nutrients, would tend to have more of an effect on species diversity and composition than exposure to low levels of air contaminants.

Emissions from Power Block 2 will comply with all state and federal ambient air quality standards. Those standards have been established to protect public health and welfare, with an adequate margin of safety. Compliance with these standards will be protective of the environment.

5.8.2 Monitoring

Monitoring of off-site nonaquatic species is not proposed because of the minimal opportunity for impacts to occur.

5.9 OTHER PLANT OPERATION EFFECTS

5.9.1 Highway Traffic

Traffic associated with operation of the Hines Energy Complex represents a long-term impact to Polk County roadways, since they will be recurring into the future. Traffic impacts are directly related to the number of employees, since materials for plant operations will arrive primarily by rail and/or pipeline. A total of 55 operations workers will be needed for ultimate site development. This employment projection was considered in the traffic impact analysis which was conducted by Kimley-Horn in 1992 and submitted with the 1992 SCA. (See Appendix 10.5.1).

The traffic impact analysis was reviewed by both Polk County and the Florida Department of Transportation (FDOT). Recommendations for roadway and intersection improvements were developed with input from both agencies. These improvements became the subject of conditions of the Polk County CUP, and were completed during construction of Power Block 1. A copy of the CUP is included in Appendix 10.4.5. The CUP condition related the need for roadway or intersection improvements to a level of employment rather than a specific year and provided for monitoring of employment and traffic conditions to determine the appropriate timing of the improvements. Since peak employment on-site already occurred during site development and construction of Power Block 1, no further monitoring or roadway/intersection improvements are required.

5.9.2 Roadway Improvements

The improvements necessary to accommodate operations traffic were also recommended as a part of the construction traffic analysis (Section 4.6.1). No other improvements are required to accommodate the traffic impacts from operation of Power Block 2.

Using the number of employees rather than a specific year is the most appropriate measure of the need for improvement. A summary of the improvements and monitoring conditions which have been completed is presented below.

- Traffic monitoring program at the intersection of CR 555 and SR 640 to determine the need to install a traffic signal or make geometric improvements. As a result, minor geometric improvements were completed.

- Construction of a Case III intersection at the main driveway connection to CR 555 including left turn storage and acceleration/deceleration lanes.

- Construction of a Case II intersection at the secondary or southern-most driveway connection to CR 555.

- Traffic monitoring has been completed at the intersection of SR 37 and CR 640 to determine the need to install a traffic signal or make geometric improvements. Based on the occurrence of the peak numbers of employees, a traffic signal was installed by the County.

- The addition of a signal phase for westbound left-turns which operates as protected/permissive at the intersection of CR 555 and SR 60.

The transportation improvements listed above conform to FDOT and Polk County requirements.

5.9.3. References

Florida Power Corporation. 1992. Polk County Site. Site Certification Application.

5.10 ARCHAEOLOGICAL SITES

As a result of the highly disturbed nature of the site, no significant archaeological sites are expected to be encountered.

5.11 RESOURCES COMMITTED

5.11.1 Physical Resources

The physical state resources committed to plant operation for Power Block 2 include surface water, limited ground water and air.

The volume of surface water to be water cropped will average about 4891 ac-ft/yr to provide an alternative water supply to support plant operations, primarily to provide an alternative water supply to help compensate for evaporative losses from the Cooling Pond.

The consumptive use of ground water for Power Blocks 1 and 2 will be limited to potable water needs. No irreversible or irretrievable commitment of air resources is anticipated as a result of project operation. Analysis of likely air quality impacts of the project (Section 5.6) indicates that applicable ambient air quality standards would not be approached by operation of Power Block 2. The site is located more than 100 km (62 mi) from the nearest Class I PSD area. As demonstrated in Section 5.6, the plant should have no significant impact on that Class I area.

5.11.2 Biological Resources

As discussed in Section 5.2.1, aquatic communities in the vicinity of the proposed plant will not experience adverse effects from operation of Power Block 2

Construction and operation of the plant will have no measurable effect on wildlife species populations, or on the growth and productivity of surrounding vegetation, including agricultural crops.

5.11.3 Economic and Cultural Resources

Economic resources committed to the project will include human labor, financial commitments, and the displacement of other potential economic uses of the site. A

maximum operational work force of approximately 22 persons will be dedicated to Power Blocks 1 and 2 as long as they are in operation. These individuals will not be available for employment elsewhere. Similarly, financial resources that FPC commits to operation of the plant will not be available for alternative uses as long as the plant is in operation. Because no expansion of government-supplied services will be required by the plant, no commitment of state or local government financial resources is anticipated.

New employees and their families, like any growing population, will place additional demands on the local infrastructure (See Section 7.2 of the 1992 SCA included in Appendix 10.6). Effects on schools, utilities, highways, and other public facilities are expected to be more than offset by taxes paid in Polk County.

No cultural resources are known to exist on-site, therefore no commitment of cultural resources is anticipated.

5.12 VARIANCES

No variances from applicable federal or state standards are known to be required.

CHAPTER 6

TRANSMISSION LINES AND OTHER LINEAR FACILITIES

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6.1 TRANSMISSION LINES

The existing 230 kv transmission system from the Barcola Substation to the Hines Energy Complex and from the Hines Energy Complex to the Fort Meade substation with double circuit structure is adequate for electric transmission from Power Blocks 1 and 2.

Future phases of project generation may require the certification of additional transmission line facilities via the submittal of future supplemental certification applications.

7.0

CHAPTER 7

ECONOMIC AND SOCIAL EFFECTS OF PLANT CONSTRUCTION AND OPERATIONS

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7.1 SOCIOECONOMIC BENEFITS AND COSTS

The Hines Energy Complex will continue to provide a substantial net benefit to Polk County, both in terms of the large increase in property tax base that will occur, and the project's employment and payroll. The level of permanent employment will continue to increase with the adddition of generating units. An analysis of the benefits and costs accruing to the County throughout construction of the ultimate site capacity was completed, and submitted with the 1992 SCA. (See Appendix 10.6).

CHAPTER 8

SITE AND PLANT DESIGN ALTERNATIVES

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8.1 SITE AND DESIGN ALTERNATIVES

This optional chapter is not being submitted as part of this SCA because an Environmental Impact Statement required by the National Environmental Policy Act is not required for the development of Power Block 2.

CHAPTER 9

COORDINATION

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9.0 COORDINATION

The following individuals have been contacted regarding this SCA:

Name	Agency	Telephone Number
Hamilton Oven	DEP	(850) 487-0472
Paul Darst	DCA	(850) 488-4925
Bob Vertell	SWFWMD	(941) 534-1448
Brian Sodt	CFRPC	(941) 534-7130
Merle Bishop	Polk Co.	(941) 534-6084
Sandra Whitmire	DOT	(850) 488-8006
Douglas Bailey	FGFWFC	(850) 488-6661

ENERGY COMPLEX POWER BLOCK 2

FLORIDA POWER CORPORATION

SUPPLEMENTAL SITE CERTIFICATION APPLICATION

HINES ENERGY COMPLEX POWER BLOCK 2

JANUARY 1999

Florida Power CORPORATION

VOLUME 2

FLORIDA POWER CORPORATION

SUPPLEMENTAL SITE CERTIFICATION APPLICATION

HINES ENERGY COMPLEX POWER BLOCK 2

JANUARY 1999

Florida Power CORPORATION

VOLUME 2

CHAPTER 10

APPENDICES

10.1 FEDERAL PERMIT APPLICATIONS OR APPROVALS

- 10.1.1 316 Demonstrations
- 10.1.2 NPDES Application/Permit
- 10.1.3 Hazardous Waste Management Application/Permit
- 10.1.4 Section 10 or 404 Application/Permit
- 10.1.5 Prevention of Significant Deterioration Permit Application
- 10.1.6 Coastal Zone Management Certifications

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10.4 EXISTING STATE PERMITS OR APPLICATIONS

- 10.4.1 Ultimate Site Capacity (3000 MW) and Power Block 1 Certification
  - 10.4.1.1 Final Order Approving Certification for Florida Power Corporation (PA 92-33)
  - 10.4.1.2 Hines Energy Complex Ultimate Buildout (3000 MW) Site Plan
- 10.4.2 Final Order Modifying Condition of Certification (PA 92-33B)
- 10.4.3 Final Order Modifying Conditions of Certification (PA 92-33C)
- 10.4.4 Siting Board's Final Order and Land Use Recommended Order
- 10.4.5 Polk County Conditional Use Permit 92-06

10.4.6 IMC Noralyn/Phosphoria Conceptual Reclamation Plan Modification Application
10.4.7 SWFWMD Water Use Permit No. 2011407.00
10.4.8 Domestic Wastewater Permit FLA 017408-001-DW3P
10.4.9 Potable Water Permit PWIS # 6535433
10.4.10 Division of Historical Resources Letter Regarding Archaeological and Historic Sites

10.5 MONITORING PROGRAMS

10.5.1 Traffic Analysis

10.5.1.1 Transportation Conditions (Level of Service)
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10.5.2 Water Quality Monitoring

10.5.2.1 Ground Water Monitoring Locations and Water Quality Results
10.5.2.2 Ground Water Level Monitoring Data for Power Block 1 Construction Dewatering
10.5.2.3 Surface Water Quality Results

10.5.3 Local Climatological Data, Tampa Station

10.6 SOCIOECONOMIC COST/BENEFITS

10.1.1

10.1.1 316 Demonstrations

There is no surface water intake or point source thermal discharge to surface waters located at the Hines Energy Complex. Therefore, no demonstrations pursuant to Sections 316(a) or (b) of the Clean Water Act are required. This section is not applicable.

10.1.2 NPDES Application/Permit

The Hines Energy Complex will operate as a zero discharge facility for industrial wastewaters. Therefore, no NPDES permit or permit application will be required for operation of the Power Blocks. This section is not applicable.

10.1.3 Hazardous Waste Management Application/Permit

The Hines Energy Complex has been designed to operate so that a federal or state hazardous waste treatment, storage or disposal permit is not required. This section is not applicable.

10.1.4 Section 10 or 404 Application/Permit

A copy of the U.S. Army Corps of Engineers (COE) Permit No. 199302169 (IP-MN) is included in the following section.

DEPARTMENT OF THE ARMY PERMIT

Permittee: FLORIDA POWER CORPORATION

Permit No. 199302169(IP-MN)

Issuing Office: U.S. Army Engineer District, Jacksonville

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: To construct a combined cycle power plant facility in six phases over a 30-year period that will impact approximately 951 acres of waterbodies consisting of mine cuts and approximately 269 acres of associated wetlands. All work is to be completed in accordance with the attached plans numbered 199302169(IP-MN) in 8 sheets dated December 10, 1993.

Project Location: Wetlands associated with phosphate mining and associated with McCullough Creek and Camp Branch, in Sections 1-4, 10-14 and 23, Township 31 South, Range 24 East, Section 31, Township 30 South, Range 25 East, Sections 5-8, 17 and 18, Township 31 South, Range 25 East, approximately 10 miles south southeast of Bartow, Polk County, Florida.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on March 3, 2024. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature **and mailing address** of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

The attached Specific Conditions of Water Quality Certification/Permit number PA 92-33 issued by the Florida Department of Environmental Protection as part of the Florida Electrical Power Plant Siting Act on January 28, 1994, address most of the conditions that the District Engineer has determined are necessary to satisfy legal and public interest requirements for issuance of this permit. Therefore, all of the DEP permit specific conditions are hereby incorporated into this Department of the Army permit, with the following modifications, clarifications, are included to satisfy additional legal and public interest concerns of the District Engineer and/or address administrative procedures and do not alter the content of the DEP Specific Conditions.

a. Reference DEP Condition XXIV-A: In accordance with the time allotted to comply with this condition, the permittee shall submit a time table for completion of the mitigation indicated in the drawings required by this condition. The time table shall include planting, monitoring, success criteria, a management plan, and a contingency plan should the mitigation prove unsuccessful as measured using the criteria of the DEP specific conditions. The permittee shall also submit the mitigation construction plans required by this condition on standard 8 1/2" by 11" paper.

b. Submissions shall be made to the Corps of Engineers, Regulatory Division, Enforcement Branch at P.O. Box 4970, Jacksonville, Florida 32232, and the EPA, Wetlands Protection Section, 345 Courtland Street, NE, Atlanta, Georgia 30365.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal projects.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

(PERMITTEE) 4/12/94 (DATE)

David L. Miller
Senior Vice President, Corporate Services

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

(DISTRICT ENGINEER) 4/19/94 (DATE)

Terrence C. Salt
Colonel, U.S. Army

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

TRANSFEREE-SIGNATURE DATE

(NAME-PRINTED)

(ADDRESS)

(CITY, STATE, AND ZIP CODE)

JAX DISTRICT APR 18 94

XXIV. WETLAND RECLAMATION REQUIREMENTS FOR MINING PARCELS N-9B AND N-13

A. Within six months after the purchase of the Polk County Site, FPC shall submit to DEP construction drawings showing the proposed design for the reclaimed wetlands on mining parcels N-9B and N-13. The drawings shall include plan views and cross sections showing all of the proposed structures and predicted elevations after dewatering and initial clay consolidation referenced to NGVD for the proposed wetlands.

B. At least 90 days prior to planting of vegetation in mining parcels N-9B and N-13, FPC shall submit to DEP final planting plans for all areas to be reclaimed as wetlands. The plans shall include plan views and cross sections showing the species to be planted at the various elevations. The plans shall specify the size of the plants to be planted and the source of the plants.

C. Together with the final planting plans, FPC shall submit a detailed management plan for the reclaimed wetlands to DEP for review. The approved plan shall be made part of this certification. Upon approval, the plan shall be fully implemented. The management plan shall include, but not be limited to, frequent assessment and regular removal, if present, of nuisance and invasive exotic species listed in Attachment A and supplemental plantings of wetlands species (including groundcover, shrubs and trees) to simulate a natural floristic composition in the shrub and groundcover strata in the forested wetlands. Specific details for all aspects of the plans shall be included, such as specific time intervals for nuisance species assessments and planting densities. The management and maintenance actions shall be fully described in the required annual monitoring reports.

D. In order to ensure that the wetland reclamation is correctly implemented, a qualified biological consultant shall oversee the earthmoving, mucking, grading, planting, and monitoring required for the wetland reclamation plan. Prior to the commencement of any wetland reclamation activities, FPC shall submit to DEP for review and approval the name of the biological consultant and supporting documentation that the biological consultant is qualified to oversee the work. The biological consultant must have documented experience in successful wetland reclamation. Any proposed change in biological consultant prior to the wetland areas being determined to be successful shall be submitted to DEP for review and approval.

E. The areas to be reclaimed as forested wetlands shall be planted with a mixture of woody species noted in Attachment B. This includes the initial list of candidate species. Some may be deleted and others added, depending upon

soil conditions resulting from the clay consolidation process. The woody species and the herbaceous species shall be planted at elevations within the reclaimed wetlands that will provide hydroperiods appropriate for the species. Additional or alternate species or densities may be used if approved in writing by the Department during post-certification review. The areas to be reclaimed as herbaceous wetlands shall be planted with a mixture of the herbaceous species listed in Attachment B. These herbaceous species shall be planted at elevations within the reclaimed wetlands that will provide hydroperiods appropriate for the species. Additional or alternate species or densities may be used if approved in writing by the Department during post-certification review.

F. Within ninety days of completion of dewatering, placement of any soil subsidy and grading, the wetland reclamation areas shall be surveyed and a topographic map shall be prepared and submitted to DEP. The topographic map shall meet the following criteria:

1. It shall clearly depict the wetland topography in such a way as to unambiguously show how the site will retain, detain, shed, or otherwise influence the wet season flow and detention of water at the site.

2. It shall show one foot contour intervals based on a 50 foot, or finer, resolution grid;

3. It shall be certified by a registered land surveyor;

4. It shall show any hydrologic connections between the reclaimed and adjacent, existing wetlands; and,

5. It shall show the variations of topographic relief within the graded areas, which may require showing topographic intervals or spot elevations finer than one foot, in some portions of the site.

G. To provide for a more hospitable root zone environment and to foster better water quality in the short term, DEP encourages FPC to place organic soils, mulch or muck to a minimum depth of four inches on as much of the reclaimed wetlands on the site as possible. An alternative that would be acceptable to DEP would be to cap the wetland area with sand mixed with organic material, rather than overburden. The sand and organic mix, for purposes of the condition, is defined as a fine sand with six percent or greater organic content, if tested by the Walkley-Black method or dry weight loss ignition method.

Any fresh (not stockpiled) muck or mulch to be used for the wetlands shall be from a donor site with no or only minor presence by nuisance or exotic species. Any stockpiled muck

or mulch must have all nuisance or exotic plants removed before application to the reclaimed areas. FPC shall submit maps showing the location of specific donor site relative to the project site and a brief description of the proposed site, including the vegetation and soil type. The donor locations must be approved in writing by DEP.

H. The plants used to plant the mitigation areas shall be nursery stock. The plants shall originate from within a 50 mile radius of the site or within the same SCS hardiness zone as the mitigation site, whichever is greater. The stock of vegetation to be planted will be consistent with normal reclamation practices.

I. Freshwater herbaceous wetland reclamation shall be considered successful when the following conditions are meet:

1. Percent cover by non-nuisance, non-exotic wetland species shall be 80 percent or more. Percent covers for the aggregate of those wetland species, non-wetland species, bare ground and water shall be reported relative to the total area. A list of the wetland species included in the aggregate shall be included. Wetland species shall be those listed in Florida Administrative Code Rule 17-301.400;

2. Nuisance species and exotic species listed in Attachment A are limited to 10 percent or less of the total cover with no one species being more than 5 percent of the total cover. If these species exceed 10 percent of the total cover their density must be declining over several years, which would be considered a positive indication that they are under control;

3. The reclaimed wetlands are constructed in accordance with the conditions of certification.

J. Forested wetland reclamation shall be considered successful when the following conditions are met:

1. An average of at least 400 wetland trees per acre shall be growing above the herbaceous stratum;

2. The wetland species tree cover shall exceed 33 percent of the total area and in no area of an acre in size shall the tree cover be less than 20 percent total cover. Cover measurement shall be restricted to (1) those trees exceeding the herbaceous stratum in height and (2) those indigenous species that contribute to the overstory of the mature forest of the South Prong of the Alafia River and the Peace River and its tributaries and that are wetland vegetation listed in Florida Administrative Code Rule 17-301.400;

3. At least 80 percent of obligate groundcover (herbaceous) and obligate shrub (non-canopy woody species) vegetation shall be among those species listed in Florida Administrative Code Rule 17-301.400, and shall be reproducing naturally, either normal, healthy, vegetative spread (in ways that would be normal for each wetland species) or through seedling establishment, growth and survival. Nuisance species and exotic species listed in Attachment A shall be limited to 10 percent or less of the total cover, with no one species being more than 5 percent of the total cover. If these species exceed 10 percent of the total cover their density must be declining over several years, which would be considered a positive indication that they are under control;

4. The reclaimed wetlands are constructed in accordance with the conditions of certification.

K. FPC shall furnish to DEP annual statistical reports of vegetational sampling of the reclaimed wetlands done by any mutually agreed-upon method. Acceptable methods may be found in Daubenmire (1968), Green (1979), Grieg-Smith (1983), Mueller-Dombois and Ellenberg (1974), Oosting (1956), Poole (1974), and Southwood (1978). It is the responsibility of FPC to ensure that the monitoring report provides a qualitative and quantitative depiction of the site that is representative of the conditions at the entire site.

This report shall include on the cover page, just below the title, the certification of the following statement by the individual who supervised preparation of the report: "This report represents a true, accurate, and representative description of the site conditions present at the time of monitoring."

1. A monitoring plan describing sampling methods report format, and a map of sampling locations and photographic stations shall be submitted to the Department for review and approval at least 90 days prior to the initial planting.

2. Annual statistical reports shall describe as appropriate for each reclamation area: (1) the density and percent cover of listed trees, (2) percent cover of listed and non-listed herbaceous species, bare ground and water. For forested wetlands, tree canopy cover shall be submitted for not less than the third, fifth, and any subsequent years after planting until a determination of a successful reclamation has been made. Data for listed nuisance or invasive exotic species shall be tabulated separately. A listed species is one listed in Florida Administrative Code Rule 17-301.400. Reports shall also include an assessment of the jurisdictional status of each reclamation area. Data shall be taken during the summer growing

season. Reports shall be submitted annually within 60 days of data acquisition until a determination of a successful wetland reclamation has been made. The first annual statistical report data gathering shall occur not later than one year after planting.

3. Following implementation of the reclamation plan, monitoring shall be performed, following the methods established in the monitoring section, until a determination of a successful reclamation is obtained. At the end of the first three years of monitoring, FPC may request in writing that the monitoring program be reviewed by the DEP to determine whether or not the frequency or parameters of the monitoring program should be changed.

4. If it is determined by DEP staff, based on visual inspection and review of the monitoring reports that the reclamation is not trending toward success, FPC shall present methods and proposals to be reviewed and approved by the DEP within 30 days of DEP's notification to ensure success of the effort. The plan of corrective actions shall be implemented within 90 days of written approval by DEP.

EXOTIC AND NUISANCE PLANT LISTS

EXOTIC PLANT LIST

Brazilian Pepper (*Schinus terebinthifolius*)
Water Hyacinth (*Eichornia crassipes*)
Water Lettuce (*Pistia stratiotes*)
Cogon Grass (*Imperata brasiliensis & cylindrica*)
Caeser's Weed (*Urena lobata*)
Kudzu (*Pueraria montana*)
Lantana (*Lantana camara*)
Japanese Climbing Fern (*Lygodium japonicum*)
Melaleuca quinquenervia Casuarina equistifolia

NUISANCE PLANT LIST

Cattail (*Typha* spp.)
Primrose Willow (*Ludwigia peruviana*)
Climbing Hempvine (*Mikania scandens*)

VEGETATION PLAN FOR N-9B, N-13 AND SA-10
WITH CANDIDATE SPECIES AND PLANTING DENSITIES

MINE AREA N-9B

1. UPLAND FOREST

ACRES OF HABITAT TO BE ESTABLISHED: 41

Trees - Total average density of 300/acre

Slash Pine (*Pinus elliottii*)
Laurel Oak (*Quercus laurifolia*)
Southern Red Ceder (*Juniperus silicicola*)
Live Oak (*Quercus virginiana*)
Sweetgum (*Liquidamber styraciflua*)
American Holly (*Ilex opaca*)
Pignut Hickory (*Carya glabra*)
Redbud (*Cercis canadensis*) - Delayed until overstory shading
Dogwood (*Cornus florida*) - Delayed until overstory shading
Black Cherry (*Prunus serotina*) - Natural recruitment
Cabbage Palm (*Sabel palmetto*)

Shrubs - Total average density of 240/acre

Saw Palmetto (*Serenoa repens*)
Wax Myrtle (*Myrica cerifera*)
Beautyberry (*Callicarpa americana*)
Yaupon Holly (*Ilex vomitoria*)
Wild Olive (*Osmanthus americanus*).
Shining Sumac (*Rhus copallina*)
Hawthorne (*Crataegus* spp.)
Blueberry (*Vaccinium* spp.)
Groundsel Tree (*Baccharis halimifolia*) - Natural recruitment

Grasses, Forbs and Vines - 80 percent of ground cover

Eastern Gamagrass (*Tripsacum dactyloides*)
Panicum (*Panicum* spp.)
Blackberry (*Rubus* spp.) - Natural recruitment
Virginia Creeper (*Parthenocissus quinquefolia*) - Natural recruitment
Greenbriar (*Smilax* spp.) - Natural recruitment
Wild Grape (*Vitis munsoniana*) - Natural recruitment
Wood Fern (*Thelypterus* spp.) - Natural recruitment

2. SHRUB/BRUSHLAND

ACRES OF HABITAT TO BE ESTABLISHED: 23

Shrubs - Total average density of 240/acre

Saw Palmetto (*Serenoa repens*)
Wax Myrtle (*Myrica cerifera*)
Beautyberry (*Callicarpa americana*)
Yaupon Holly (*Ilex vomitoria*)
Wild Olive (*Osmanthus americanus*)
Shining Sumac (*Rhus copallina*)
Groundsel Tree (*Baccharis halimifolia*) - Natural recruitment

Grasses, Forbs and Vines - 80 percent of ground cover

Eastern Gamagrass (*Tripsacum dactyloides*)
Panicum (*Panicum* spp.)
Blackberry (*Rubus* spp.) - Natural recruitment
Virginia Creeper (*Parthenocissus quinquefolia*) - Natural recruitment
Greenbriar (*Smilax* spp.) - Natural recruitment
Wild Grape (*Vitis munsoniana*) - Natural recruitment
Wood Fern (*Thelypterus* spp.) - Natural recruitment

3. RANGELAND

ACRES OF HABITAT TO BE ESTABLISHED: 16

Grasses, Forbs and Vines - 100 percent of ground cover

Eastern Gamagrass (*Tripsacum dactyloides*)
Panicum (*Panicum* spp.)
Bluestems (*Andropogon* spp.)
Lopsided Indiangrass (*Sorgastrum secundum*)
Blackberry (*Rubus* spp.) - Natural recruitment
Partridge Pea (*Cassia chamaecrista*)
Wild Grape (*Vitis munsoniania*) - Natural recruitment
Hairy Indigo (*Indigofera hirsuta*) - Natural recruitment
Aster (*Aster* spp.) - Natural recruitment

4. PINE FLATWOODS

ACRES OF HABITAT TO BE ESTABLISHED: 27

Trees - Total average density of 200/acre

Slash Pine (*Pinus elliottii*)
Longleaf Pine (*Pinus palustris*)
Persimmon (*Diospyros virginiana*)

Shrubs - Total average density of 200/acre

Saw Palmetto (*Serenoa repens*)
Wax Myrtle (*Myrica cerifera*)
Beautyberry (*Callicarpa americana*)
Yaupon Holly (*Ilex vomitoria*)
Gallberry (*Ilex glabra*)
Fetterbush (*Lyonia lucida*)
Blueberry (*Vaccinium* spp.)

Grasses, Forbs and Vines - 80 percent of ground surface

Eastern Gamagrass (*Tripsacum dactyloides*)
Panicum (*Panicum* spp.)
Bluestems (*Andropogon* spp.)
Lopsided Indiangrass (*Sorgastrum secundum*)
Blackberry (*Rubus* spp.) - Natural recruitment
Greenbriar (*Smilax* spp.) - Natural recruitment
Partridge Pea (*Cassia fasiculata*)
Wild Grape (*Vitis munsoniania*) - Natural recruitment
Aeschyomene (*Aeschyomene* spp.)

5. SHRUB WETLAND

ACRES OF HABITAT TO BE ESTABLISHED: 25

Shrubs - Total average density of 300/acre

Buttonbush (*Cephalanthus occidentalis*)
Dahoon Holly (*Ilex cassine*)
Elderberry (*Sambucus simpsonii*)
Swamp Dogwood (*Cornus foemina*)
Swamp Hibiscus (*Hibiscus grandiflorus*)
Groundsel Tree (*Baccharis halimifolia*) - Natural recruitment
Carolina Willow (*Salix caroliniana*) - Natural recruitment
Wax Myrtle (*Myrica cerifera*) - Natural recruitment

Grasses, Forbs and Vines - 50 percent of remaining available ground surface

Panicum (*Panicum* spp.)
Lizard's Tail (*Saururus cernuus*)
Sedge (*Carex* spp. and *Cyperus* spp.)
Royal Fern (*Osmunda regalis*)
Cinnamon Fern (*Osmunda cinnamomea*)
Sawgrass (*Cladium jamaicense*)
Duck Potato (*Sagittaria* spp.)
Golden Ragwort (*Senecio glabellus*) - Natural recruitment
Wood Fern (*Thelypterus* spp.) - Natural recruitment
Wild Grape (*Vitis munsoniania*) - Natural recruitment
Camphorweed (*Pluchea* spp.) - Natural recruitment
Cow Pea (*Vigna luteola*) - Natural recruitment

6. FRESHWATER MARSH (HERBACEOUS WETLAND)

ACRES OF HABITAT TO BE ESTABLISHED: 89

Groundcover - 50 percent of remaining available ground surface

Panicum (*Panicum* spp.)
Sedge (*Carex* spp. and *Cyperus* spp.)
Sawgrass (*Cladium jamaicense*)
St. John's Wort (*Hypericum fasiculatum*)
Spike Rush (*Eleocharis* spp.)
Soft Rush (*Juncus effusus*)
Black Rush (*Juncus repens*)
Bullrush (*Scirpus* spp.)
Swamp Lily (*Crinum americanum*)
Spider Lily (*Hymenocallis* spp.)
Pickerelweed (*Pontederia cordata*)
Arrowroot (*Thalia geniculata*)
Canna Lily (*Canna* spp.)
Duck Potato (*Sagittaria* spp.)
Spatterdock (*Nuphar lutea*)
Water Lily (*Nymphaea* spp.)

7. ISLANDS AND OVERBURDEN MOUNDS

ACRES OF HABITAT TO BE ESTABLISHED: 6

Vegetation in these areas will require minimal to no plantings. They will either be overburden mounds left intact or constructed mounds tapered into the slough.

MINE AREA N-13

1. UPLAND FOREST

ACRES OF HABITAT TO BE ESTABLISHED: 65

Trees - Total average density of 300/acre

Slash Pine (*Pinus elliottii*)
Laurel Oak (*Quercus laurifolia*)
Southern Red Ceder (*Juniperus silicicola*)
Live Oak (*Quercus virginiana*)
Sweetgum (*Liquidamber styraciflua*)
American Holly (*Ilex opaca*)
Pignut Hickory (*Carya glabra*)
Redbud (*Cercis canadensis*) - Delayed until overstory shading
Dogwood (*Cornus florida*) - Delayed until overstory shading
Black Cherry (*Prunus serotina*) - Natural recruitment
Cabbage Palm (*Sabel palmetto*)

Shrubs - Total average density of 240/acre

Saw Palmetto (*Serenoa repens*)
Wax Myrtle (*Myrica cerifera*)
Beautyberry (*Callicarpa americana*)
Yaupon Holly (*Ilex vomitoria*)
Wild Olive (*Osmanthus americanus*)
Shining Sumac (*Rhus copallina*)
Hawthorne (*Crataegus* spp.)
Blueberry (*Vaccinium* spp.)
Groundsel Tree (*Baccharis halimifolia*) - Natural recruitment

Grasses, Forbs and Vines - 80 percent of ground cover

Eastern Gamagrass (*Tripsacum dactyloides*)
Panicum (*Panicum* spp.)
Blackberry (*Rubus* spp.) - Natural recruitment
Virginia Creeper (*Parthenocissus quinquefolia*) - Natural recruitment
Greenbriar (*Smilax* spp.) - Natural recruitment
Wild Grape (*Vitis munsoniana*) - Natural recruitment
Wood Fern (*Thelypterus* spp.) - Natural recruitment

2. SHRUB/BRUSHLAND

ACRES OF HABITAT TO BE ESTABLISHED: 22

Shrubs - Total average density of 240/acre

Saw Palmetto (*Serenoa repens*)
Wax Myrtle (*Myrica cerifera*)
Beautyberry (*Callicarpa americana*)
Yaupon Holly (*Ilex vomitoria*)
Wild Olive (*Osmanthus americanus*)
Shining Sumac (*Rhus copallina*)
Groundsel Tree (*Baccharis halimifolia*) - Natural recruitment

Grasses, Forbs and Vines - 80 percent of ground cover

Eastern Gamagrass (*Tripsacum dactyloides*)
Panicum (*Panicum* spp.)
Blackberry (*Rubus* spp.) - Natural recruitment
Virginia Creeper (*Parthenocissus quinquefolia*) - Natural recruitment
Greenbriar (*Smilax* spp.) - Natural recruitment
Wild Grape (*Vitis munsoniana*) - Natural recruitment
Wood Fern (*Thelypterus* spp.) - Natural recruitment

3. RANGELAND

ACRES OF HABITAT TO BE ESTABLISHED: 72

Grasses, Forbs and Vines - 100 percent of ground cover

Eastern Gamagrass (*Tripsacum dactyloides*)
Panicum (*Panicum* spp.)
Bluestems (*Andropogon* spp.)
Lopsided Indiangrass (*Sorgastrum secundum*)
Blackberry (*Rubus* spp.) - Natural recruitment
Partridge Pea (*Cassia chamaecrista*)
Wild Grape (*Vitis munsoniania*) - Natural recruitment
Hairy Indigo (*Indigofera hirsuta*) - Natural recruitment
Aster (*Aster* spp.) - Natural recruitment

4. WETLAND MIXED FOREST

ACRES OF HABITAT TO BE ESTABLISHED: 13

Trees - Total average density of 400/acre

Red Maple (*Acer rubrum*)
Sugarberry (*Celtis laevigata*)
Pop Ash (*Fraxinus caroliniana*)
Bald Cypress (*Taxodium distichum*)
Red Mulberry (*Morus rubra*)
Water Oak (*Quercus nigra*)

Shrubs - Total average density of 300/acre

Buttonbush (*Cephalanthus occidentalis*)
Dahoon Holly (*Ilex cassine*)
Elderberry (*Sambucus simpsonii*)
Swamp Dogwood (*Cornus foemina*)
Swamp Hibiscus (*Hibiscus grandiflorus*)
Wild Olive (*Osmanthus americanus*)
Groundsel Tree (*Baccharis halimifolia*) - Natural recruitment

Grasses, Forbs and Vines- 50 percent of remaining available ground surface

Panicum (*Panicum* spp.)
Lizard's Tail (*Saururus cernuus*)
Sedge (*Carex* spp.)
Royal Fern (*Osmunda regalis*)
Cinnamon Fern (*Osmunda cinnamomea*)
Wood Fern (*Thelypterus* spp.) - Natural recruitment
Wild Grape (*Vitis munsoniania*) - Natural recruitment

5. SHRUB WETLAND

ACRES OF HABITAT TO BE ESTABLISHED: 14

Shrubs - Total average density of 300/acre

Buttonbush (*Cephalanthus occidentalis*)
Dahoon Holly (*Ilex cassine*)
Elderberry (*Sambucus simpsonii*)
Swamp Dogwood (*Cornus foemina*)
Swamp Hibiscus (*Hibiscus grandiflorus*)
Groundsel Tree (*Baccharis halimifolia*) - Natural recruitment
Carolina Willow (*Salix caroliniana*) - Natural recruitment
Wax Myrtle (*Myrica cerifera*) - Natural recruitment

Grasses, Forbs and Vines - 50 percent of remaining available ground surface

Panicum (*Panicum* spp.)
Lizard's Tail (*Saururus cernuus*)
Sedge (*Carex* spp. and *Cyperus* spp.)
Royal Fern (*Osmunda regalis*)
Cinnamon Fern (*Osmunda cinnamomea*)
Sawgrass (*Cladium jamaicense*)
Duck Potato (*Sagittaria* spp.)
Golden Ragwort (*Senecio glabellus*) - Natural recruitment
Wood Fern (*Thelypterus* spp.) - Natural recruitment
Wild Grape (*Vitis munsoniania*) - Natural recruitment
Camphorweed (*Pluchea* spp.) - Natural recruitment
Cow Pea (*Vigna luteola*) - Natural recruitment

6. FRESHWATER MARSH

ACRES OF HABITAT TO BE ESTABLISHED: 79

Groundcover - 50 percent of remaining available ground surface

Panicum (*Panicum* spp.)
Sedge (*Carex* spp. and *Cyperus* spp.)
Sawgrass (*Cladium jamaicense*)
St. John's Wort (*Hypericum fasiculatum*)
Spike Rush (*Eleocharis* spp.)
Soft Rush (*Juncus effusus*)
Black Rush (*Juncus repens*)
Bullrush (*Scirpus* spp.)
Swamp Lily (*Crinum americanum*)
Spider Lily (*Hymenocallis* spp.)
Pickerelweed (*Pontederia cordata*)
Arrowroot (*Thalia geniculata*)
Canna Lily (*Canna* spp.)
Duck Potato (*Sagittaria* spp.)
Spatterdock (*Nuphar lutea*)
Water Lily (*Nymphaea* spp.)

MINE AREA SA-10

PALMETTO PRAIRIE

ACRES OF HABITAT TO BE ESTABLISHED: 268

Shrubs - Total average density of 50/acre

Saw Palmetto (*Serenoa repens*)
Wax Myrtle (*Myrica cerifera*)
Gallberry (*Ilex cassine*)
Fetterbush (*Lyonia lucida*)
Blueberry (*Vaccinium* spp.)

Grasses, Forbs and Vines - 100 percent of remaining ground cover

Eastern Gamagrass (*Tripsacum dactyloides*)
Panicum (*Panicum* spp.)
Bluestems (*Andropogon* spp.)
Lopsided Indiangrass (*Sorgastrum secundum*)
Blackberry (*Rubus* spp.) - Natural recruitment
Greenbriar (*Smilax* spp.) - Natural recruitment
Partridge Pea (*Cassia chamaecrista*)
Aeschynomene (*Aeschynomene* spp.) - Natural recruitment
Wild Grape (*Vitis munsoniania*) - Natural recruitment

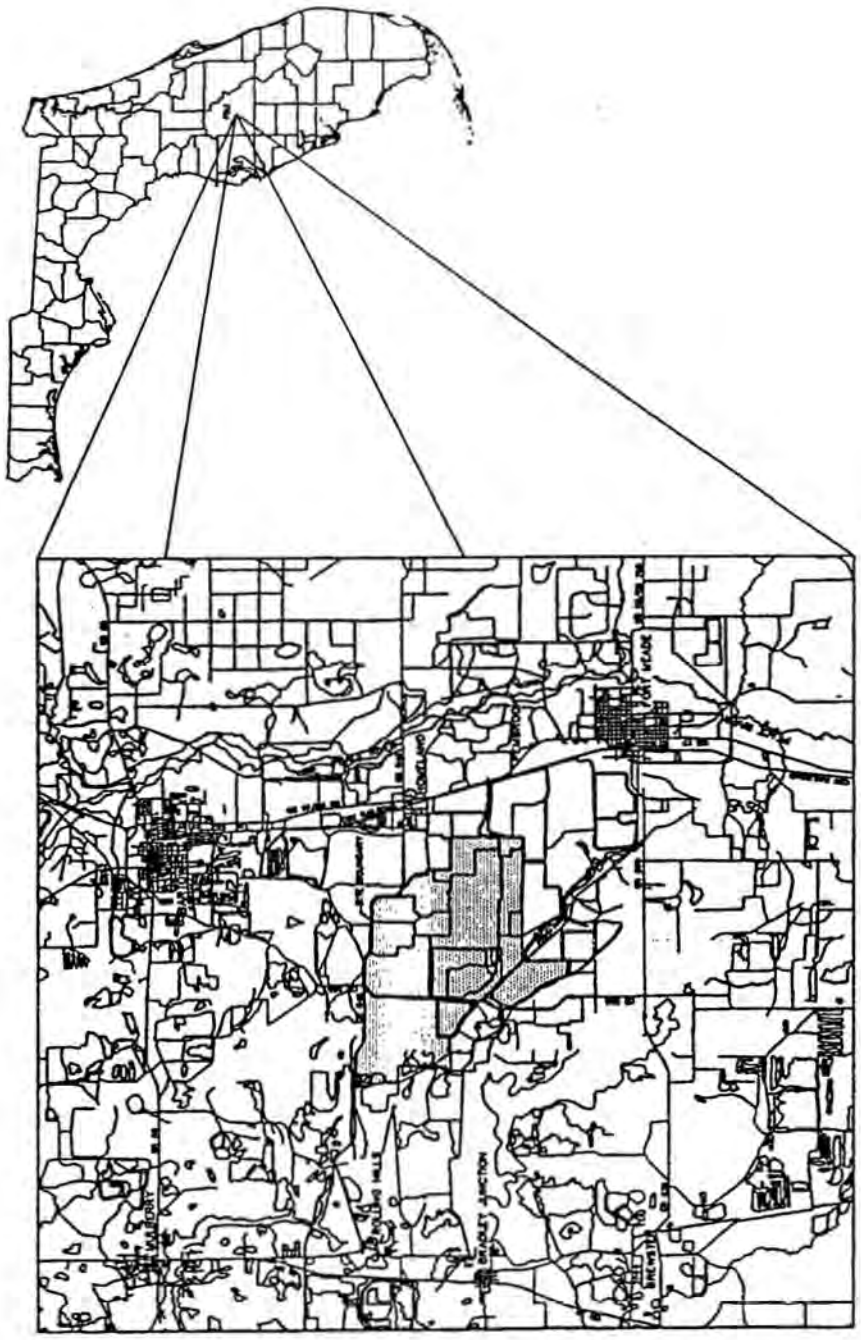


FIGURE 1A
SITE LOCATION MAP

Florida Power CORPORATION

Polk County Site

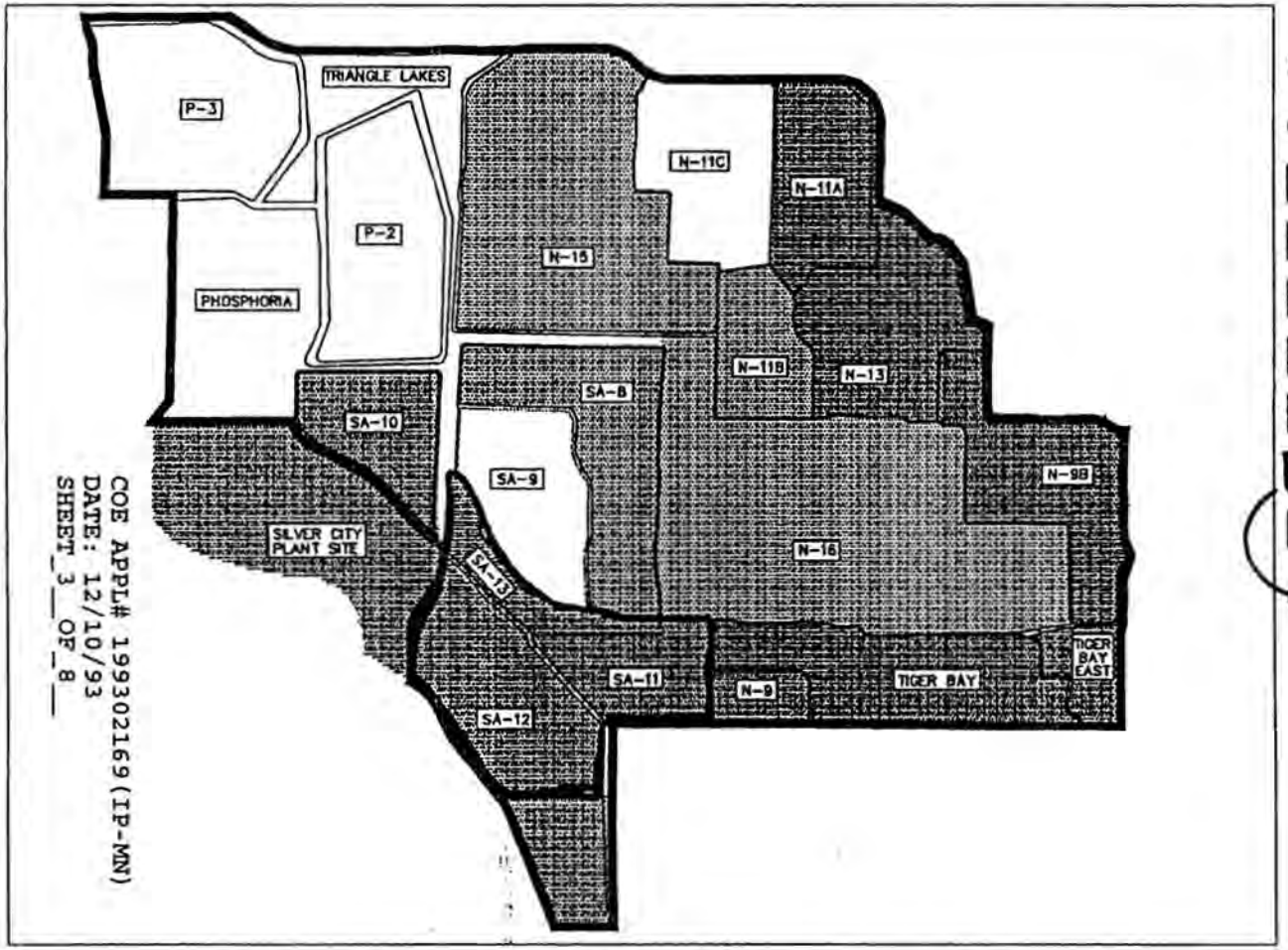
COE APPL# 199302169(IP-MN)
DATE: 12/10/93
SHEET_1__OF_8__

Florida Power CORPORATION

Polk County Site

FIGURE 1B

SITE MAP



LEGEND

- SITE BOUNDARY
- BRINE POND
- COOLING POND N-16
- DRAINAGE TO McCULLOUGH CREEK
- DRAINAGE TO CAMP BRANCH
- SOLID WASTE DISPOSAL AREA
- PLANT ISLAND (FILL)
- WATER CROP

SA-13
SA-12
SA-11

N
W — E
0 5000'

Florida Power CORPORATION

Polk County Site

SITE DEVELOPMENT PHASE VI
2250 MW-3000 MW (1000 NGCC and up to 2000 CGCC)
2260 ACRE COOLING POND

Rev. 0

EG

FPC Polk County Site

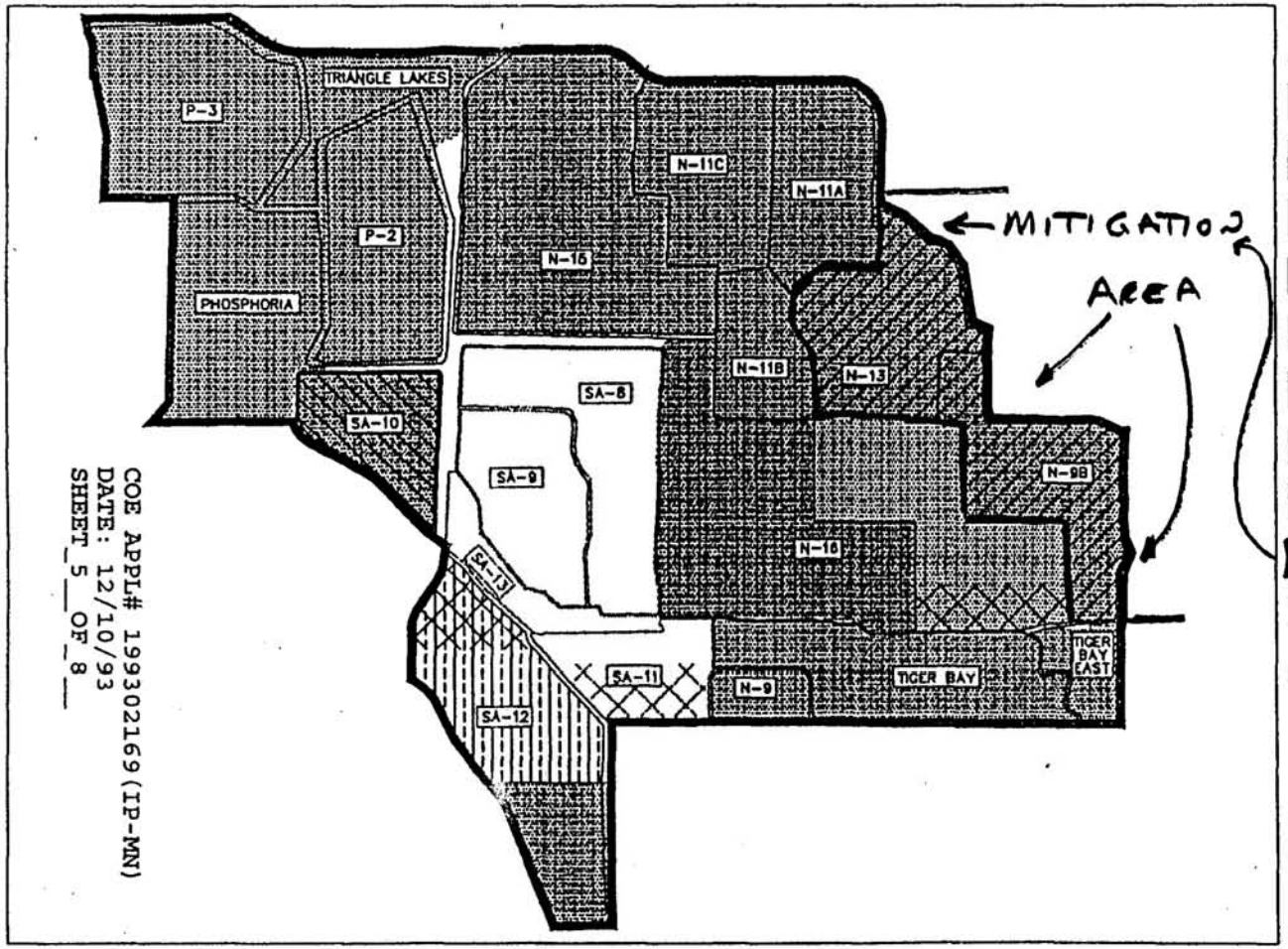
EXHIBIT HF-7 9/8/93

TABLE 9-1

ACREAGE OF POTENTIALLY IMPACTED COE-ASSERTED JURISDICTIONAL WETLANDS AND OPEN WATER AT THE POLK COUNTY SITE

MINE AREA	WETLANDS ACREAGE	OPEN WATER ACREAGE
N-16	205	508
SA-11	23	123
SA-12	22	269
SA-13	19	51
TOTAL	269 ACRES	951 ACRES

COE APPL# 199302169(IP-MN)
DATE: 12/10/93
SHEET 4 OF 8



LEGEND

- SITE BOUNDARY
- WATER STORAGE
- CONSOLIDATION
- ACTIVE IN MINE SYSTEM
- GENERATING UNITS & ASSOCIATED FACILITIES' CONSTRUCTION
- DRAINAGE ENHANCEMENT
- RECLAIMED WATER STORAGE
- COE MITIGATION CONSTRUCTION
- STORMWATER RETENTION
- HABITAT ENHANCEMENT N-13 N-9B
- FILL STORAGE
- UNAFFECTED AREA

N
W — E

0 5000'

Florida Power CORPORATION

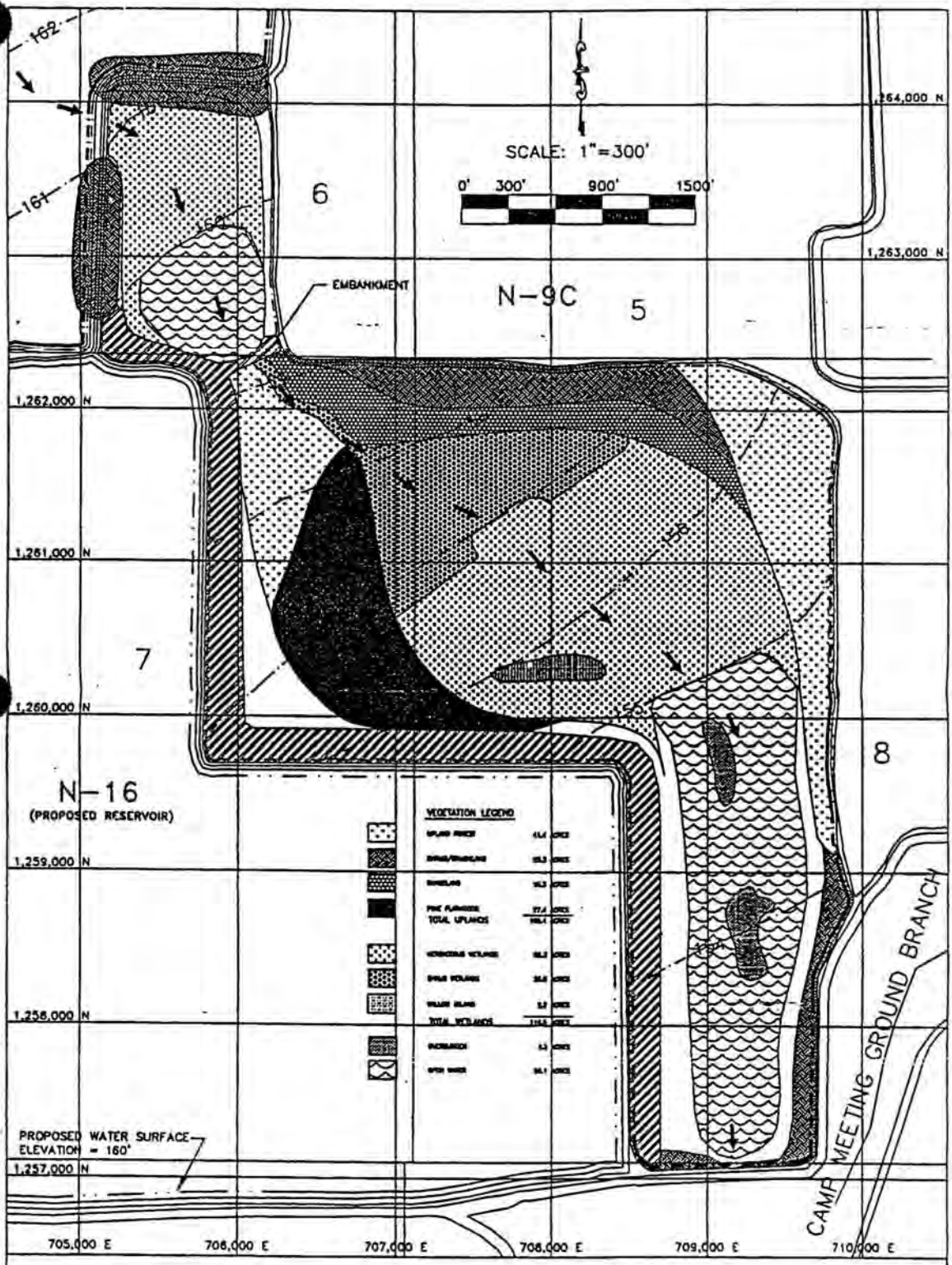
Polk County Site

SITE DEVELOPMENT PHASE II
INITIAL VERTICAL POWER PLANT CONSTRUCTION

Rev. 0 E2 9/8/93

FPC Polk County Site

EXHIBIT HF-3



LEGEND

-164- PROPOSED CLAY SURFACE/DIKE ELEVATION (1997)

EXISTING/PROPOSED DIKE SYSTEM

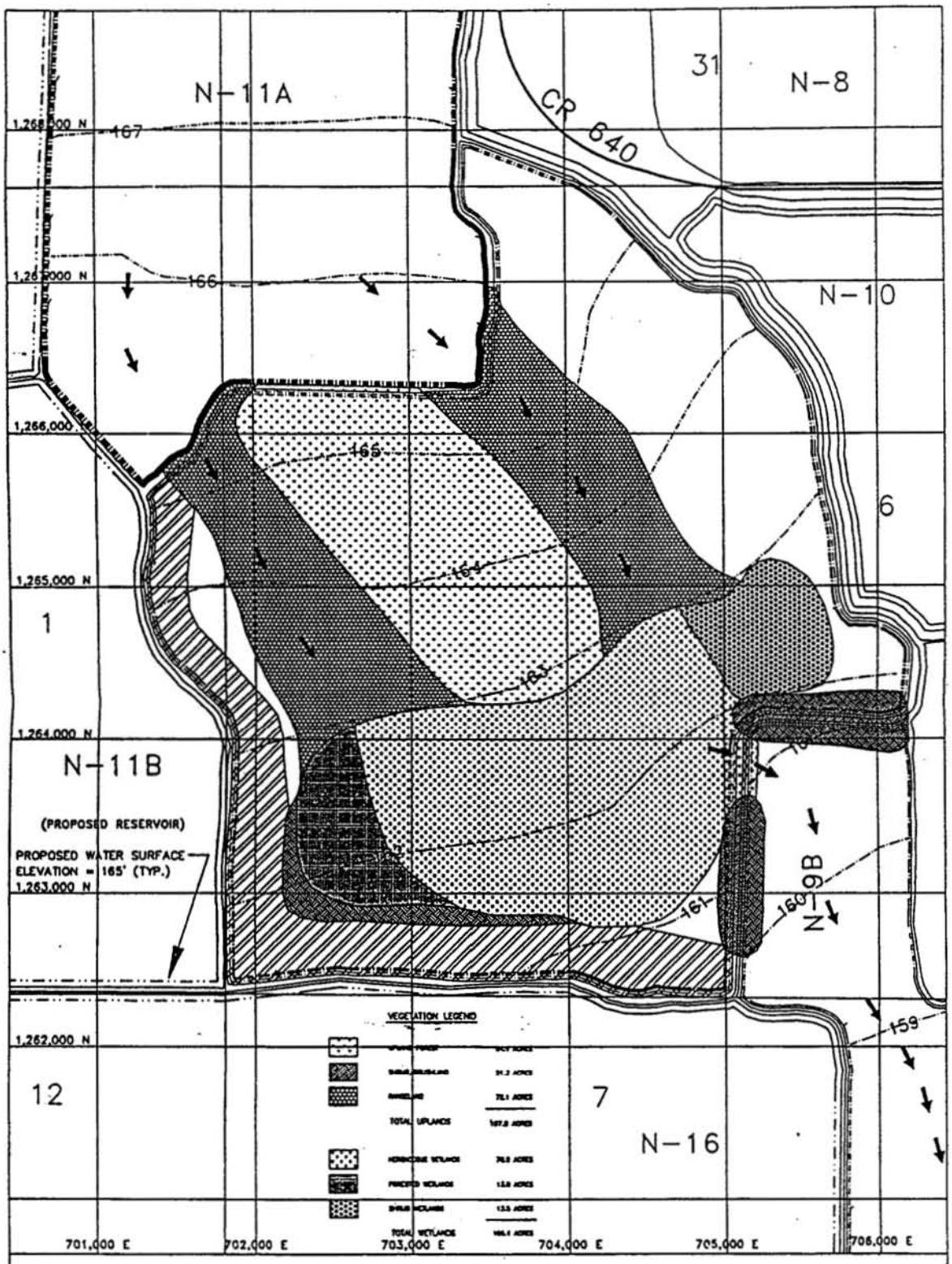
COOLING POND EMBANKMENTS (GRASSED - FLUCCS CODE NO. 830)

CHANNEL FLOW DRAINAGE (PROPOSED)

FIGURE 11
PROPOSED HABITAT ENHANCEMENT AND CREATION PLAN
N-9B

COE APPL# 199302169(IP-MN)
DATE: 12/10/93
SHEET 6 OF 8

Florida Power CORPORATION
Polk County Site



LEGEND

-164- PROJECTED CLAY SURFACE/DIKE ELEVATION (1997)

EXISTING/PROPOSED DIKE SYSTEM

COOLING POND EMBANKMENTS (GRASSED-FLUCCS CODE NO. 830)

CHANNEL FLOW DRAINAGE (PROPOSED)

N:\3VEGLDNG
DRAWN: 9/29/93
REVISED:

FIGURE 12
PROPOSED HABITAT ENHANCEMENT AND CREATION PLAN
N-13

COE APPL# 199302169(IP-MN)
DATE: 12/10/93
SHEET_7__OF_8__

Florida Power CORPORATION
Polk County Site

TABLE 10-3

HABITAT ACREAGES TO BE ESTABLISHED IN MINE AREAS N-9B AND N-13 DURING THE FIRST PHASE OF THE PROJECT.

HABITAT TYPE	ACREAGE
Upland Forest	106
Overburden Mounds	4
Shrub/Brushland	45
Rangeland	88
Pine Flatwoods	27
SUBTOTAL UPLANDS	270
Shrub Islands	2
Herbaceous Wetlands	168
Forested Wetlands	13
Shrub Wetlands	39
SUBTOTAL WETLANDS	222
Open Water	58
TOTAL	550 ACRES

COE APPL# 199302169(IP-MN)
DATE: 12/10/93
SHEET_8__OF_8__

This notice of authorization must be conspicuously displayed at the site of work.

United States Army Corps of Engineers

19 April 19 94

A permit to construct a combined cycle power plant facility in six phases over a 30-yr period that will impact approx. 951 acres of waterbodies consisting of mine cuts and approx. 269 acres of associated wetlands

at Wetlands assoc. with McCullough Ck, Secs. 1-4, 10-14 and 23, T31S, R24E, Sec. 31, T30S, R25E, Secs. 5-8, 17 and 18, T31S, R25E, Polk CO., FL

has been issued to Florida Power Corporation on 19 April 19 94

Address of Permittee 3201 Thirty-fourth Street So., St. Pete, FL 33733

Permit Number

199302169 (IP-MN)

Terrence C. Salt
Colonel, U.S. Army
District Commander

ENG FORM 4336, Jul 81 (33 CFR 320-330) EDITION OF JUL 70 MAY BE USED (Proponent: CECW-O)

10.1.5 Prevention of Significant Deterioration Permit Application

Following is a copy of the Prevention of Significant Deterioration (PSD) permit application for Power Block 2 submitted to the DEP pursuant to requirements of the Federal Clean Air Act.

PSD PERMIT APPLICATION

FOR

FLORIDA POWER CORPORATION
HINES ENERGY COMPLEX
POWER BLOCK 2

January 1999

Florida Power Corporation
One Power Plaza
263 13th Ave. South
St. Petersburg, Florida 33701

APPLICATION FORMS

Department of
Environmental Protection

DIVISION OF AIR RESOURCES MANAGEMENT

APPLICATION FOR AIR PERMIT - LONG FORM

See Instructions for Form No. 62-210.900(1)

I. APPLICATION INFORMATION

This section of the Application for Air Permit form identifies the facility and provides general information on the scope and purpose of this application. This section also includes information on the owner or authorized representative of the facility (or the responsible official in the case of a Title V source) and the necessary statements for the applicant and professional engineer, where required, to sign and date for formal submittal of the Application for Air Permit to the Department. If the application form is submitted to the Department using ELSA, this section of the Application for Air Permit must also be submitted in hard-copy.

Identification of Facility Addressed in This Application

Enter the name of the corporation, business, governmental entity, or individual that has ownership or control of the facility; the facility site name, if any; and the facility's physical location. If known, also enter the facility identification number.

1. Facility Owner/Company Name: **Florida Power Corporation**	
2. Site Name: **Hines Energy Complex**	
3. Facility Identification Number:	[x] Unknown
4. Facility Location Information: Street Address or Other Locator: **County Rd 555;2.5m S of CR 640** City: **Bartow** County: **Polk** Zip Code: **33830**	
5. Relocatable Facility? [ ] Yes [x] No	6. Existing Permitted Facility? [x] Yes [ ] No

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	
2. Permit Number:	
3. PSD Number (if applicable):	
4. Siting Number (if applicable):	

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official:

W. Jeffrey Pardue, Dir. Environmental Services Dept.

2. Owner/Authorized Representative or Responsible Official Mailing Address:

Organization/Firm: **Florida Power Corporation**
Street Address: **One Power Plaza,263-13th Ave S**
City: **St. Petersburg** State: **FL** Zip Code: **33701-5511**

3. Owner/Authorized Representative or Responsible Official Telephone Numbers:

Telephone: **(727) 826-4301** Fax: **(727) 826-4216**

4. Owner/Authorized Representative or Responsible Official Statement:

I, the undersigned, am the owner or authorized representative of the non-Title V source addressed in this Application for Air Permit or the responsible official, as defined in Rule 62-210.200, F.A.C., of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.*



Signature Date 1/5/99

* Attach letter of authorization if not currently on file.

Scope of Application

This Application for Air Permit addresses the following emissions unit(s) at the facility. An Emissions Unit Information Section (a Section III of the form) must be included for each emissions unit listed.

Emissions Unit ID		Description of Emissions Unit	Permit Type
Unit #	Unit ID		
1R	---	CT-1; Power Block 2	AC1A
2R	---	CT-2; Power Block 2	AC1A

See individual Emissions Unit (EU) sections for more detailed descriptions.
Multiple EU IDs indicated with an asterisk (*). Regulated EU indicated with an "R".

Purpose of Application and Category

Check one (except as otherwise indicated):

Category I: All Air Operation Permit Applications Subject to Processing Under Chapter 62-213, F.A.C.

This Application for Air Permit is submitted to obtain:

[ ] Initial air operation permit under Chapter 62-213, F.A.C., for an existing facility which is classified as a Title V source.

[ ] Initial air operation permit under Chapter 62-213, F.A.C., for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number: _____

[ ] Air operation permit renewal under Chapter 62-213, F.A.C., for a Title V source.

Operation permit to be renewed: _____

[ ] Air operation permit revision for a Title V source to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number: _____

Operation permit to be renewed: _____

[ ] Air operation permit revision or administrative correction for a Title V source to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. Also check Category III.

Operation permit to be revised/corrected: _____

_____

[ ] Air operation permit revision for a Title V source for reasons other than construction or modification of an emissions unit. Give reason for the revision e.g., to comply with a new applicable requirement or to request approval of an "Early Reductions" proposal.

Operation permit to be revised: _____

Reason for revision: _____

_____

Category II: All Air Construction Permit Applications Subject to Processing Under Rule 62-210.300(2)(b),F.A.C.

This Application for Air Permit is submitted to obtain:

[ ] Initial air operation permit under Rule 62-210.300(2)(b), F.A.C., for an existing facility seeking classification as a synthetic non-Title V source.

Current operation/construction permit number(s): _____

_____

[ ] Renewal air operation permit under Rule 62-210.300(2)(b), F.A.C., for a synthetic non-Title V source.

Operation permit to be renewed: _____

[ ] Air operation permit revision for a synthetic non-Title V source. Give reason for revision; e.g.; to address one or more newly constructed or modified emissions units.

Operation permit to be revised: _____

Reason for revision: _____

_____

Category III: All Air Construction Permit Applications for All Facilities and Emissions Units.

This Application for Air Permit is submitted to obtain:

[x] Air construction permit to construct or modify one or more emissions units within a facility (including any facility classified as a Title V source).

Current operation permit number(s), if any: _____

_____

[ ] Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.

Current operation permit number(s): _____

_____

[ ] Air construction permit for one or more existing, but unpermitted, emissions units.

Application Processing Fee

Check one:

[ ] Attached - Amount: _____ [x] Not Applicable.

Construction/Modification Information

1. Description of Proposed Project or Alterations:

Power Block 2 consists of two nominal 165 MW Westinghouse 501F combustion turbines (CTs), two unfired heat recovery steam generators (HRSGs), and one 170 MW steam turbine; nominal rating of 500 MW combined cycle unit. See PSD Application. Fee included with Site Certification Application.

2. Projected or Actual Date of Commencement of Construction :

1 Nov 1999

3. Projected Date of Completion of Construction :

1 Jul 2001

Professional Engineer Certification

1. Professional Engineer Name: **Kennard F. Kosky**
   Registration Number: **14996**

2. Professional Engineer Mailing Address:
   Organization/Firm: **Golder Associates Inc.**
   Street Address: **6241 NW 23rd Street; Suite 500**
   City: **Gainesville** State: **FL** Zip Code: **32653**

3. Professional Engineer Telephone Numbers:
   Telephone: **(352) 336-5600** Fax: **(352) 336-6603**

4. Professional Engineer's Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [ ] if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [X] if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ] if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature (seal) 12/31/98 Date

* Attach any exception to certification statement.

Application Contact

1. Name and Title of Application Contact:
   Scott Osbourn, Senior Environmental Specialist

2. Application Contact Mailing Address:

   Organization/Firm: **Florida Power Corporation**
   Street Address: **One Power Plaza,263-13th Ave S**
   City: **St. Petersburg** State: **FL** Zip Code: **33701-5511**

3. Application Contact Telephone Numbers:

   Telephone: **(727) 826-4258** Fax: **(727) 826-4216**

Application Comment

This application has been submitted and will be reviewed within the Florida Power Plant Siting Act (PPSA). See PSD Application. Power Block 1 has permit PA-92-33; PSD-FL-195A.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates:
   Zone: **17** East (km): **414.4** North (km): **3073.9**

2. Facility Latitude/Longitude:
   Latitude (DD/MM/SS): **27 / 47 / 19** Longitude: (DD/MM/SS): **81 / 52 / 10**

3. Governmental Facility Code:	4. Facility Status Code:	5. Facility Major Group SIC Code:	6. Facility SIC(s):
0	**C**	**49**	**4911**

7. Facility Comment (limit to 500 characters):

Operation of Power Block 1 has recently begun. Power Block 1 is a nominal 500 MW combined cycle unit consisting of 2 CTs, 2 HRSG's and 1 steam turbine. The CTs fire natural gas with distillate oil as backup. The HRSGs are unfired. This application is for the addition of Power Block 2, a nominal 500 MW conbined cycle application. See PSD Application.

Facility Contact

1. Name and Title of Facility Contact:
   David Sorrick, Plant Manager

2. Facility Contact Mailing Address:
   Organization/Firm: **Hines Energy Complex**
   Street Address: **7700 County Road 555**
   City: **Bartow** State: **FL** Zip Code: **33830**

3. Facility Contact Telephone Numbers:
   Telephone: **(941) 519-6201** Fax: **(941) 519-6210**

Facility Regulatory Classifications

1. Small Business Stationary Source? [ ] Yes [x] No [ ] Unknown
2. Title V Source? [x] Yes [ ] No
3. Synthetic Non-Title V Source? [ ] Yes [x] No
4. Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)? [x] Yes [ ] No
5. Synthetic Minor Source of Pollutants Other than HAPs? [ ] Yes [x] No
6. Major Source of Hazardous Air Pollutants (HAPs)? [ ] Yes [x] No
7. Synthetic Minor Source of HAPs? [ ] Yes [x] No
8. One or More Emissions Units Subject to NSPS? [x] Yes [ ] No
9. One or More Emissions Units Subject to NESHAP? [ ] Yes [x] No
10. Title V Source by EPA Designation? [ ] Yes [x] No
11. Facility Regulatory Classifications Comment (limit to 200 characters): **Applicable NSPS is 40 CFR Part 60; Subpart GG.**

B. FACILITY REGULATIONS

Rule Applicability Analysis (Required for Category II applications and Category III applications involving non Title-V sources. See Instructions.)

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

62-212.400, F.A.C.
See PSD Application

C. FACILITY POLLUTANTS

Facility Pollutant Information

1. Pollutant Emitted		2. Pollutant Classification
PM	Particulate Matter - Total	A
SO2	Sulfur Dioxide	A
NOx	Nitrogen Oxides	A
CO	Carbon Monoxide	A
VOC	Volatile Organic Compounds	A
SAM	Sulfuric Acid Mist	A

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Detail Information:

1. Pollutant Emitted:		
2. Requested Emissions Cap:	(lb/hr)	(tons/yr)
3. Basis for Emissions Cap Code:		
4. Facility Pollutant Comment (limit to 400 characters):		

Facility Pollutant Detail Information:

1. Pollutant Emitted:		
2. Requested Emissions Cap:	(lb/hr)	(tons/yr)
3. Basis for Emissions Cap Code:		
4. Facility Pollutant Comment (limit to 400 characters):		

E. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements for All Applications

1. Area Map Showing Facility Location:
   [X] Attached, Document ID: Fig. 1-1; PSD
   [ ] Not Applicable [ ] Waiver Requested

2. Facility Plot Plan:
   [X] Attached, Document ID: Fig. 2-1; PSD
   [ ] Not Applicable [ ] Waiver Requested

3. Process Flow Diagram(s):
   [X] Attached, Document ID(s): Fig. 2-2; PSD
   [ ] Not Applicable [ ] Waiver Requested

4. Precautions to Prevent Emissions of Unconfined Particulate Matter:
   [X] Attached, Document ID: PSD Appl.
   [ ] Not Applicable [ ] Waiver Requested

5. Fugitive Emissions Identification:
   [ ] Attached, Document ID: _____
   [X] Not Applicable [ ] Waiver Requested

6. Supplemental Information for Construction Permit Application:
   [X] Attached, Document ID: PSD Appl.
   [ ] Not Applicable

Additional Supplemental Requirements for Category I Applications Only

7. List of Proposed Exempt Activities:
   [ ] Attached, Document ID: _____
   [ ] Not Applicable

8. List of Equipment/Activities Regulated under Title VI:
   [ ] Attached, Document ID: _____
   [ ] Equipment/Activities On site but Not Required to be Individually Listed
   [ ] Not Applicable

9. Alternative Methods of Operation:
   [ ] Attached, Document ID: _____
   [ ] Not Applicable

10. Alternative Modes of Operation (Emissions Trading):
    [ ] Attached, Document ID: _____
    [ ] Not Applicable

11. Identification of Additional Applicable Requirements:
[ ] Attached, Document ID: _____
[ ] Not Applicable

12. Compliance Assurance Monitoring Plan:
[ ] Attached, Document ID: _____
[ ] Not Applicable

13. Risk Management Plan Verification:

[ ] Plan Submitted to Implementing Agency - Verification Attached
Document ID: _____

[ ] Plan to be Submitted to Implementing Agency by Required Date

[ ] Not Applicable

14. Compliance Report and Plan
[ ] Attached, Document ID: _____
[ ] Not Applicable

15. Compliance Statement (Hard-copy Required)
[ ] Attached, Document ID: _____
[ ] Not Applicable

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through L as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application. Some of the subsections comprising the Emissions Unit Information Section of the form are intended for regulated emissions units only. Others are intended for both regulated and unregulated emissions units. Each subsection is appropriately marked.

A. TYPE OF EMISSIONS UNIT (Regulated and Unregulated Emissions Units)

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one:

[x] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

2. Single Process, Group of Processes, or Fugitive Only? Check one:

[x] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

B. GENERAL EMISSIONS UNIT INFORMATION
(Regulated and Unregulated Emissions Units)

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section (limit to 60 characters): **CT-1; Power Block 2**		
2. Emissions Unit Identification Number: [ ] No Corresponding ID [X] Unknown		
3. Emissions Unit Status Code: C	4. Acid Rain Unit? [X] Yes [ ] No	5. Emissions Unit Major Group SIC Code: 49
6. Emissions Unit Comment (limit to 500 characters): **Westinghouse 501 F combustion turbine firing natural gas with distillate oil back-up.**		

Emissions Unit Control Equipment Information

A.

1. Description (limit to 200 characters):

Dry Low NOx combustion-natural gas firing

2. Control Device or Method Code: **25**

B.

1. Description (limit to 200 characters):

Selective Catalytic Reduction (SCR) - natural gas firing

2. Control Device or Method Code: **65**

C.

1. Description (limit to 200 characters):

Water Injection - distillate oil firing

2. Control Device or Method Code: **28**

C. EMISSIONS UNIT DETAIL INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Details

1. Initial Startup Date:	
2. Long-term Reserve Shutdown Date:	
3. Package Unit: Manufacturer: **Westinghouse**	Model Number: **501F**
4. Generator Nameplate Rating: **165** MW	
5. Incinerator Information: Dwell Temperature:	°F
Dwell Time:	seconds
Incinerator Afterburner Temperature:	°F

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate:		**1,822**	mmBtu/hr
2. Maximum Incineration Rate:	lbs/hr		tons/day
3. Maximum Process or Throughput Rate:			
4. Maximum Production Rate:			
5. Operating Capacity Comment (limit to 200 characters): **Heat input is HHV; heat input at 59 degree F turbine inlet temperature; MW nominal rating.**			

Emissions Unit Operating Schedule

1. Requested Maximum Operating Schedule:			
	hours/day		days/week
	weeks/yr	**8,760**	hours/yr

D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

Rule Applicability Analysis (Required for Category II Applications and Category III applications involving non Title-V sources. See Instructions.)

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

See Attachment PB2-EU1-D
See PSD Application

ATTACHMENT PB2-EU1-D

APPLICABLE REQUIREMENTS LISTING

ATTACHMENT PB2-EU1-D

Applicable Requirements Listing

EMISSION UNIT ID: EU1

FDEP Rules:

Air Pollution Control-General Provisions:

62-204.800(7)(b)37. (State Only)	- NSPS Subpart GG
62-204.800(7)(c) (State Only)	- NSPS authority
62-204.800(7)(d)(State Only)	- NSPS General Provisions
62-204.800(12) (State Only)	- Acid Rain Program
62-204.800(13) (State Only)	- Allowances
62-204.800(14) (State Only)	- Acid Rain Program Monitoring
62-204.800(16) (State Only)	- Excess Emissions (Potentially applicable over term of permit)

Stationary Sources-General:

62-210.650	- Circumvention; EUs with control device
62-210.700(1)	- Excess Emissions;
62-210.700(4)	- Excess Emissions; poor maintenance
62-210.700(6)	- Excess Emissions; notification

Acid Rain:

62-214.300	- All Acid Rain Units (Applicability)
62-214.320(1)(a),(2)	- All Acid Rain Units (Application Shield)
62-214.330(1)(a)1.	- Compliance Options (if 214.430)
62-214.340	- Exemptions (new units, retired units)
62-214.350(2);(3);(6)	- All Acid Rain Units (Certification)
62-214.370	- All Acid Rain Units (Revisions; correction; potentially applicable if a need arises)
62-214.430	- All Acid Rain Units (Compliance Options-if required)

Stationary Sources-Emission Standards:

62-296.320(4)(b)(State Only)	- CTs/Diesel Units

Stationary Sources-Emission Monitoring (where stack test is required):

62-297.310(1)	- All Units (Test Runs-Mass Emission)
62-297.310(2)(b)	- All Units (Operating Rate; other than CTs;no CT)
62-297.310(3)	- All Units (Calculation of Emission)
62-297.310(4)(a)	- All Units (Applicable Test Procedures;Sampling time)
62-297.310(4)(b)	- All Units (Sample Volume)
62-297.310(4)(c)	- All Units (Required Flow Rate Range-PM/H2SO4/F)
62-297.310(4)(d)	- All Units (Calibration)
62-297.310(4)(e)	- All Units (EPA Method 5-only)
62-297.310(5)	- All Units (Determination of Process Variables)

62-297.310(6)(a) - All Units (Permanent Test Facilities-general)
62-297.310(6)(c) - All Units (Sampling Ports)
62-297.310(6)(d) - All Units (Work Platforms)
62-297.310(6)(e) - All Units (Access)
62-297.310(6)(f) - All Units (Electrical Power)
62-297.310(6)(g) - All Units (Equipment Support)
62-297.310(7)(a)1. - Applies mainly to CTs/Diesels
62-297.310(7)(a)2. - FFSG excess emissions
62-297.310(7)(a)3. - Permit Renewal Test Required
62-297.310(7)(a)4.a - Annual Test
62-297.310(7)(a)5. - PM exemption if <400 hrs/yr
62-297.310(7)(a)6. - PM FFSG semi annual test required if >200 hrs/yr
62-297.310(7)(a)7. - PM quarterly monitoring if >100 hrs/yr
62-297.310(7)(a)9. - FDEP Notification - 15 days
62-297.310(7)(c) - Waiver of Compliance Tests (Fuel Sampling)
62-297.310(8) - Test Reports

Federal Rules:

NSPS Subpart GG:
40 CFR 60.332(a)(1) - NOx for Electric Utility CTs
40 CFR 60.332(a)(3) - NOx for Electric Utility CTs
40 CFR 60.333 - SO2 limits
40 CFR 60.334 - Monitoring of Operations (Custom Monitoring for Gas)
40 CFR 60.335 - Test Methods

NSPS General Requirements:
40 CFR 60.7(a)(1) - Notification of Construction
40 CFR 60.7(a)(2) - Notification of Initial Start-Up
40 CFR 60.7(a)(3) - Notification of Actual Start-Up
40 CFR 60.7(a)(4) - Notification and Recordkeeping (Physical/Operational Cycle)
40 CFR 60.7(a)(5) - Notification of CEM Demonstration
40 CFR 60.7(b) - Notification and Recordkeeping (startup/shutdown/malfunction)
40 CFR 60.7(c) - Notification and Recordkeeping (startup/shutdown/malfunction)
40 CFR 60.7(d) - Notification and Recordkeeping (startup/shutdown/malfunction)
40 CFR 60.7(f) - Notification and Recordkeeping (maintain records-2 yrs)
40 CFR 60.8(a) - Performance Test Requirements
40 CFR 60.8(b) - Performance Test Notification
40 CFR 60.8(c) - Performance Tests (representative conditions)
40 CFR 60.8(e) - Provide Stack Sampling Facilities

40 CFR 60.8(f) - Test Runs
40 CFR 60.11(a) - Compliance (ref. S. 60.8 or Subpart; other than opacity)
40 CFR 60.11(b) - Compliance (opacity determined EPA Method 9)

40 CFR 60.11(c)	- Compliance (opacity; excludes startup/shutdown/malfunction)
40 CFR 60.11(d)	- Compliance (maintain air pollution control equip.)
40 CFR 60.11(e)(2)	- Compliance (opacity; ref. S. 60.8)
40 CFR 60.12	- Circumvention
40 CFR 60.13(a)	- Monitoring (Appendix B; Appendix F)
40 CFR 60.13(c)	- Monitoring (Opacity COMS)
40 CFR 60.13(d)(1)	- Monitoring (CEMS; span, drift, etc.)
40 CFR 60.13(d)(2)	- Monitoring (COMS; span, system check)
40 CFR 60.13(e)	- Monitoring (frequency of operation)
40 CFR 60.13(f)	- Monitoring (frequency of operation)
40 CFR 60.13(h)	- Monitoring (COMS; data requirements)

Acid Rain-Permits:

40 CFR 72.9(a)	- Permit Requirements
40 CFR 72.9(b)	- Monitoring Requirements
40 CFR 72.9(c)(1)	- SO2 Allowances-hold allowances
40 CFR 72.9(c)(2)	- SO2 Allowances-violation
40 CFR 72.9(c)(3)(iii)	- SO2 Allowances-Phase II Units (listed)
40 CFR 72.9(c)(4)	- SO2 Allowances-allowances held in ATS
40 CFR 72.9(c)(5)	- SO2 Allowances-no deduction for 72.9(c)(1)(i)
40 CFR 72.9(d)	- NOx Requirements
40 CFR 72.9(e)	- Excess Emission Requirements
40 CFR 72.9(f)	- Recordkeeping and Reporting
40 CFR 72.9(g)	- Liability
40 CFR 72.20(a)	- Designated Representative; required
40 CFR 72.20(b)	- Designated Representative; legally binding
40 CFR 72.20(c)	- Designated Representative; certification requirements
40 CFR 72.21	- Submissions
40 CFR 72.22	- Alternate Designated Representative
40 CFR 72.23	- Changing representatives; owners
40 CFR 72.24	- Certificate of representation
40 CFR 72.30(a)	- Requirements to Apply (operate)
40 CFR 72.30(b)(2)	- Requirements to Apply (Phase II-Complete)
40 CFR 72.30(c)	- Requirements to Apply (reapply before expiration)
40 CFR 72.30(d)	- Requirements to Apply (submittal requirements)
40 CFR 72.31	- Information Requirements; Acid Rain Applications
40 CFR 72.32	- Permit Application Shield
40 CFR 72.33(b)	- Dispatch System ID;unit/system ID
40 CFR 72.33(c)	- Dispatch System ID;ID requirements
40 CFR 72.33(d)	- Dispatch System ID;ID change
40 CFR 72.40(a)	- General; compliance plan
40 CFR 72.40(b)	- General; multi-unit compliance options
40 CFR 72.40(c)	- General; conditional approval
40 CFR 72.40(d)	- General; termination of compliance options
40 CFR 72.51	- Permit Shield
40 CFR 72.90	- Annual Compliance Certification

Allowances:

40 CFR 73.33(a),(c)	- Authorized account representative
40 CFR 73.35(c)(1)	- Compliance: ID of allowances by serial number

Monitoring Part 75:

40 CFR 75.4	- Compliance Dates;
40 CFR 75.5	- Prohibitions
40 CFR 75.10(a)(1)	- Primary Measurement; SO2;
40 CFR 75.10(a)(2)	- Primary Measurement; NOx;
40 CFR 75.10(a)(3)(iii)	- Primary Measurement; CO2; O2 monitor
40 CFR 75.10(b)	- Primary Measurement; Performance Requirements
40 CFR 75.10(c)	- Primary Measurement; Heat Input; Appendix F
40 CFR 75.10(e)	- Primary Measurement; Optional Backup Monitor
40 CFR 75.10(f)	- Primary Measurement; Minimum Measurement
40 CFR 75.10(g)	- Primary Measurement; Minimum Recording
40 CFR 75.11(d)	- SO2 Monitoring; Gas- and Oil-fired units
40 CFR 75.11(e)	- SO2 Monitoring; Gaseous firing
40 CFR 75.12(a)	- NOx Monitoring; Coal; Non-peaking oil/gas units
40 CFR 75.12(b)	- NOx Monitoring; Determination of NOx emission rate; Appendix F
40 CFR 75.13(b)	- CO2 Monitoring; Appendix G
40 CFR 75.13(c)	- CO2 Monitoring; Appendix F
40 CFR 75.14(c)	- Opacity Monitoring; Gas units; exemption
40 CFR 75.20(a) Certification	- Initial Certification Approval Process; Loss of
40 CFR 75.20(b)	- Recertification Procedures-(if recertification necessary)
40 CFR 75.20(c)	- Certification Procedures (if recertification necessary)
40 CFR 75.20(d)	- Recertification Backup/portable monitor
40 CFR 75.20(f)	- Alternate Monitoring system
40 CFR 75.21(a) 12/31/96)	- QA/QC; CEMS; Appendix B (Suspended 7/17/95-
40 CFR 75.21(c)	- QA/QC; Calibration Gases
40 CFR 75.21(d)	- QA/QC; Notification of RATA
40 CFR 75.21(e)	- QA/QC; Audits
40 CFR 75.21(f)	- QA/QC; CEMS (Effective 7/17/96-12/31/96)
40 CFR 75.22	- Reference Methods
40 CFR 75.24	- Out-of-Control Periods; CEMS
40 CFR 75.30(a)(3)	- General Missing Data Procedures; NOx
40 CFR 75.30(a)(4)	- General Missing Data Procedures; SO2
40 CFR 75.30(b) monitor	- General Missing Data Procedures; certified backup
40 CFR 75.30(c) monitor	- General Missing Data Procedures; certified backup
40 CFR 75.30(d)	- General Missing Data Procedures; SO2 (optional before 1/1/97)
40 CFR 75.30(e)	- General Missing Data Procedures; bypass/multiple stacks
40 CFR 75.31	- Initial Missing Data Procedures (new/re-certified CMS)

40 CFR 75.32	- Monitoring Data Availability for Missing Data
40 CFR 75.33	- Standard Missing Data Procedures
40 CFR 75.36	- Missing Data for Heat Input
40 CFR 75.40	- Alternate Monitoring Systems-General
40 CFR 75.41	- Alternate Monitoring Systems-Precision Criteria
40 CFR 75.42	- Alternate Monitoring Systems-Reliability Criteria
40 CFR 75.43	- Alternate Monitoring Systems-Accessability Criteria
40 CFR 75.44	- Alternate Monitoring Systems-Timeliness Criteria
40 CFR 75.45	- Alternate Monitoring Systems-Daily QA
40 CFR 75.46	- Alternate Monitoring Systems-Missing data
40 CFR 75.47	- Alternate Monitoring Systems-Criteria for Class
40 CFR 75.48	- Alternate Monitoring Systems-Petition
40 CFR 75.53	- Monitoring Plan ; revisions
40 CFR 75.54(a)	- Recordkeeping-general
40 CFR 75.54(b)	- Recordkeeping-operating parameter
40 CFR 75.54(c)	- Recordkeeping-SO2
40 CFR 75.54(d)	- Recordkeeping-NOx
40 CFR 75.54(e)	- Recordkeeping-CO2
40 CFR 75.54(f)	- Recordkeeping-Opacity
40 CFR 75.55(c)	- General Recordkeeping (Specific Situations)
40 CFR 75.55(e)	- General Recordkeeping (Specific Situations)
40 CFR 75.56	- Certification; QA/QC Provisions
40 CFR 75.60	- Reporting Requirements-General
40 CFR 75.61	- Reporting Requirements-Notification cert/recertification
40 CFR 75.62	- Reporting Requirements-Monitoring Plan
40 CFR 75.63	- Reporting Requirements-Certification/Recertification
40 CFR 75.64(a)	- Reporting Requirements-Quarterly reports; submission
40 CFR 75.64(b) statement	- Reporting Requirements-Quarterly reports; DR
40 CFR 75.64(c)	- Rep. Req.; Quarterly reports; Compliance Certification
40 CFR 75.64(d)	- Rep. Req.; Quarterly reports; Electronic format
40 CFR 75.66	- Petitions to the Administrator (if required)
Appendix A-1	- Installation and Measurement Locations
Appendix A-2.	- Equipment Specifications
Appendix A-3.	- Performance Specifications
Appendix A-4.	- Data Handling and Acquisition Systems
Appendix A-5.	- Calibration Gases
Appendix A-6.	- Certification Tests and Procedures
Appendix A-7.	- Calculations
Appendix B	- QA/QC Procedures
Appendix C-1.	- Missing Data; SO2/NOx for controlled sources
Appendix C-2.	- Missing Data; Load-Based Procedure; NOx & flow
Appendix D	- Optional SO2; Oil-/gas-fired units
Appendix F	- Conversion Procedures
Appendix H	- Traceability Protocol

Acid Rain Program-Excess Emissions (these are future requirements):

40 CFR 77.3	- Offset Plans (future)

40 CFR 77.5(b)	- Deductions of Allowances (future)
40 CFR 77.6	- Excess Emissions Penalties (SO2 and NOx;future)

E. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: Fig 2-1
2. Emission Point Type Code: [x]1 [ ]2 [ ]3 [ ]4
3. Descriptions of Emissions Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **Exhausts through a single stack.**
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:
5. Discharge Type Code: [ ]D [ ]F [ ]H [ ]P [ ]R [x]V [ ]W
6. Stack Height: **125** feet
7. Exit Diameter: **19** feet
8. Exit Temperature: **206** °F

9. Actual Volumetric Flow Rate:	**1,035,668** acfm
10. Percent Water Vapor:	%
11. Maximum Dry Standard Flow Rate:	dscfm
12. Nonstack Emission Point Height:	feet
13. Emission Point UTM Coordinates: Zone: **17** East (km): **414.4** North (km): **3073.9**	
14. Emission Point Comment (limit to 200 characters): **Temperature and flow for natural gas at 59 degrees turbine inlet; See Tables 2-1 and 2-2 in PSD application.**	

F. SEGMENT (PROCESS/FUEL) INFORMATION
(Regulated and Unregulated Emissions Units)

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Natural Gas**	
2. Source Classification Code (SCC): **2-01-002-01**	
3. SCC Units: **Million Cubic Feet**	
4. Maximum Hourly Rate: **1.85**	5. Maximum Annual Rate: **15,201**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit: **1,050**	
10. Segment Comment (limit to 200 characters): **Based on 1,050 BTU/CF (HHV); maximum hourly at 32 degrees F; annual at 59 degrees F; turbine inlet temperatures.**	

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Distillate Fuel Oil**	
2. Source Classification Code (SCC): **2-01-001-01**	
3. SCC Units: **1,000 Gallons Used**	
4. Maximum Hourly Rate: **15.1**	5. Maximum Annual Rate: **6,881**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur: **0.05**	8. Maximum Percent Ash:
9. Million Btu per SCC Unit: **129**	
10. Segment Comment (limit to 200 characters): **BTU based on HHV of 129 MMBtu/1,000 gallons. Aggregate fuel usage of 13,762,806 gallons per year requested for Power Block 2.**	

G. EMISSIONS UNIT POLLUTANTS
(Regulated and Unregulated Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM			EL
SO2			EL
NOx	026	065	EL
CO			EL
VOC			EL
SAM			E1

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **PM**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: **46** lb/hour **49** tons/year
4. Synthetically Limited? [ ] Yes [X] No
5. Range of Estimated Fugitive/Other Emissions: [ ]1 [ ]2 [ ]3 _____ to _____ tons/yr
6. Emission Factor: Reference: **Westinghouse, 1998**
7. Emissions Method Code: [ ]0 [ ]1 [X]2 [ ]3 [ ]4 [ ]5
8. Calculation of Emissions (limit to 600 characters): **See Section 2.0 in PSD Application**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Max lb/hr for oil firing at 22 degrees F turbine inlet; TPY at 59 degree F turbine inlet with 8,260 hrs/yr-gas; equivalent of 500 hrs/yr/CT-oil.**

Emissions Unit Information Section 1 of 2
Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **10 percent Opacity**	
4. Equivalent Allowable Emissions: **9.8** lb/hour	**40.7** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 9**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Gas Firing: lb/hr at 32 degree F turbine inlet; TPY for 8,760 hrs/yr at 59 degree F turbine inlet.**	

B.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **20 percent Opacity**	
4. Equivalent Allowable Emissions: **46** lb/hour	**11.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 9**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Oil firing: lb/hr at 22 degree F turbine inlet; TPY equivalent of 500 hrs/yr/CT-oil at 59 degrees F turbine inlet.**	

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **SO2**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: **104** lb/hour **46.5** tons/year
4. Synthetically Limited? [ ] Yes [X] No
5. Range of Estimated Fugitive/Other Emissions: [ ]1 [ ]2 [ ]3 _____ to _____ tons/yr
6. Emission Factor: Reference: **Westinghouse, 1998**
7. Emissions Method Code: [ ]0 [ ]1 [X]2 [ ]3 [ ]4 [ ]5
8. Calculation of Emissions (limit to 600 characters): **See Section 2.0 in PSD Application**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Max lb/hr for oil firing at 22 degree F turbine inlet; TPY at 59 degree F turbine inlet; TPY at 59 degree F turbine inlet with 8,260 hrs/yr-gas; equivalent of 500 hrs/yr/CT-oil.**

Emissions Unit Information Section 1 of 2

Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **Pipeline Gas**	
4. Equivalent Allowable Emissions:	**6** lb/hour **24.1** tons/year
5. Method of Compliance (limit to 60 characters): **Fuel Sampling - Vendor**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Gas Firing: lb/hr at 32 degree F turbine inlet; TPY for 8,760 hrs/yr at 59 degree F turbine inlet.**	

B.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **0.05 % Sulfur Oil**	
4. Equivalent Allowable Emissions:	**104** lb/hour **23.75** tons/year
5. Method of Compliance (limit to 60 characters): **Fuel Sampling - Vendor**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Oil Firing: lb/hr at 22 degree F turbine inlet; TPY equivalent of 500 hrs/yr/CT-oil at 59 degrees F turbine inlet.**	

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **NOx**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: **332** lb/hour **249.5** tons/year
4. Synthetically Limited? [ ] Yes [X] No
5. Range of Estimated Fugitive/Other Emissions: [ ]1 [ ]2 [ ]3 _____ to _____ tons/yr
6. Emission Factor: Reference: **Westinghouse, 1998**
7. Emissions Method Code: [ ]0 [ ]1 [X]2 [ ]3 [ ]4 [ ]5
8. Calculation of Emissions (limit to 600 characters): **Maximum lb/hour based on oil-firing. Does not include provision for fuel-bound nitrogen (FBN). An allowance up to 0.03 percent FBN is requested. See Section 2.0 in PSD Application.**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Max lb/hr for oil firing at 22 degree F turbine inlet; TPY at 59 degree F turbine inlet with 8,260 hrs/yhr-gas; equivalent of 500 hrs/yr/CT-oil.**

Emissions Unit Information Section 1 **of** 2

Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **45 lb/hr**	
4. Equivalent Allowable Emissions:	**45** lb/hour **184** tons/year
5. Method of Compliance (limit to 60 characters): **CEM; Part 75; 24-hour Block average**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Gas Firing: lb/hr at 32 degree F turbine inlet; TPY for 8,760 hrs/yr at 59 degree F turbine inlet.**	

B.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **332 lb/hr**	
4. Equivalent Allowable Emissions:	**332** lb/hour **75.75** tons/year
5. Method of Compliance (limit to 60 characters): **CEM; Part 75**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Oil Firing: lb/hr at 22 degree F turbine inlet; TPY equivalent of 500 hrs/yr/CT-oil at 59 degrees F turbine inlet.**	

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **CO**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: **113** lb/hour **378** tons/year
4. Synthetically Limited? [ ] Yes [**X**] No
5. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
6. Emission Factor: Reference: **Westinghouse, 1998**
7. Emissions Method Code: [ ] 0 [ ] 1 [**X**] 2 [ ] 3 [ ] 4 [ ] 5
8. Calculation of Emissions (limit to 600 characters): **See Section 2.0 in PSD Application**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Max lb/hr for oil firing at 22 degree F turbine inlet; TPY at 59 degree F turbine inlet with 8,260 hrs/yr-gas; equivalent of 500 hrs/yr/CT-oil.**

Emissions Unit Information Section 1 of 2.
Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **91 lb/hr**	
4. Equivalent Allowable Emissions:	**91** lb/hour **377** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 10**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Gas Firing: lb/hr at 32 degree F turbine inlet; TPY for 8,760 hrs/yr at 59 degree F turbine inlet.**	

B.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **113 lb/hr**	
4. Equivalent Allowable Emissions:	**113** lb/hour **23** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 10**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Oil Firing: lb/hr at 22 degree F turbine inlet; TPY equivalent of 500 hrs/yr/CT-oil at 59 degrees F turbine inlet.**	

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **VOC**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: **24** lb/hour **71.6** tons/year
4. Synthetically Limited? [ ] Yes [X] No
5. Range of Estimated Fugitive/Other Emissions: [ ]1 [ ]2 [ ]3 _____ to _____ tons/yr
6. Emission Factor: Reference: **Westinghouse, 1998**
7. Emissions Method Code: [ ]0 [ ]1 [X]2 [ ]3 [ ]4 [ ]5
8. Calculation of Emissions (limit to 600 characters): **See Section 2.0 in PSD Application**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Max lb/hr for oil firing at 22 degree F turbine inlet; TPY at 59 degree F turbine inlet with 8,260 hrs/yr-gas; equivalent of 500 hrs/yr/CT-oil.**

Emissions Unit Information Section 1 of 2.

Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **17 lb/hr**	
4. Equivalent Allowable Emissions:	**17** lb/hour **70** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 25A**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Gas Firing: lb/hr at 32 degree F turbine inlet; TPY for 8,760 hrs/yr at 59 degree F turbine inlet.**	

B.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **24 lb/hr**	
4. Equivalent Allowable Emissions:	**24** lb/hour **5.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 25A**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Oil Firing: lb/hr at 22 degree F turbine inlet; TPY equivalent of 500 hrs/yr/CT-oil at 59 degrees F turbine inlet.**	

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **SAM**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: **10** lb/hour **4.77** tons/year
4. Synthetically Limited? [ ] Yes [ ] No
5. Range of Estimated Fugitive/Other Emissions: [ ]1 [ ]2 [ ]3 _____ to _____ tons/yr
6. Emission Factor: **6.5 % SO2** Reference: **Golder, 1998**
7. Emissions Method Code: [ ]0 [ ]1 [X]2 [ ]3 [ ]4 [ ]5
8. Calculation of Emissions (limit to 600 characters): **Emission Factor is converted to SAM. See Section 2.0 in PSD Application**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Max lb/hr for oil firing at 22 degree F turbine inlet; TPY at 59 degree F turbine inlet with 8,260 hrs/yr-gas; equivalent of 500 hrs/yr/CT-oil.**

Emissions Unit Information Section 1 of 2
Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **Pipeline Gas**	
4. Equivalent Allowable Emissions:	**0.6** lb/hour **2.4** tons/year
5. Method of Compliance (limit to 60 characters): **Fuel Sampling - Vendor**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Gas Firing: lb/hr at 32 degree F turbine inlet; TPY for 8,760 hrs/yr at 59 degree F turbine inlet.**	

B.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **0.05 % Sulfur oil**	
4. Equivalent Allowable Emissions:	**10** lb/hour **2.25** tons/year
5. Method of Compliance (limit to 60 characters): **Fuel Sampling - Vendor**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Oil Firing: lb/hr at 22 degree F turbine inlet; TPY equivalent of 500 hrs/yr/CT-oil at 59 degrees F turbine inlet.**	

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Visible Emissions Limitations: Visible Emissions Limitation 1 of 3

1.	Visible Emissions Subtype: **VE10**
2.	Basis for Allowable Opacity: [ ] Rule [X] Other
3.	Requested Allowable Opacity Normal Conditions: **10** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4.	Method of Compliance: **EPA Method 9**
5.	Visible Emissions Comment (limit to 200 characters): **Gas Firing**

Visible Emissions Limitations: Visible Emissions Limitation 2 of 3

1.	Visible Emissions Subtype: **VE20**
2.	Basis for Allowable Opacity: [ ] Rule [X] Other
3.	Requested Allowable Opacity Normal Conditions: **20** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4.	Method of Compliance: **EPA Method 9**
5.	Visible Emissions Comment (limit to 200 characters): **Oil Firing**

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Visible Emissions Limitations: Visible Emissions Limitation 3 of 3

1.	Visible Emissions Subtype: **VE99**
2.	Basis for Allowable Opacity: [x] Rule [ ] Other
3.	Requested Allowable Opacity Normal Conditions: % Exceptional Conditions: **100** % Maximum Period of Excess Opacity Allowed: **60** min/hour
4.	Method of Compliance: **None**
5.	Visible Emissions Comment (limit to 200 characters): **FDEP Rule 62-210.700(2); allowed for 2 hours (120 minutes) per 24 hours for startup, shutdown and malfunction.**

Visible Emissions Limitations: Visible Emissions Limitation _____ of _____

1.	Visible Emissions Subtype:
2.	Basis for Allowable Opacity: [ ] Rule [ ] Other
3.	Requested Allowable Opacity Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4.	Method of Compliance:
5.	Visible Emissions Comment (limit to 200 characters):

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Continuous Monitoring System Continuous Monitor 1 of 2

1. Parameter Code: EM	2. Pollutant(s): NOx
3. CMS Requirement: [X] Rule [ ] Other	
4. Monitor Information: Monitor Manufacturer: Not Yet Determined Model Number: Serial Number:	
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters): **NOx CEM required by 40 CFR Part 75. A carbon dioxide or oxygen monitor will be included.**	

Continuous Monitoring System Continuous Monitor 2 of 2

1. Parameter Code: EM	2. Pollutant(s): NOx
3. CMS Requirement: [X] Rule [ ] Other	
4. Monitor Information: Monitor Manufacturer: Westinghouse Model Number: Serial Number:	
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters): **Parameter Code: WTF. Required by 40 CFR 60; Subpart GG; S.60.334; oil firing. Request NOx CEM in lieu of WTF monitoring.**	

K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION
(Regulated and Unregulated Emissions Units)

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

   If the emissions unit addressed in this section emits particulate matter or sulfur dioxide, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for particulate matter or sulfur dioxide. Check the first statement, if any, that applies and skip remaining statements.

   [X] The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.

   [ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and the emissions unit consumes increment.

   [ ] The facility addressed in this application is classified as an EPA major source and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and the emissions unit consumes increment.

   [ ] For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

   [ ] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

2. Increment Consuming for Nitrogen Dioxide?

If the emissions unit addressed in this section emits nitrogen oxides, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for nitrogen dioxide. Check first statement, if any, that applies and skip remaining statements.

[X] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and the source consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and the source consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and the emissions unit consumes increment.

[ ] None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

3.	Increment Consuming/Expanding Code:			
	PM	[X] C	[ ] E	[ ] Unknown
	SO_2	[X] C	[ ] E	[ ] Unknown
	NO_2	[X] C	[ ] E	[ ] Unknown
4.	Baseline Emissions:			
	PM	lb/hour		tons/year
	SO_2	lb/hour		tons/year
	NO_2			tons/year
5.	PSD Comment (limit to 200 characters):			
	See PSD Application			

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements for All Applications

1.	Process Flow Diagram	
	[X] Attached, Document ID: Fig 2-2	
	[ ] Not Applicable	[ ] Waiver Requested
2.	Fuel Analysis or Specification	
	[X] Attached, Document ID: Tab 2-4	
	[ ] Not Applicable	[ ] Waiver Requested
3.	Detailed Description of Control Equipment	
	[X] Attached, Document ID: Sec. 4.0	
	[ ] Not Applicable	[ ] Waiver Requested
4.	Description of Stack Sampling Facilities	
	[X] Attached, Document ID: PSD Appl.	
	[ ] Not Applicable	[ ] Waiver Requested
5.	Compliance Test Report	
	[ ] Attached, Document ID: _____	[X] Not Applicable
	[ ] Previously Submitted, Date: _____	
6.	Procedures for Startup and Shutdown	
	[ ] Attached, Document ID: _____	[X] Not Applicable
7.	Operation and Maintenance Plan	
	[ ] Attached, Document ID: _____	[X] Not Applicable
8.	Supplemental Information for Construction Permit Application	
	[X] Attached, Document ID: PSD Appl.	[ ] Not Applicable
9.	Other Information Required by Rule or Statute	
	[X] Attached, Document ID: PSD Appl.	[ ] Not Applicable

Additional Supplemental Requirements for Category I Applications Only

10.	Alternative Methods of Operation [ ] Attached, Document ID: _____ [ ] Not Applicable
11.	Alternative Modes of Operation (Emissions Trading) [ ] Attached, Document ID: _____ [ ] Not Applicable
12.	Identification of Additional Applicable Requirements [ ] Attached, Document ID: _____ [ ] Not Applicable
13.	Compliance Assurance Monitoring Plan [ ] Attached, Document ID: _____ [ ] Not Applicable
14.	Acid Rain Permit Application (Hard Copy Required) [ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID: _____ [ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID: _____ [ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID: _____ [ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID: _____ [ ] Not Applicable

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through L as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application. Some of the subsections comprising the Emissions Unit Information Section of the form are intended for regulated emissions units only. Others are intended for both regulated and unregulated emissions units. Each subsection is appropriately marked.

A. TYPE OF EMISSIONS UNIT (Regulated and Unregulated Emissions Units)

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one:

[x] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

2. Single Process, Group of Processes, or Fugitive Only? Check one:

[x] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

B. GENERAL EMISSIONS UNIT INFORMATION
(Regulated and Unregulated Emissions Units)

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section (limit to 60 characters): **CT-2; Power Block 2**		
2. Emissions Unit Identification Number: [ ] No Corresponding ID [X] Unknown		
3. Emissions Unit Status Code: **C**	4. Acid Rain Unit? [X] Yes [ ] No	5. Emissions Unit Major Group SIC Code: **49**
6. Emissions Unit Comment (limit to 500 characters): **Westinghouse 501 F combustion turbine firing natural gas with distillate oil back-up.**		

Emissions Unit Control Equipment Information

A.

1. Description (limit to 200 characters):

Dry Low NOx combustion-natural gas firing

2. Control Device or Method Code: **25**

B.

1. Description (limit to 200 characters):

Selective Catalytic Reduction (SCR) - natural gas firing

2. Control Device or Method Code: **65**

C.

1. Description (limit to 200 characters):

Water Injection - distillate oil firing

2. Control Device or Method Code: **28**

C. EMISSIONS UNIT DETAIL INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Details

1. Initial Startup Date:	
2. Long-term Reserve Shutdown Date:	
3. Package Unit: Manufacturer: Westinghouse	Model Number: 501F
4. Generator Nameplate Rating: 165 MW	
5. Incinerator Information: Dwell Temperature:	°F
Dwell Time:	seconds
Incinerator Afterburner Temperature:	°F

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate:		1,822	mmBtu/hr
2. Maximum Incineration Rate:	lbs/hr		tons/day
3. Maximum Process or Throughput Rate:			
4. Maximum Production Rate:			
5. Operating Capacity Comment (limit to 200 characters): Heat input is HHV; heat input at 59 degree F turbine inlet temperature; MW nominal rating.			

Emissions Unit Operating Schedule

1. Requested Maximum Operating Schedule:			
	hours/day		days/week
	weeks/yr	8,760	hours/yr

D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

Rule Applicability Analysis (Required for Category II Applications and Category III applications involving non Title-V sources. See Instructions.)

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

See Attachment PB2-EU1-D
See PSD Application

E. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Fig 2-1**	
2. Emission Point Type Code: [x]1 [ ]2 [ ]3 [ ]4	
3. Descriptions of Emissions Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **Exhausts through a single stack.**	
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:	
5. Discharge Type Code: [ ]D [ ]F [ ]H [ ]P [ ]R [x]V [ ]W	
6. Stack Height:	**125** feet
7. Exit Diameter:	**19** feet
8. Exit Temperature:	**206** °F

9. Actual Volumetric Flow Rate:	**1,035,668** acfm
10. Percent Water Vapor:	%
11. Maximum Dry Standard Flow Rate:	dscfm
12. Nonstack Emission Point Height:	feet
13. Emission Point UTM Coordinates:	
Zone: **17** East (km): **414.4**	North (km): **3073.9**
14. Emission Point Comment (limit to 200 characters):	
Temperature and flow for natural gas at 59 degrees turbine inlet; See Tables 2-1 and 2-2 in PSD application.	

F. SEGMENT (PROCESS/FUEL) INFORMATION
(Regulated and Unregulated Emissions Units)

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Natural Gas**	
2. Source Classification Code (SCC): **2-01-002-01**	
3. SCC Units: **Million Cubic Feet**	
4. Maximum Hourly Rate: **1.85**	5. Maximum Annual Rate: **15,201**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit: **1,050**	
10. Segment Comment (limit to 200 characters): **Based on 1,050 BTU/CF (HHV); maximum hourly at 32 degrees F; annual at 59 degrees F; turbine inlet temperatures.**	

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Distillate Fuel Oil**	
2. Source Classification Code (SCC): **2-01-001-01**	
3. SCC Units: **1,000 Gallons Used**	
4. Maximum Hourly Rate: **15.1**	5. Maximum Annual Rate: **6,881**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur: **0.05**	8. Maximum Percent Ash:
9. Million Btu per SCC Unit: **129**	
10. Segment Comment (limit to 200 characters): **BTU based on HHV of 129 MMBtu/1,000 gallons. Aggregate fuel usage of 13,762,806 gallons per year requested for Power Block 2.**	

G. EMISSIONS UNIT POLLUTANTS
(Regulated and Unregulated Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM			EL
SO2			EL
NOx	026	065	EL
CO			EL
VOC			EL
SAM			El

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **PM**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: **46** lb/hour **49** tons/year
4. Synthetically Limited? [ ] Yes [X] No
5. Range of Estimated Fugitive/Other Emissions: [ ]1 [ ]2 [ ]3 _____ to _____ tons/yr
6. Emission Factor: Reference: **Westinghouse, 1998**
7. Emissions Method Code: [ ]0 [ ]1 [X]2 [ ]3 [ ]4 [ ]5
8. Calculation of Emissions (limit to 600 characters): **See Section 2.0 in PSD Application**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Max lb/hr for oil firing at 22 degrees F turbine inlet; TPY at 59 degree F turbine inlet with 8,260 hrs/yr-gas; equivalent of 500 hrs/yr/CT-oil.**

Emissions Unit Information Section 2 of 2
Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **10 percent Opacity**	
4. Equivalent Allowable Emissions: **9.8** lb/hour	**40.7** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 9**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Gas Firing: lb/hr at 32 degree F turbine inlet; TPY for 8,760 hrs/yr at 59 degree F turbine inlet.**	

B.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **20 percent Opacity**	
4. Equivalent Allowable Emissions: **46** lb/hour	**11.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 9**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Oil firing: lb/hr at 22 degree F turbine inlet; TPY equivalent of 500 hrs/yr/CT-oil at 59 degrees F turbine inlet.**	

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **SO2**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: **104** lb/hour **46.5** tons/year
4. Synthetically Limited? [ ] Yes [**X**] No
5. Range of Estimated Fugitive/Other Emissions: [ ]1 [ ]2 [ ]3 _____ to _____ tons/yr
6. Emission Factor: Reference: **Westinghouse, 1998**
7. Emissions Method Code: [ ]0 [ ]1 [**X**]2 [ ]3 [ ]4 [ ]5
8. Calculation of Emissions (limit to 600 characters): **See Section 2.0 in PSD Application**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Max lb/hr for oil firing at 22 degree F turbine inlet; TPY at 59 degree F turbine inlet; TPY at 59 degree F turbine inlet with 8,260 hrs/yr-gas; equivalent of 500 hrs/yr/CT-oil.**

Emissions Unit Information Section 2 of 2.
Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **Pipeline Gas**	
4. Equivalent Allowable Emissions:	**6** lb/hour **24.1** tons/year
5. Method of Compliance (limit to 60 characters): **Fuel Sampling - Vendor**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Gas Firing: lb/hr at 32 degree F turbine inlet; TPY for 8,760 hrs/yr at 59 degree F turbine inlet.**	

B.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **0.05 % Sulfur Oil**	
4. Equivalent Allowable Emissions:	**104** lb/hour **23.75** tons/year
5. Method of Compliance (limit to 60 characters): **Fuel Sampling - Vendor**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Oil Firing: lb/hr at 22 degree F turbine inlet; TPY equivalent of 500 hrs/yr/CT-oil at 59 degrees F turbine inlet.**	

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **NOx**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: **332** lb/hour **249.5** tons/year
4. Synthetically Limited? [ ] Yes [**X**] No
5. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
6. Emission Factor: Reference: **Westinghouse, 1998**
7. Emissions Method Code: [ ] 0 [ ] 1 [**X**] 2 [ ] 3 [ ] 4 [ ] 5
8. Calculation of Emissions (limit to 600 characters): **Maximum lb/hour based on oil-firing. Does not include provision for fuel-bound nitrogen (FBN). An allowance up to 0.03 percent FBN is requested. See Section 2.0 in PSD Application.**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Max lb/hr for oil firing at 22 degree F turbine inlet; TPY at 59 degree F turbine inlet with 8,260 hrs/yhr-gas; equivalent of 500 hrs/yr/CT-oil.**

Emissions Unit Information Section 2 **of** 2

Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **45 lb/hr**	
4. Equivalent Allowable Emissions:	**45** lb/hour **184** tons/year
5. Method of Compliance (limit to 60 characters): **CEM; Part 75; 24-hour Block average**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Gas Firing: lb/hr at 32 degree F turbine inlet; TPY for 8,760 hrs/yr at 59 degree F turbine inlet.**	

B.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **332 lb/hr**	
4. Equivalent Allowable Emissions:	**332** lb/hour **75.75** tons/year
5. Method of Compliance (limit to 60 characters): **CEM; Part 75**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Oil Firing: lb/hr at 22 degree F turbine inlet; TPY equivalent of 500 hrs/yr/CT-oil at 59 degrees F turbine inlet.**	

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **CO**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: **113** lb/hour **378** tons/year
4. Synthetically Limited? [ ] Yes [X] No
5. Range of Estimated Fugitive/Other Emissions: [ ]1 [ ]2 [ ]3 _____ to _____ tons/yr
6. Emission Factor: Reference: **Westinghouse, 1998**
7. Emissions Method Code: [ ]0 [ ]1 [X]2 [ ]3 [ ]4 [ ]5
8. Calculation of Emissions (limit to 600 characters): **See Section 2.0 in PSD Application**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Max lb/hr for oil firing at 22 degree F turbine inlet; TPY at 59 degree F turbine inlet with 8,260 hrs/yr-gas; equivalent of 500 hrs/yr/CT-oil.**

Emissions Unit Information Section 2 of 2
Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **91 lb/hr**	
4. Equivalent Allowable Emissions:	**91** lb/hour **377** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 10**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Gas Firing: lb/hr at 32 degree F turbine inlet; TPY for 8,760 hrs/yr at 59 degree F turbine inlet.**	

B.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **113 lb/hr**	
4. Equivalent Allowable Emissions:	**113** lb/hour **23** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 10**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Oil Firing: lb/hr at 22 degree F turbine inlet; TPY equivalent of 500 hrs/yr/CT-oil at 59 degrees F turbine inlet.**	

Emissions Unit Information Section 2 **of** 2.

Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **17 lb/hr**	
4. Equivalent Allowable Emissions:	**17** lb/hour **70** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 25A**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Gas Firing: lb/hr at 32 degree F turbine inlet; TPY for 8,760 hrs/yr at 59 degree F turbine inlet.**	

B.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **24 lb/hr**	
4. Equivalent Allowable Emissions:	**24** lb/hour **5.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 25A**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Oil Firing: lb/hr at 22 degree F turbine inlet; TPY equivalent of 500 hrs/yr/CT-oil at 59 degrees F turbine inlet.**	

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **SAM**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: **10** lb/hour **4.77** tons/year
4. Synthetically Limited? [ ] Yes [ ] No
5. Range of Estimated Fugitive/Other Emissions: [ ]1 [ ]2 [ ]3 _____ to _____ tons/yr
6. Emission Factor: **6.5 % SO2** Reference: **Golder, 1998**
7. Emissions Method Code: [ ]0 [ ]1 [X]2 [ ]3 [ ]4 [ ]5
8. Calculation of Emissions (limit to 600 characters): **Emission Factor is converted to SAM. See Section 2.0 in PSD Application**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Max lb/hr for oil firing at 22 degree F turbine inlet; TPY at 59 degree F turbine inlet with 8,260 hrs/yr-gas; equivalent of 500 hrs/yr/CT-oil.**

Emissions Unit Information Section 2 **of** 2.

Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **Pipeline Gas**	
4. Equivalent Allowable Emissions:	**0.6** lb/hour **2.4** tons/year
5. Method of Compliance (limit to 60 characters): **Fuel Sampling - Vendor**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Gas Firing: lb/hr at 32 degree F turbine inlet; TPY for 8,760 hrs/yr at 59 degree F turbine inlet.**	

B.

1. Basis for Allowable Emissions Code: **OTHER**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **0.05 % Sulfur oil**	
4. Equivalent Allowable Emissions:	**10** lb/hour **2.25** tons/year
5. Method of Compliance (limit to 60 characters): **Fuel Sampling - Vendor**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Oil Firing: lb/hr at 22 degree F turbine inlet; TPY equivalent of 500 hrs/yr/CT-oil at 59 degrees F turbine inlet.**	

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Visible Emissions Limitations: Visible Emissions Limitation 1 of 3

1.	Visible Emissions Subtype: **VE10**
2.	Basis for Allowable Opacity: [ ] Rule [X] Other
3.	Requested Allowable Opacity Normal Conditions: **10** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4.	Method of Compliance: **EPA Method 9**
5.	Visible Emissions Comment (limit to 200 characters): **Gas Firing**

Visible Emissions Limitations: Visible Emissions Limitation 2 of 3

1.	Visible Emissions Subtype: **VE20**
2.	Basis for Allowable Opacity: [ ] Rule [X] Other
3.	Requested Allowable Opacity Normal Conditions: **20** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4.	Method of Compliance: **EPA Method 9**
5.	Visible Emissions Comment (limit to 200 characters): **Oil Firing**

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Visible Emissions Limitations: Visible Emissions Limitation 3 of 3

1.	Visible Emissions Subtype: **VE99**
2.	Basis for Allowable Opacity: [x] Rule [ ] Other
3.	Requested Allowable Opacity Normal Conditions: % Exceptional Conditions: **100** % Maximum Period of Excess Opacity Allowed: **60** min/hour
4.	Method of Compliance: **None**
5.	Visible Emissions Comment (limit to 200 characters): **FDEP Rule 62-210.700(2); allowed for 2 hours (120 minutes) per 24 hours for startup, shutdown and malfunction.**

Visible Emissions Limitations: Visible Emissions Limitation _____ of _____

1.	Visible Emissions Subtype:
2.	Basis for Allowable Opacity: [.] Rule [ ] Other
3.	Requested Allowable Opacity Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4.	Method of Compliance:
5.	Visible Emissions Comment (limit to 200 characters):

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Continuous Monitoring System Continuous Monitor 1 of 2

1. Parameter Code: EM	2. Pollutant(s): NOx
3. CMS Requirement: [X] Rule [ ] Other	
4. Monitor Information: Monitor Manufacturer: Not Yet Determined Model Number: Serial Number:	
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters): **NOx CEM required by 40 CFR Part 75. A carbon dioxide or oxygen monitor will be included.**	

Continuous Monitoring System Continuous Monitor 2 of 2

1. Parameter Code: EM	2. Pollutant(s): NOx
3. CMS Requirement: [X] Rule [ ] Other	
4. Monitor Information: Monitor Manufacturer: Westinghouse Model Number: Serial Number:	
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters): **Parameter Code: WTF. Required by 40 CFR 60; Subpart GG; S.60.334; oil firing. Request NOx CEM in lieu of WTF monitoring.**	

K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION
(Regulated and Unregulated Emissions Units)

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

   If the emissions unit addressed in this section emits particulate matter or sulfur dioxide, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for particulate matter or sulfur dioxide. Check the first statement, if any, that applies and skip remaining statements.

   [x] The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.

   [ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and the emissions unit consumes increment.

   [ ] The facility addressed in this application is classified as an EPA major source and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and the emissions unit consumes increment.

   [ ] For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

   [ ] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

2. Increment Consuming for Nitrogen Dioxide?

If the emissions unit addressed in this section emits nitrogen oxides, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for nitrogen dioxide. Check first statement, if any, that applies and skip remaining statements.

[X] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and the source consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and the source consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and the emissions unit consumes increment.

[ ] None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

3.	Increment Consuming/Expanding Code:			
	PM	[X] C	[ ] E	[ ] Unknown
	SO_2	[X] C	[ ] E	[ ] Unknown
	NO_2	[X] C	[ ] E	[ ] Unknown
4.	Baseline Emissions:			
	PM	lb/hour		tons/year
	SO_2	lb/hour		tons/year
	NO_2			tons/year
5.	PSD Comment (limit to 200 characters):			
	See PSD Application			

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements for All Applications

1.	Process Flow Diagram	
	[X] Attached, Document ID: Fig 2-2	
	[ ] Not Applicable	[ ] Waiver Requested
2.	Fuel Analysis or Specification	
	[X] Attached, Document ID: Tab 2-4	
	[ ] Not Applicable	[ ] Waiver Requested
3.	Detailed Description of Control Equipment	
	[X] Attached, Document ID: Sec. 4.0	
	[ ] Not Applicable	[ ] Waiver Requested
4.	Description of Stack Sampling Facilities	
	[X] Attached, Document ID: PSD Appl.	
	[ ] Not Applicable	[ ] Waiver Requested
5.	Compliance Test Report	
	[ ] Attached, Document ID: _____	[X] Not Applicable
	[ ] Previously Submitted, Date: _____	
6.	Procedures for Startup and Shutdown	
	[ ] Attached, Document ID: _____	[X] Not Applicable
7.	Operation and Maintenance Plan	
	[ ] Attached, Document ID: _____	[X] Not Applicable
8.	Supplemental Information for Construction Permit Application	
	[X] Attached, Document ID: PSD Appl.	[ ] Not Applicable
9.	Other Information Required by Rule or Statute	
	[X] Attached, Document ID: PSD Appl.	[ ] Not Applicable

Additional Supplemental Requirements for Category I Applications Only

10.	Alternative Methods of Operation [ ] Attached, Document ID: _____ [ ] Not Applicable
11.	Alternative Modes of Operation (Emissions Trading) [ ] Attached, Document ID: _____ [ ] Not Applicable
12.	Identification of Additional Applicable Requirements [ ] Attached, Document ID: _____ [ ] Not Applicable
13.	Compliance Assurance Monitoring Plan [ ] Attached, Document ID: _____ [ ] Not Applicable
14.	Acid Rain Permit Application (Hard Copy Required) [ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID: _____ [ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID: _____ [ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID: _____ [ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID: _____ [ ] Not Applicable

PREVENTION OF SIGNIFICANT DETERIORATION PERMIT
APPLICATION FOR FLORIDA POWER CORPORATION (FPC)
HINES ENERGY COMPLEX
POWER BLOCK 2

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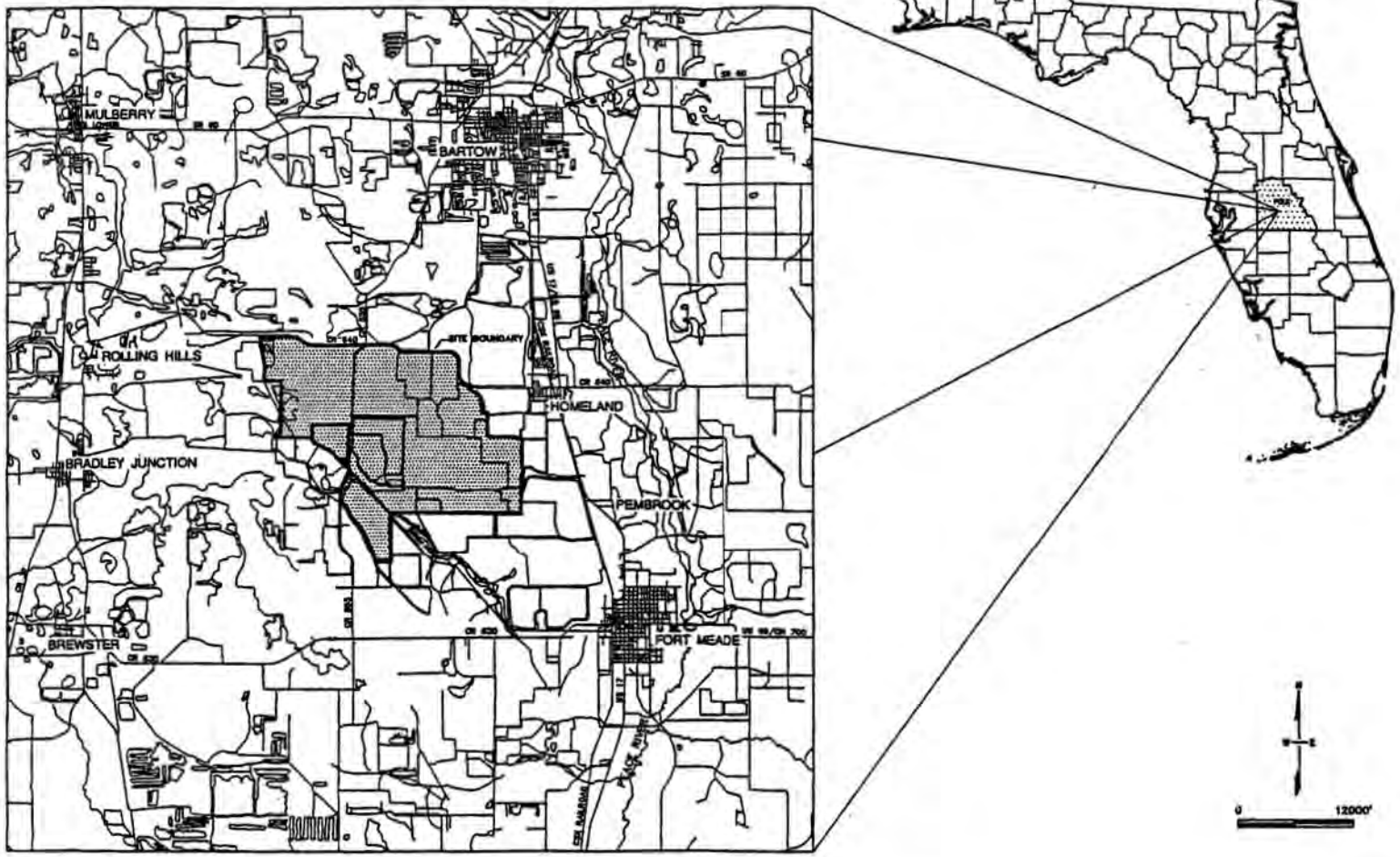
1.0 INTRODUCTION

Florida Power Corporation (FPC) has recently begun operation of Power Block 1, 485 megawatts (MW-nominal 500 MW) of combined cycle power generation. The generating units are located in the southwest portion of Polk County, about seven miles south-southwest of Bartow and five miles west-northwest of Fort Meade (see Figure 1-1). Future generating units are to be brought on-line sequentially, with the scheduling of units to match the estimated growth of demand through the ultimate site capacity of up to 3,000 MW. The expansion of generating capacity at the Hines Energy Complex will be accomplished using the most efficient generating technology throughout the life of the project. This approach offers FPC maximum flexibility and cost control as both technology advances and electrical demand increases.

Power Block 2 consists of two nominal 165 MW Westinghouse 501 F combustion turbines (CTs), two unfired heat recovery steam generators (HRSGs), and one nominal 170 MW steam turbine generator (STG); i.e., a two-on-one configuration. The total nominal rating for Power Block 2 is approximately 500 MW. Pipeline quality natural gas will be utilized as the primary fuel with limited use of low sulfur fuel oil as the back-up fuel. Among the advantages of this combined cycle (CC) technology are its fuel flexibility, modularity, and efficiency. Because of the modularity of CC units, they can be sized and built incrementally to match demand without losing the economy of scale. Applications for the remaining site capacity will be submitted in the future, as appropriate.

The U.S. Environmental Protection Agency (EPA) has promulgated Prevention of Significant Deterioration (PSD) regulations (40 CFR 51.166), which require a permit review and approval for new or modified sources that increase air pollutant emissions above specified threshold levels. These emission threshold levels will be exceeded for several criteria pollutants during operation of Power Block 2. As a result, Power Block 2 is subject to PSD review for these pollutants. The Federal PSD regulations are implemented in

Florida by the Florida Department of Environmental Protection (FDEP). FDEP's PSD regulations are codified in Rule 62-212.400 F.A.C. The technical information and analysis required by the federal and state PSD regulations are contained in this PSD permit application. Although this document will be an appendix to the Site Certification Application (SCA) and only addresses Power Block 2, it has been prepared as a stand-alone PSD permit application. The permit application is divided into eight major sections. Presented in Section 2.0 is a description of the facility, including air pollutant emissions and stack parameters. Air quality review requirements and applicability are presented in Section 3.0. The best available control technology (BACT) evaluation is presented in Section 4.0. An ambient air quality monitoring data analysis is presented in Section 5.0, and the air quality modeling methodology, the results of the air quality impact assessment, and additional impacts analysis performed for the proposed project are presented in Sections 6.0, 7.0, and 8.0, respectively. Section 9.0 contains a list of references and materials cited.



SOURCE: 1992 SCA

Florida Power CORPORATION

Hines Energy Complex

FIGURE 1-1
SITE LOCATION MAP

c:\dwg\fpcsca\borders.dwg

2.1 GENERAL DESCRIPTION

The proposed Power Block 2 project will consist of the construction of approximately 500 MW of generation. The CC configuration consists of two CTs, two HRSGs, and one steam turbine. In this "two-on-one" configuration, each of the two CTs are nominally rated at 165 MW, and the steam turbine has a nominal rating of 170 MW. Each CT will be served by a single HRSG, exhausting to an individual stack. There will be no HRSG bypass stacks for simple cycle operation. Also, there will be no supplemental firing of the HRSGs. The expected primary fuel is natural gas, with low sulfur fuel oil as a backup.

The CC units will utilize low sulfur fuel to limit sulfur dioxide (SO_2) emissions and sulfuric acid mist, selective catalytic reduction (SCR) to limit emissions of oxides of nitrogen (NO_X), and good combustion practices and clean fuels for the minimization of particulate matter (PM/PM_{10}), carbon monoxide (CO), volatile organic compounds (VOCs), and other (trace metals) emissions. The proposed emission control techniques are described in detail in Section 4.0 of this application.

2.2 PROPOSED SOURCE EMISSIONS AND STACK PARAMETERS

As the steam turbine is not a combustion source, estimated mass emissions are based on operation of only the CTs. However, the exhaust gas characteristics reflect flow through the HRSG (i.e., the characteristics reflect the impact of the steam turbine). Therefore, the estimated stack emissions that are representative of the advanced CT designs proposed for Power Block 2 are presented in Tables 2-1 and 2-2 for a 165 MW CT unit. The exhaust parameters presented in these tables are reflective of the combined cycle configuration. These tables cover the natural gas and fuel oil cases for three ambient temperatures: 1) the high temperature case of 105°F, 2) the ISO reference temperature case of 59°F and 3) the low temperature case that represents the shaft limit or the maximum physical output of the equipment, i.e., 22°F for oil and 32°F for natural gas. Maximum hourly emission rates for all pollutants, in units of pounds per hour (lb/hr) are projected to occur for operations at low

ambient temperature and base load. Maximum annual potential emission rates (after the application of BACT) for the proposed sources with respect to regulated criteria air pollutants and regulated non-criteria air pollutants are presented in Table 2-3.

Worst-case air quality impacts due to the proposed facility are a function of emission rate and plume rise. Although it is not practical to model all possible operating scenarios for the facility, a number of cases (combinations of operating conditions and fuel types) were examined to represent the range that will occur during actual operations. The low (22°F and 32°F for oil and gas, respectively) and high (105°F) ambient temperatures are reasonable points selected to indicate the influence of compressor inlet temperature on combustion turbine performance and emissions/exhaust characteristics. At high ambient temperature, the units cannot generate as much power because of lower compressor inlet density. To compensate for a portion of the loss of output (which can be on the order of 20 MW compared to referenced temperatures), inlet cooling is proposed to be installed ahead of the combustion turbine inlet. Therefore, the 59°F temperature case represents a conservative average temperature condition for estimating annual emissions for Power Block 2, inclusive of potential inlet cooling.

A review of the CT unit design information in Tables 2-1 and 2-2 indicates that the highest criteria air pollutant emission rates (SO_2, PM/PM_{10}, NO_X, CO, and VOCs) occur when burning fuel oil. Combustion of fuel oil also results in higher exhaust gas flow rates and stack exit temperatures, which are directly related to plume rise. Although the highest emission rates occur under the low temperature (22°F) condition, the lowest exhaust gas volumetric flow rate for the CC units occurs under the 105°F ambient temperature condition. Detailed discussion on the determination of worst-case impacts is presented in Section 6.0 (Air Quality Modeling Methodology).

Typical fuel analyses for natural gas and fuel oil are presented in Tables 2-4 and 2-5, respectively. For oil firing, it is requested that an aggregate annual fuel usage for Power Block 2 of 13,762,806 gallons be included as a permit condition. This equates to a maximum of 1,000 hours per year of generation at full load (59° F). This amount is the

same as authorized for Power Block 1.

FPC is requesting that the fuel-bound nitrogen allowance be added to the permitted NO_x emission rate while firing fuel oil. The allowance would account for fuel-bound nitrogen up to 0.030%, resulting in permitted emissions ranging from the baseline of 42 ppm (303 lb/hour, 152 tons/year) for a fuel-bound nitrogen content of 0.015% to 48 ppm (346 lb/hour, 174 tons/year) for a fuel-bound nitrogen content of 0.030%.

2.3 SITE LAYOUT AND STRUCTURES

The site arrangement for the initial nominal 1,000 MW (combined Power Blocks 1 and 2) is depicted in Figure 2-1. This configuration arrangement includes the existing 485 MW CC unit, as well as the proposed 500 MW Power Block 2, each with two CTs, two HRSGs, and one steam turbine. The four HRSG stacks are arranged in an east-west line. The flow diagram for a single 250 MW CC unit is depicted in Figure 2-2.

Stack sampling facilities will be constructed in accordance with Rule 62-297.310(6) F.A.C.

TABLE 2-1

COMBUSTION TURBINE UNIT (165 MW)

ESTIMATED [1] PERFORMANCE ON NATURAL GAS

CONDITIONS			
Ambient Temperature (°F)	32	59	105
Ambient Relative Humidity (%)	60	60	60
Load Condition (%)	100	100	100
Elevation (ft) (above MSL)	163	163	163
Maximum Heat Input Rate (MMBtu/hr)[2]	1,946	1,822	1,626
EMISSIONS (lb/hr)			
Carbon Monoxide (25 ppm)	91	86	75
Nitrogen Oxides (at 15% O_2) (6 ppmvd)[3]	45	42	38
Sulfur Dioxide	6.0	5.5	5.0
Particulate Matter (PM_{10})	9.8	9.3	8.5
Opacity (%)	10	10	10
Volatile Organic Compounds (8 ppmvd)	17	16	14
Lead	Neg.	Neg.	Neg.
Sulfuric Acid Mist	0.60	0.55	0.50
STACK PARAMETERS			
Stack Height (ft)	125	125	125
Stack Diameter (ft)	19.0	19.0	19.0
Stack Gas Temperature (°F)	206	206	206
Stack Gas Exit Velocity (ft/sec)	64	61	55

Notes: [1] Emission estimates based on manufacturer's data

[2] For CTs the heat-input rate is based on the higher heating value (HHV) of the fuel (1,050 Btu/SCF).

[3] Not corrected to ISO conditions.

MSL = Mean Sea Level Neg. = Negligible

TABLE 2-2

COMBUSTION TURBINE UNIT (165 MW)

ESTIMATED [1] PERFORMANCE ON FUEL OIL

CONDITIONS			
Ambient Temperature (°F)	22	59	105
Ambient Relative Humidity (%)	60	60	60
Load Condition (%)	100	100	100
Elevation (ft) (above MSL)	163	163	163
Maximum Heat Input Rate (MMBtu/hr)[2]	1,943	1,776	1,581
EMISSIONS (lb/hr)			
Carbon Monoxide (30 ppm)	113	92	92
Nitrogen Oxides[3] (42 ppmvd)	332	303	270
Sulfur Dioxide	104	95	84
Particulate Matter (PM_{10})	46	43	37
Opacity (%)	20	20	20
Volatile Organic Compounds (11 ppmvd)	24	22	19
Lead [4]	0.016	0.0146	0.0136
Sulfuric Acid Mist	10	9	8
STACK PARAMETERS			
Stack Height (ft)	125	125	125
Stack Diameter (ft)	19.0	19.0	19.0
Stack Gas Temperature (°F)	289	289	289
Stack Gas Exit Velocity (ft/sec)	74	69	62

Notes: (1) Emission estimates based on manufacturer's data.
(2) For CTs the heat input rate is based on the higher heating value (HHV) of the fuel (19,200 Btu/lb).
(3) Does not include FBN content correction.
MSL = Mean Sea Level Neg. = Negligible

TABLE 2-3
MAXIMUM POTENTIAL ANNUAL EMISSIONS (500 MW)
AND PSD SIGNIFICANCE VALUES

Pollutant	Emissions (TPY) *	PSD Significant Emission Rate (TPY)	PSD Review Required (Yes/No)
Carbon Monoxide	756	100	Yes
Nitrogen Oxides	499	40	Yes
Sulfur Dioxide	93	40	Yes
Particulate Matter (PM_{10})	98	15	Yes
Total Suspended Particulates	98	25	Yes
Volatile Organic Compounds	143	40	Yes
Lead	0.016	0.6	No
Sulfuric Acid Mist	9.5	7	Yes

* TPY = Tons per year for the proposed Power Block 2 project.

Basis: Full-load operation; 100% capacity factor; 59°F; 1,000 total hours on fuel oil between the two CTs; 8,260 hours per CT on gas.

TABLE 2-4

TYPICAL NATURAL GAS ANALYSIS

ANALYSIS	MOLE (%)
Carbon Dioxide	0.873
Ethane	2.824
Hexanes Plus	0.116
Iso-Butane	0.175
Methane	94.850
Nitrogen	0.235
Normal-Butane	0.148
Pentanes Plus	0.085
Propane	0.696
Total:	100.000
Specific Gravity (air at 1)	0.71

Quality Information	Parameters
Heating Value (HHV)	1050 Btu/cf
Total Sulfur (Maximum)	1 grain/100 SCF

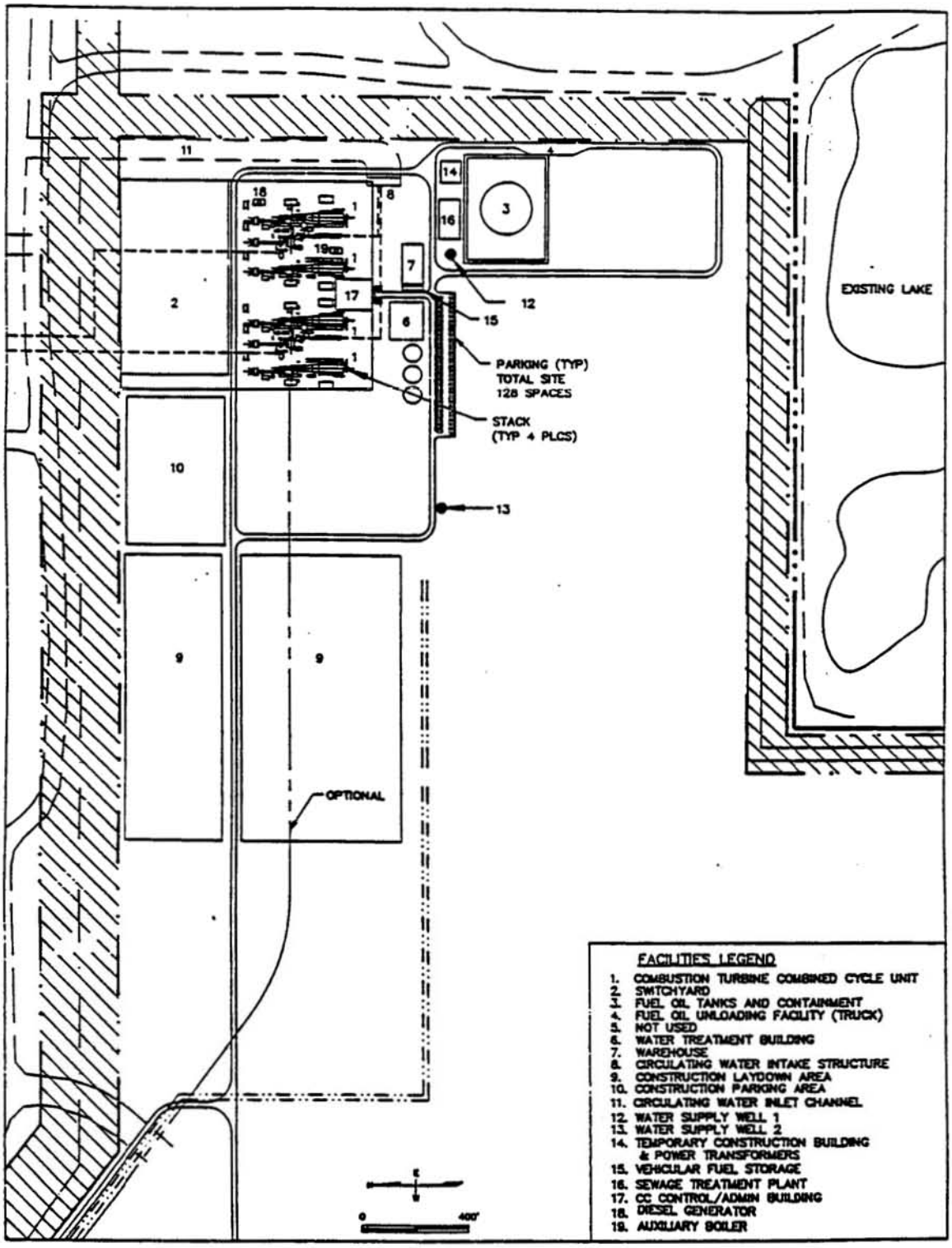
Source: Florida Gas Transmission

TABLE 2-5
TYPICAL NO. 2 FUEL OIL ANALYSIS

NO. 2 DISTILLATE OIL	PERCENT (BY WEIGHT)
Carbon	85.5
Hydrogen	12.7
Nitrogen	0.2*
Oxygen	1.5
Sulfur	0.05**
Ash	0.01

Lower Heating Value: 18,550 Btu/lb
Higher Heating Value: 19,200 Btu/lb
*This is a typical FBN Value. FPC has requested an emissions allowance for FBN of up to 0.030 %, by weight.
**The sulfur content is the maximum, as required by permit.

Source: FPC, 1998



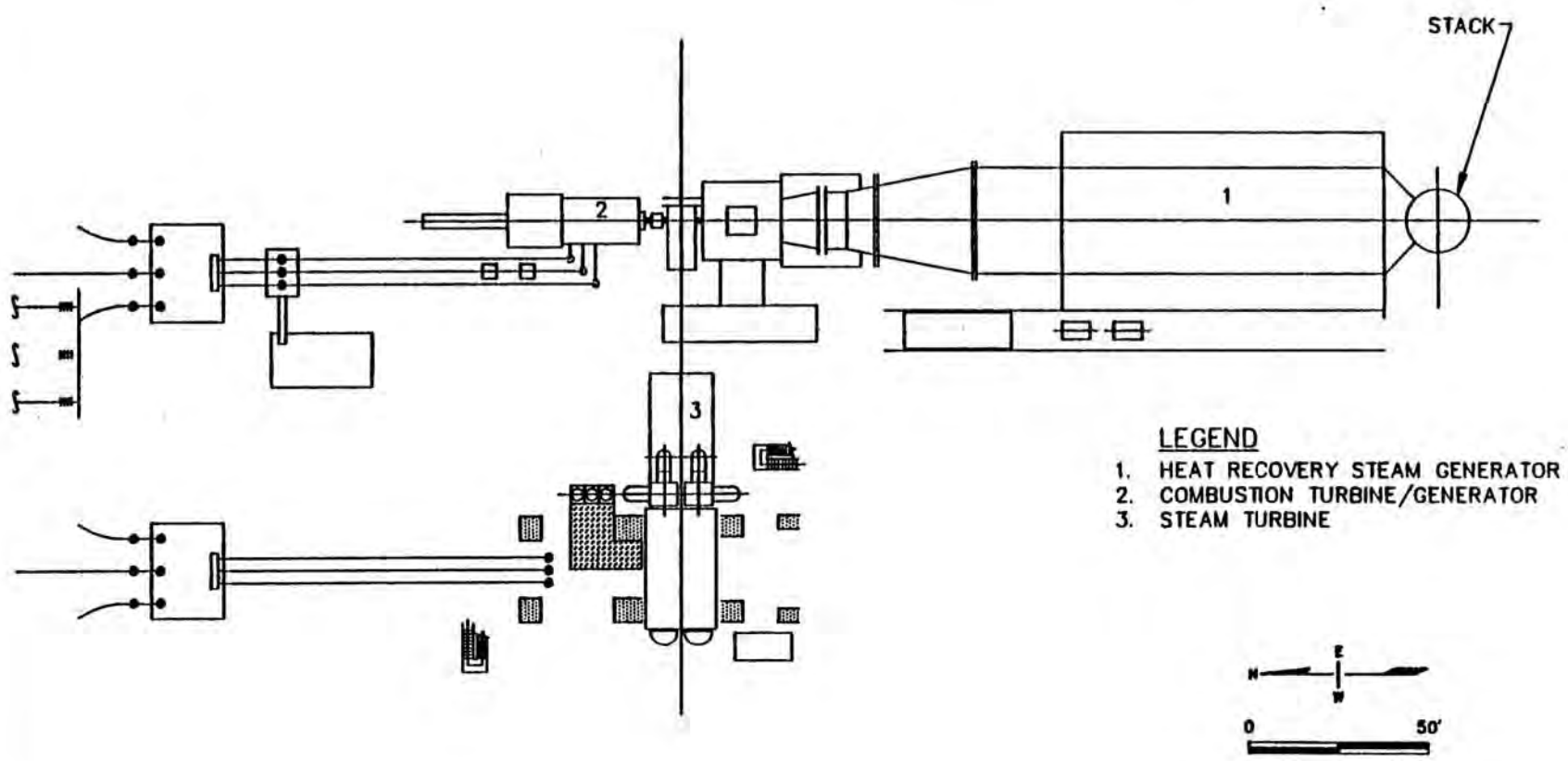
SOURCE: 1992 SCA

Florida Power CORPORATION

HINES ENERGY COMPLEX

FIGURE 2-1
SITE ARRANGEMENT
(940 MW)

c:\dwg\fpcsca\borders.dwg



SOURCE: 1992 SCA

Florida Power CORPORATION

HINES ENERGY COMPLEX

FIGURE 2-2
LAYOUT FOR ONE CC UNIT (235 MW)

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3.0 AIR QUALITY REVIEW REQUIREMENTS AND APPLICABILITY

The following discussion pertains to the federal and state air regulatory requirements and their applicability to Power Block 2. These regulations must be satisfied before the proposed facility can be constructed and begin operation.

3.1 NATIONAL AND FLORIDA AMBIENT AIR QUALITY STANDARDS (NAAQS/FAAQS)

The applicable federal and state ambient air quality standards are presented in Table 3-1 (PSD increments are also presented in Table 3-1, but discussed in Section 3.2.2). The primary National Ambient Air Quality Standards and Florida Ambient Air Quality Standards (NAAQS/FAAQS) were promulgated to protect the public health, and the secondary NAAQS/FAAQS were promulgated to protect the public health and welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. Polk County is an attainment area for all criteria pollutants, meaning that existing ambient concentrations meet the allowable standards.

3.2 PSD REVIEW REQUIREMENTS

3.2.1 General Requirements

Under the federal and FDEP Prevention of Significant Deterioration (PSD) permit review requirements, all major new or modified existing sources of air pollutants located in attainment areas and regulated under the Clean Air Act (CAA) must be reviewed and approved. A "major stationary source" is defined as any one of 28 specified source categories which has the potential to emit 100 tons per year (TPY) or more, or any other stationary source which has the potential to emit 250 TPY or more of any air pollutant regulated under the CAA. Fossil fuel-fired steam electric plants of more than 250 MMBtu/hr of heat input comprise one of the 28 specified source categories. As Power Block 2

constitutes a modification to an existing major source, the proposed project "potential to emit" is compared to the PSD significant emission rates (TPY). The term "potential to emit" means the capability, at maximum design capacity, to emit a pollutant after the application of control equipment. As presented earlier in Table 2-3, the potential emissions from the proposed project will exceed the significance rates for all criteria pollutants; therefore, the project is considered a modification to an existing major stationary source and is subject to PSD review.

PSD review is used to ensure that significant air quality deterioration will not result from the new or modified source located in an attainment area. The PSD regulations are contained in rule 62-212.400 F.A.C. Major sources and modifications are required to undergo the following analyses under PSD for each air pollutant emitted where potential emissions exceed the significant emission rates:

- A control technology analysis;
- An air quality impacts analysis; and
- An additional impacts analysis.

In addition to these analyses, a new source must also be reviewed with respect to Good Engineering Practice (GEP) stack height regulations (EPA, 1985a), New Source Performance Standards (NSPS), and any applicable state emission standard as discussed in Section 3.3.

3.2.2 PSD Increments/Classifications

In promulgating the 1977 Clean Air Act (CAA) Amendments, Public Law 95-95, Congress specified that certain increases above an air quality "baseline concentration" level for SO_2 and TSP

concentrations would constitute "significant deterioration." The magnitude of the allowable increment depends on the classification of the area in which a new source (or modification) will be located or have a significant impact. Three classifications were designated based on criteria established in the CAA Amendments. Initially, Congress designated PSD areas as Class I (international parks, national wilderness areas, and memorial parks larger than 5,000 acres, and national parks larger than 6,000 acres) or as Class II (all areas not designated as Class I). No Class III areas, which would allow greater deterioration than Class II areas, were designated. EPA subsequently incorporated the requirements for classifications and area designation into the PSD regulations.

On October 17, 1988, the EPA promulgated regulations to prevent significant deterioration due to NO_X emissions and established PSD increments for NO_2 concentrations. The allowable PSD increments for SO_2, TSP, and NO_2 are presented in Table 3-1. The FDEP has adopted the EPA PSD classification scheme and the allowable PSD increments for SO_2, PM_{10}, and NO_2.

The term "baseline concentration" is derived from federal and state PSD regulations and denotes a concentration level corresponding to a specified baseline date and contributions from certain additional baseline sources. The PSD regulations (40 CFR 51.166) define baseline concentration as the ambient concentration level which exists in the baseline area at the time of the applicable baseline date. Emission increases after the baseline date consume PSD increments. A baseline concentration is determined for each pollutant for which PSD increments are promulgated and a baseline date is established. The baseline concentration includes:

- The actual emissions representative of sources in existence on the applicable baseline date; and

- The allowable emissions of major stationary sources which commenced construction before January 6, 1975, for SO_2 and PM_{10} concentrations, or before February 8, 1988, for NO_2 concentrations, but which were not in operation by the applicable baseline date.

The air quality analysis results which demonstrate project compliance with these requirements are presented in Section 7.0.

3.2.3 Control Technology

The control technology review requirements of the PSD regulations require that all applicable federal and state emission limiting standards be met and that Best Available Control Technology (BACT) be applied to control emissions from the source. The BACT requirements apply to all applicable regulated and unregulated air pollutants for which the increase in emissions from the source or modification exceeds significant emission rate.

BACT is defined in rule 62-210.200 F.A.C. as:

> An emission limitation, including a visible emissions standard, based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems and techniques (including fuel cleaning or treatment or innovative fuel combustion techniques) for control of each such pollutant.
>
> (a) If the Department determines that technological or economic limitations on the application of measurement methodology to a particular part of an emission unit or facility would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reductions achievable by implementation of such design, equipment, work practice or operation.
>
> (b) Each BACT determination shall include applicable test methods or shall provide for determining compliance with the standard(s) by means which achieve equivalent results.

The requirements for BACT were incorporated within the PSD framework in the 1977 CAA Amendments. The primary purpose of BACT is to minimize consumption of PSD increments and thereby increase the potential for future economic growth without significantly degrading air quality. Guidelines for the evaluation of BACT can be found in the draft "New Source Review Workshop Manual" (EPA, 1990b) and the draft "Top-Down BACT Guidance Document" (EPA, 1990c). These guidelines were issued by EPA to provide a consistent approach to BACT and to ensure that the impacts of alternative emission control systems are measured by the same set of parameters. The "top-down" approach to BACT has been followed in this application. BACT is determined on a case-by-case basis, and BACT for a source in one area may not be the same for an identical source located in another area. BACT analyses for the same types of emissions units and the same pollutants in different locations or situations may determine that different control strategies should be applied to the different sites, depending on site-specific factors.

The BACT requirements are intended to ensure that the control systems incorporated in the design of a proposed facility reflect the latest in control technologies used in a particular industry and take into consideration existing and future air quality in the vicinity of the proposed facility. BACT must, at a minimum, demonstrate compliance with NSPS for a source (if applicable). An evaluation of the air pollution control techniques and systems, including a cost-benefit analysis of alternative control technologies capable of achieving a higher degree of emission reduction than the proposed control technology, is required. The cost-benefit analysis requires the documentation of the materials, energy, and economic penalties associated with the proposed and alternative control systems, as well as the environmental benefits derived from these systems. A determination of BACT is to be based on sound judgement, balancing environmental benefits with energy, economic, and other impacts. Section 4.0 presents the BACT discussion and recommendations for this project.

3.2.4 Ambient Air Quality Monitoring Requirements

In accordance with the requirements of Rule 62-212.400(5)(f) F.A.C., any application for a PSD permit must contain an analysis of ambient air quality monitoring data in the area affected by the proposed major stationary source or major modification.

In accordance with Rule 62-212.400(5)(f)(2), ambient air monitoring for a period of up to one year may be required to satisfy the PSD monitoring requirements. A minimum of four months of data would be required. Existing data from the vicinity of the proposed source may be utilized if the data meet certain quality assurance requirements; otherwise, additional data may need to be gathered.

However, the FDEP PSD regulations include an exemption which excludes or limits the pollutants for which an ambient air quality analysis must be conducted (Rule 62-212.400(3)(e)). This exemption states that a proposed major stationary source or major modification from the monitoring requirements with respect to a particular pollutant if the emissions increase of the pollutant from the source or modification would cause, in any area, air quality impacts less than the *de minimis* air quality impact levels presented in Table 3-2.

Ambient air quality monitoring data is discussed in Section 5.0 of this application.

3.2.5 Source Impact Analysis

A source impact analysis of air quality must be performed for a proposed major source subject to PSD for each air pollutant for which the increase in emissions exceeds the significant emission rate. The PSD regulations specifically require the use of atmospheric dispersion models in performing air quality impact analysis, estimating baseline and future air quality levels, and determining compliance with NAAQS/FAAQS and allowable PSD increments. Reference EPA models must normally be used in performing the impact analysis. Use of nonreference EPA models requires EPA's consultation and prior approval. Guidance for the regulatory application of dispersion models is presented in the U.S. EPA "Guideline on Air Quality Models (Revised)" (EPA, 1997). The modelling methodology utilized for the source impact analysis is described in detail in Section 6.0 of this application.

3.2.6 Additional Impacts Analysis

In addition to air quality impact analyses, the PSD regulations require analyses of the impairment to visibility and the impacts on soils and vegetation that would occur as a result of the proposed source. These analyses are to be conducted primarily for PSD Class I areas. Impacts on air quality due to general commercial, residential, industrial, and other growth related activities associated with the source must also be addressed. These analyses are required for each pollutant emitted in significant quantities. Section 8.0 of this application contains the additional impact analyses.

3.3 OTHER REQUIREMENTS

In addition to the requirements of the PSD program, any new or modified source of air pollution must be reviewed with respect to the GEP stack height regulations (EPA, 1985a), the federal NSPS requirements, and any state-specific emission standards.

3.3.1 Good Engineering Practice (GEP) Stack Height

The 1977 CAA Amendments require under Section 123 that the degree of emission limitation required for control of any air pollutant not be affected by a stack height that exceeds GEP, or any other dispersion technique. On July 8, 1985, EPA promulgated final stack height regulations (EPA, 1985a).

The EPA's final stack height regulations define GEP stack height in part as the greater of:

(1) 65 meters, measured from the ground-level elevation at the base of the stack; or

(2) $H_g = H + 1.5\ L$

where:

H_g = GEP stack height, measured from the ground-level elevation at the base of the stack;

H = Height of nearby structure(s) measured from the ground-level elevation at the base of the stack; and

L = Lesser dimension, height or projected width of nearby structure(s).

The term "nearby" is defined by the GEP stack height regulations as a distance up to five times the lesser of the height or width dimensions of a structure or terrain feature, but not greater than 0.8 km. Although GEP stack height regulations require that the stack height credit used in modelling for determining compliance with NAAQS/FAAQS and PSD increments not exceed the GEP stack height, the actual stack height may be greater. In this case the proposed stacks for the 500 MW (nominal) generating units are 125.0 feet (38.1 meters) above ground level. This height does not exceed the de minimus GEP stack height of 65m. See Section 6.7 of this application for a discussion of building downwash considerations for this project.

3.3.2 New Source Performance Standards (NSPS)

The CAA required the U.S. EPA to adopt standards of performance for new or modified stationary sources of air pollution. To date, the U.S. EPA has adopted regulations for approximately 80 stationary source categories. These regulations are contained in 40 CFR Part 60. A review of the regulations reveals that the Power Block 2 CC units are subject to a specific NSPS. Any source subject to a specific NSPS is also subject to the general provisions of 40 CFR 60 Subpart A.

3.3.2.1 General Provisions

The general provisions of the NSPS regulations are found in 40 CFR 60, Subpart A. The general provisions specify the notification and record keeping requirements (40 CFR 60.7), compliance with standards and maintenance requirements (40 CFR 60.11), and the monitoring requirements (40 CFR 60.13) for each affected source.

3.3.2.2 Combined Cycle Units

NSPS for combined cycle units are covered in 40 CFR 60 and potentially include: Subpart Da - Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978; in 40 CFR 60, Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units; and in 40 CFR 60, Subpart GG - Standards of Performance for Stationary Gas Turbines. Because the steam generators associated with Power Block 2 (i.e., HRSGs) will utilize only the waste heat from the combustion turbines, only the requirements of Subpart GG and Subpart A will apply.

Subpart GG regulates the CC units as electric utility stationary gas turbines and establishes emission limitations on both NO_x and SO_2. The NO_x emission limitation is set by the following equation:

$$STD = 0.0075 \frac{(14.4)}{Y} + F$$

where:

STD = allowable NO_X emissions (percent by volume at 15 percent oxygen and on a dry basis).

Y = manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour) or actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F = NO_X emission allowance for fuel-bound nitrogen as defined below:

Fuel-bound nitrogen (percent by weight)	F (NO_X percent by volume)
N<0.015	0
0.015<N<0.1	0.04(N)
0.1<N<0.25	0.004 + 0.0067(N-0.1)
N>0.25	0.005

where:

N = the nitrogen content of the fuel (percent by weight).

This results in an emission limitation of 113.5 parts per million on a dry volume basis (ppmvd) at 15 percent oxygen for the proposed units when fired on natural gas and 112.7 ppmvd at 15 percent oxygen when fired on fuel oil. (These values do not include the allowance for fuel-bound nitrogen). The SO_2 emission limitations are set at 150 ppmvd corrected to 15 percent oxygen in the exhaust stream or a fuel sulfur content less than or equal to 0.8 percent by weight.

40 CFR 60 Subparts Da, Db, and Dc are not applicable to the CC units since the HRSGs will not be fired with any type of auxiliary fuel.

3.3.2.3 Excess Emissions

The EPA has adopted general and specific recordkeeping and reporting requirements relating to excess emissions in 40 CFR 60.7(b) and 40 CFR 60.334(c). The EPA requirements specify maintaining records and submittal of a quarterly report (calendar year) on excess emissions associated with start-ups, shutdowns, malfunctions, inoperative continuous emission monitoring systems, low water-to-fuel ratio, and fuel sulfur content greater than 0.8% by weight. The reporting requirement includes submittal of the quarterly report even when no excess emissions occur. EPA has not adopted any specific time limits related to excess emissions from a CC unit, or from combustion turbine units regulated under 40 CFR Part 60, Subpart GG.

3.3.3 State-Specific and General Emission Standards

In addition to federal requirements, FDEP has adopted specific and general emission limiting and performance standards. These standards may be found in rule 62-296, F.A.C. The requirements of these standards must be met along with any federal PSD or NSPS limitation or requirement.

3.3.3.1 General Emission Standards

The FDEP has adopted general particulate matter emission limits as well as general pollutant emission limits (rule 62-296.320, F.A.C.). These limits apply when no specific emission standard is applicable.

3.3.3.2 Combined Cycle Units

The FDEP has not adopted any state-specific emission standards in rule 62-296, F.A.C. relating to the operation of a CC unit. The FDEP has adopted the NSPS requirements of Subparts A and GG by reference in rule 62-204.800, F.A.C. Based on the current FDEP rules, the CC units must meet the NSPS requirements as discussed in Section 3.3.2.2. In addition, a general opacity limit of less than 20 percent and a prohibition on emitting air pollutants that cause or contribute to an objectionable odor apply.

FPC is requesting that the DEP add the fuel-bound nitrogen allowance to the emissions limit for NO_x. This request is discussed in more detail in Section 2.2 and Section 4 of this Appendix.

3.3.3.3 Excess Emissions

The FDEP has adopted standards relating to excess emissions in rule 62-210.700, F.A.C. The rule allows excess emissions resulting from startup, shutdown, or malfunction of any source as long as best operational practices are applied and the excess emissions do not exceed 2 hours in any 24 hour period. Currently, the rule allows one exception from the 2 hour limit and that is for existing fossil fuel steam generators. The FDEP can authorize different excess emission parameters for other sources on a case-by-case basis. Based on the intended operation of the CC units, it is requested that the FDEP consider the operational variations of this equipment as well as the EPA's NSPS requirements on excess emissions and set an allowable excess emissions level as follows:

> "Excess emissions from a combined cycle unit resulting from startup, shutdown, fuel switch, or malfunction shall be permitted for up to three (3) hours provided that best operational practices to minimize excess emissions are adhered to and the duration of the excess emissions shall be minimized."

3.4 SOURCE APPLICABILITY

3.4.1 Pollutant Applicability

The PSD regulations apply to the proposed generation project due to the attainment status for the Polk County Site. Polk County and the surrounding counties are designated as PSD Class II areas for SO_2, PM_{10}, and NO_2. The Polk County Site is located approximately 118 km southeast of the Chassahowitzka Wilderness Area, the nearest PSD Class I area. The Chassahowitzka Wilderness Area is that portion of the Chassahowitzka National Wildlife Refuge which has been officially designated as wilderness.

Pollutant applicability for the proposed facilities is addressed in Sections 2.0 and 4.0 and briefly summarized here. The proposed Power Block 2 project is considered to be a modification to an existing major source under the PSD regulations. PSD review is required for any regulated

pollutant for which the net increase in emissions exceeds the PSD significant emission rates presented in Table 2-5. As shown, the potential emissions for the proposed facilities will exceed the PSD significant emission rates for the following regulated pollutants: CO, NO_X, SO_2, PM_{10}, VOC, and sulfuric acid mist. The proposed project is subject to PSD review for these pollutants.

3.4.2 Ambient Air Quality Monitoring

Based upon the net increase in emissions from the proposed facility presented in Table 2-3, a PSD preconstruction ambient air monitoring analysis is required, as part of the air quality impact analysis for CO, NO_2, SO_2, PM_{10}, O_3 (based on VOC emissions), and sulfuric acid mist. However, if the net increase in a source's impact of a pollutant is less than the *de minimis* air quality impact level, as shown in Table 3-2, then preconstruction ambient air quality monitoring is not required for that pollutant. In addition, if an acceptable ambient air monitoring method for the pollutant has not been established by EPA, monitoring is not required.

Preliminary Dispersion modeling was performed to determine those pollutants which could be exempted from the monitoring requirement. As verified by the revised modelling analysis described in Sections 6.0 and 7.0, the increases in air quality impacts are predicted to fall below the *de minimis* impact levels presented in Table 3-2, therefore, pre-construction monitoring is not required. The results for these pollutants are presented in Section 5.0.

Table 3-1. National and State AAQS, Allowable PSD Increments, and Significant Impact Levels

Pollutant	Averaging Time	AAQS (µg/m^3)			PSD Increments (µg/m^3)		Significant Impact Levels (µg/m^3) [b]
		Primary Standard	Secondary Standard	Florida	Class I	Class II	
Particulate Matter[c] (PM10)	Annual Arithmetic Mean	50	50	50	4	17	1
	24-Hour Maximum	150	150	150	8	30	5
Sulfur Dioxide	Annual Arithmetic Mean	80	NA	60	2	20	1
	24-Hour Maximum	365	NA	260	5	91	5
	3-Hour Maximum	NA	1,300	1,300	25	512	25
Carbon Monoxide	8-Hour Maximum	10,000	10,000	10,000	NA	NA	500
	1-Hour Maximum	40,000	40,000	40,000	NA	NA	2,000
Nitrogen Dioxide	Annual Arithmetic Mean	100	100	100	2.5	25	1
Ozone[c]	8-Hour Maximum[d]	157	157	157	NA	NA	NA
Lead	Calendar Quarter Arithmetic Mean	1.5	1.5	1.5	NA	NA	NA

Note: Particulate matter (PM10) = particulate matter with aerodynamic diameter less than or equal to 10 micrometers.
NA = Not applicable, i.e., no standard exists.

[a] Short-term maximum concentrations are not to be exceeded more than once per year.

[b] Maximum concentrations are not to be exceeded.

[c] On July 18, 1997, EPA promulgated revised AAQS for particulate matter and ozone. For particulate matter, PM2.5 standards were introduced with a 24-hour standard of 65 g/m^3 (3-year average of 98th percentile) and an annual standard of 15 g/m^3 (3-year average at community monitors). Implementation of these standards are many years away.

[d] 0.08 ppm; achieved when 3-year average of 99th percentile is 0.08 ppm or less. FDEP has not yet adopted these standards.

Sources: Federal Register, Vol. 43, No. 118, June 19, 1978.
40 CFR 50; 40 CFR 52.21.
Chapter 62-272, F.A.C.

Table 3-2. PSD Significant Emission Rates and *De Minimis* Monitoring Concentrations

Pollutant	Regulated Under	Significant Emission Rate (TPY)	*De Minimis* Monitoring Concentration[a] (µg/m3)
Sulfur Dioxide	NAAQS, NSPS	40	13, 24-hour
Particulate Matter [PM(TSP)]	NSPS	25	10, 24-hour
Particulate Matter (PM10)	NAAQS	15	10, 24-hour
Nitrogen Dioxide	NAAQS, NSPS	40	14, annual
Carbon Monoxide	NAAQS, NSPS	100	575, 8-hour
Volatile Organic Compounds (Ozone)	NAAQS, NSPS	40	100 TPY[b]
Lead	NAAQS	0.6	0.1, 3-month
Sulfuric Acid Mist	NSPS	7	NM
Total Fluorides	NSPS	3	0.25, 24-hour
Total Reduced Sulfur	NSPS	10	10, 1-hour
Reduced Sulfur Compounds	NSPS	10	10, 1-hour
Hydrogen Sulfide	NSPS	10	0.2, 1-hour
Mercury	NESHAP	0.1	0.25, 24-hour
MWC Organics	NSPS	$3.5x10^{-6}$	NM
MWC Metals	NSPS	15	NM
MWC Acid Gases	NSPS	40	NM
MSW Landfill Gases	NSPS	50	NM

Note: Ambient monitoring requirements for any pollutant may be exempted if the impact of the increase in emissions is below *de minimis* monitoring concentrations.

NAAQS = National ambient air quality Standards.
NM = No ambient measurement method established; therefore, no *de minimis* concentration has been established.
NSPS = New Source Performance Standards.
NESHAP = National Emission Standards for Hazardous Air Pollutants.
g/m^3 = Micrograms per cubic meter.
MWC = Municipal waste combustor.
MSW = Municipal solid waste.

[a] Short-term concentrations are not to be exceeded.
[b] No *de minimis* concentration; an increase in VOC emissions of 100 TPY or more will require monitoring analysis for ozone.
[c] Any emission rate of these pollutants.

Sources: 40 CFR 52.21.
Rule 62-212.400

4.0 BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS

4.1 INTRODUCTION

This section of the PSD application provides a detailed BACT analysis for the Hines Energy Complex Power Block 2 installation of approximately 500 MW of combined cycle (CC) generation. The CC units will consist of two CTs, two HRSGs, and one steam turbine, termed a "two-on-one" configuration.

The project's potential annual emissions of the following regulated pollutants exceed the PSD significant emission rate thresholds and are, therefore, subject to BACT review:

- Carbon Monoxide (CO)
- Nitrogen Oxides (NO_X)
- Sulfur Dioxide (SO_2)
- Particulate Matter (PM/PM_{10})
- Volatile Organic Compounds (VOC)
- Sulfuric Acid Mist (H_2SO_4)

This BACT analysis assumes that two CT units will be operating at an annual average inlet temperature of 59°F and an ambient relative humidity of 60 percent. These turbine inlet

conditions represent a conservative estimate of annual average emissions, and account for the potential use of inlet cooling for the two CTs. In order to assure that conservatively high pollutant emission rates are used in the BACT analysis, the CT units are assumed to operate at 100 percent capacity, 8,760 hours per year. Natural gas will be the primary fuel and fuel oil will be the back-up fuel (an aggregate of 13,762,806 gallons per year based on 1,000 hours of operation per year between the two CTs at full load).

4.2 METHODOLOGY

This BACT analysis follows the general requirements of EPA's draft "top down" BACT guidance document (EPA, 1990c), which requires that the BACT analysis start by assuming the use of the most stringent control technology. Sources of information which were used to identify control alternatives include:

- EPA's RACT/BACT/LAER Clearinghouse (RBLC) via the RBLC Information System database;
- Recent FDEP BACT determinations for similar facilities;
- Vendor information; and
- Florida Power Corporation (FPC) experience for similar projects.

Of the control alternatives identified, the less efficient alternatives are evaluated if the most stringent control technology is determined to be technologically infeasible or unreasonable considering economic, energy, and environmental factors. The economic analyses in this section are based on the criteria listed in Table 4-1 and employ the procedures found in the Office of Air Quality Planning and Standards (OAQPS) *Control Cost Manual* (EPA, 1990b).

The final step is the selection of a BACT emission limitation corresponding to the most stringent, technically feasible control technology that was not eliminated based on energy, environmental, or economic impacts.

As indicated in Section 2.2, Table 2-3, projected annual emission rates of NO_x, CO, VOCs, PM/PM_{10}, SO_2, and H_2SO_4 mist for Power Block 2 exceed the PSD significance rates and, therefore, are subject to a BACT analysis. Control technology analyses using the top-down BACT method are contained in Section 4.4 for combustion products (PM/PM_{10}), Section 4.5 and 4.6 for products of incomplete combustion (CO and VOCs, respectively), and Sections 4.7 and 4.8 for acid gases (NO_x, and SO_2 and H_2SO_4 mist, respectively).

4.3 STATE AND FEDERAL EMISSION STANDARDS

This section provides a summary of potentially applicable emission standards at the state and federal level. The BACT emission limitations proposed for the Hines Energy Complex Power Block 2 are all more stringent than the applicable federal and state standards cited in the following summary.

FDEP emission standards for stationary sources are contained in Chapter 62-296, Stationary Sources-Emission Standards, F.A.C. This chapter contains general emission standards for sources emitting PM (Rule 62-296.320, F.A.C.) that are applicable to the Project. Visible emissions are limited to a maximum of 20 percent opacity pursuant to Rule 62-296.320(4)(b), F.A.C. Emission standards applicable to sources located in non-attainment areas are contained in Rules 62-296.500 (for ozone areas) and 62-296.700, F.A.C. (for PM non-attainment areas). Because

Power Block 2 is located in Polk County, Florida, and because this county is designated attainment for all criteria pollutants, these emission standards are not applicable. Finally, Rule 62-204.800, F.A.C., adopts federal New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS), respectively, by reference.

On the federal level, NSPS Subpart GG establishes emission limits for gas turbines that meet certain criteria. The Power Block 2 CTs qualify as electric utility stationary gas turbines and, therefore, are subject to the NO_x and SO_2 emission limitations of NSPS 40 CFR 60, Subpart GG, § 60.332(a)(1) and § 60.333, respectively. The proposed Hines Energy Complex Power Block 2 has no applicable NESHAP requirements.

4.4 BACT ANALYSIS FOR PM/PM_{10}

4.4.1 Potential Control Technologies

Several control technologies commonly used to limit emissions of PM include baghouses, electrostatic precipitators (ESPs), wet scrubbers and mechanical collectors. The NSPS for CT units does not establish an emission limit for particulate matter. Further, a review of RBLC documents did not reveal any post-combustion particulate matter control technologies being used on CC units. All determinations were based on the use of clean fuels and good combustion practice.

The natural gas fuel to be used in the proposed CT units will contain only trace quantities of noncombustible material. The use of low sulfur fuel oil, as a back-up fuel, will be limited. In

addition, the CTs proposed for Power Block 2 will use the latest combustor technology to maximize combustion efficiency and minimize PM/PM_{10} emission rates. In fact, the manufacturer's standard operating procedures will ensure as complete combustion of the fuel as possible.

4.4.2 Proposed BACT Emission Limitations

Based on the above analysis, it is proposed that BACT for PM/PM_{10} emissions from the CTs be the use of good combustion practices and clean fuels. The CTs will be fired primarily with natural gas, with limited low sulfur fuel oil backup capability. FPC requests that the use of fuel oil be limited to no more than 13,762,806 gallons per year. This requested quantity is consistent with the current permit limit for Power Block 1 and is based on an aggregate of 1,000 hours per year of operation between the two CTs at full load and 59°F. Since the only technically feasible alternative is proposed to be BACT, an economic and environmental analysis is not required and is not presented.

Due to the difficulties associated with stack testing exhaust streams containing very low PM/PM_{10} concentrations and consistent with recent FDEP BACT determinations for CTs, a visible emissions limit of 10/20 percent opacity for natural gas/fuel oil is proposed as a surrogate BACT limit for PM/PM_{10}.

4.5 BACT ANALYSIS FOR CO

Carbon monoxide (CO) emissions result from the incomplete combustion of carbon and organic compounds. CTs have inherently low CO emissions, which are categorized as products of incomplete combustion of fossil fuels. High combustion temperatures, adequate excess air, and good fuel/air mixing during combustion will minimize CO

emissions. Therefore, formation of CO is a function of the manufacturer's combustor design. Because lower combustion temperatures will result in a decrease in oxidation rates, emissions of CO will generally increase during turbine partial load conditions when combustion temperatures are lower.

4.5.1 Potential Control Technologies

A search of the RBLC was conducted for CO control determinations for natural gas fired CTs. A summary of the results is presented in Table 4-2. In addition, a summary of Florida DEP CO BACT determinations for natural gas-fired CTs is presented in Table 4-3. There are two available technologies for controlling CO from gas turbines: (1) combustion process design and good combustion practices and (2) oxidation catalysts. The projects identified through the RBLC as utilizing oxidation catalysts are located in non-attainment areas for CO.

Combustion Process Design

A combustor design based on high combustion temperatures, adequate excess air, and good fuel/air mixing during combustion will minimize CO emissions. Therefore, this control alternative is based on combustion chamber designs and operation practices that improve the oxidation process and minimize incomplete combustion. Due to the high combustion efficiency of CTs, CO emissions are inherently low.

Oxidation Catalysts

The oxidation catalyst process is based on a straight catalytic reaction requiring no additives. The reactions and catalysts used (platinum based) are similar to the catalytic oxidation technology used for automotive emission control. Products from the reaction include carbon dioxide and water. Catalytic oxidation systems are capable of CO

reductions of between 50 and 80 percent. However, this reduction potential will be somewhat influenced by initial concentrations of the pollutants.

Technical Feasibility

Combustion process design is considered to be technically feasible for the proposed CTs. Oxidation catalysts are susceptible to deactivation due to impurities present in the exhaust gas stream. Arsenic, iron, sodium, phosphorous, and silica, which are present in fuel oil, will all act as catalyst contaminants causing a reduction in catalyst activity and pollutant removal efficiencies. In spite of this, the addition of an oxidation catalyst was considered to be technically feasible for this BACT analysis. Significant CO oxidation will occur at any temperature above roughly 500°F. Inlet temperature must also be maintained below 1,350 to 1,400°F to prevent thermal aging of the catalyst which will reduce catalyst activity and pollutant removal efficiencies. Exhaust gas temperatures associated with the proposed project are within this performance range. Information regarding energy, environmental, and economic impacts of an oxidation catalyst for CO are provided in the following sections.

4.5.2 Energy and Environmental Impacts

There are no significant adverse energy or environmental impacts associated with the use of good combustion designs and operating practices to minimize CO emissions.

A catalyst that oxidizes CO to CO_2 will also oxidize SO_2 to SO_3. While firing fuel oil, 50 to 60 percent of the SO_2 in the flue gas will be converted to SO_3. When the SO_3 comes in contact with moisture, it will form sulfuric acid mist (H_2SO_4) that can cause corrosion damage to downstream plant equipment and damage to surrounding vegetation. The

H_2SO_4 created will also increase particulate emissions from the facility. Because CO emission rates from CTs are inherently low, further reductions through the use of oxidation catalysts will result in minimal air quality improvements, i.e., impacts are already well below the defined PSD significant impact levels for CO. The location of the Hines Energy Complex (Polk County, Florida) is classified attainment for all criteria pollutants. Dispersion modeling of CO emissions from the Project indicate that the maximum CO impacts, without oxidation catalyst, will be many times lower than the EPA and FDEP significant impact levels; there would be no air quality benefit with the addition of an oxidation catalyst to reduce the already low CO emissions.

Although CO has been well documented as a criteria pollutant, significant international pressure is now being exerted to reduce CO_2 emission levels in response to the suspected contributions of the gas to global warming. A CO oxidation catalyst could increase the CO_2 emissions from the facility by almost 380 pounds per hour (1,660 TPY assuming 8,760 hours per year of operation).

The application of an oxidation catalyst would result in a derate of approximately 0.2 percent (0.4 MW) of CT output. Since power demand will remain constant, this derate will be replaced by a combustion source that has higher CO emissions than the planned units at the Hines Energy Complex. Further the pressure drop across the catalyst bed and resulting increase in the unit's heat rate results in a potential energy loss of 31,937 MMBtu per year per CT of natural gas. This is equivalent to the use of about 32 million cubic feet (ft^3) of additional natural gas annually.

4.5.3 Economic Impacts

An economic evaluation of an oxidation catalyst system was performed using the OAQPS factors and project-specific economic factors presented in Table 4-1. Capital and annual operating costs for the oxidation catalyst control system are summarized in Tables 4-4 and 4-5, respectively.

The capital costs for the catalytic reduction system include the costs of the catalytic reactors and balance of plant equipment. Capital costs for the catalytic emission reduction system are based on budgetary quotations from equipment manufacturers. Annual operating costs include maintenance (predominantly catalyst replacement) and lost generation due to the pressure drop across the catalyst. The total capital cost for installation of the oxidation catalyst control system is estimated to be approximately $1,343,430 per CT. The total annual cost is estimated to be approximately $576,404. The cost effectiveness (incremental emission reduction cost) of the oxidation catalyst was determined to be $2,177 per ton of CO removed. This cost-effectiveness value is conservatively low due to the 100 percent capacity factor and is in the range that has typically not been deemed BACT for CO by DEP.

4.5.4 Proposed BACT Emission Limitations

The use of oxidation catalysts to control CO emissions from CTs have been generally installed on facilities located in CO non-attainment areas. The use of combustion controls results in CO emission rates from the proposed CTs that are inherently low and in the range established as BACT for similar sources in attainment areas. As discussed in the preceding paragraphs, there are also significant energy and

environmental impacts associated with the use of this technology. Further reductions through the use of oxidation catalysts will result in no measurable benefit in air quality.

Use of state-of-the-art combustion design and good operating practices to minimize incomplete combustion are proposed as BACT for CO emissions. For all CT projects recently permitted by the Florida DEP, these control techniques have been considered by FDEP to represent BACT for CO emissions. Therefore, at base load operation, the proposed BACT for CO emissions from the CTs will be 25/30 ppmvd (86/92 lb/hr at 59 °F turbine inlet conditions) for natural gas and fuel oil, respectively.

4.6 BACT for VOCs

A small amount of VOCs will be emitted by the CT as a result of incomplete combustion. The control technology established as BACT in Florida has been overwhelmingly the use of combustion controls and clean fuels. The proposed BACT emission levels for emissions are 8/11 ppmvd (16/22 lb/hr at 59 °F turbine inlet conditions) for natural gas and fuel oil, respectively. These levels are within the BACT levels recently established for other similar sources. Moreover, at these low concentrations, the application of control technologies, such as oxidation catalysts, are uncertain. The environmental benefit of further reducing the amount of VOCs from the combustion turbines proposed for Power Block 2 would be insignificant.

4.7 BACT ANALYSIS FOR NO_x

During combustion, two types of NO_X are formed: thermal NO_X and fuel NO_X. Thermal NO_X emissions are generated through the oxidation of a portion of the nitrogen contained in the combustion air. Formation of nitrogen oxides through thermal NO_X can be limited by

lowering combustion temperatures by staging combustion (a reducing atmosphere followed by an oxidizing atmosphere), or by post-combustion controls. Fuel NO_x arises from the oxidation of non-elemental nitrogen contained in the fuel. The conversion of fuel-bound nitrogen (FBN) to NO_x depends on the bound nitrogen content of the fuel. In contrast to thermal NO_x, fuel NO_x formation does not vary appreciably with combustion variables such as temperature or residence time. Presently, there are no combustion process or fuel treatment technologies available to control fuel NO_x emissions. For this reason, the gas turbine NSPS (Subpart GG) contains an allowance for FBN above 0.015 percent (see Section 4.3). In the application for Power Block 2, FPC has requested a NO_x allowance for FBN levels up to 0.030 percent. NO_x emissions from combustion sources fired with fuel oil are higher than those fired with natural gas due to higher combustion temperatures and FBN contents. Natural gas may contain molecular nitrogen (N_2); however the N_2 found in natural gas does not contribute significantly to fuel NO_x formation. Typically, natural gas contains a negligible amount of FBN.

4.7.1 Potential Control Technologies

A review of the latest control technology determinations (RBLC summary in Table 4-6) indicates that the lowest NO_X emission limit established to date for a CT unit equipped with a dry low NO_x combustor is 3.5 ppmvd. This is for a natural gas-fired combined cycle (CC) unit and was based on the use of dry low NO_X combustors operating with a CT that can achieve 9 ppmvd in combination with a selective catalytic reduction (SCR) system achieving about 60% NO_x removal. The only stationary sources required to meet this most stringent control technology emission limit are those new/modified sources being located in non-attainment areas, or sources which have other unique circumstances which require exceedingly stringent pollution control. Many other projects achieve NO_x removal efficiencies between 60 and 80 percent but result in emissions limits higher than 3.5

ppmvd. Therefore, the most stringent control technology for NO_X emissions control with a CC unit using dry low NO_X combustors is an SCR system. Recent Florida DEP natural gas-fired CT NO_x BACT determinations range from 9 to 25 ppmvd at 15 percent O_2 with dry low NO_x combustors and 6 ppmvd at 15 percent O_2 with SCR. A summary of FDEP NO_x BACT determinations for natural gas-fired CTs is provided in Table 4-7.

Available technologies for controlling NO_x emissions from CTs include combustion process modifications and post-combustion exhaust gas treatment systems, as follows:

Combustion Process Modifications:

- Water/steam injection and good combustor design.
- Dry low- NO_x combustor design.

Post-Combustion Exhaust Gas Treatment Systems:

- Selective Catalytic Reduction (SCR).
- Selective Non-Catalytic Reduction (SNCR).
- SCO NO_x™

A description of each of the listed control technologies is provided in the following sections.

Water or Steam Injection and Good Combustor Design

Use of water or steam injection in the combustion zone of a CT unit can limit the amount of NO_X formed. Thermal NO_X formation is avoided due to lower combustion temperatures resulting from the water or steam injection. The degree of reduction in NO_X formation is somewhat proportional to the amount of water or steam injected into the turbine. Further, high purity water must be employed to prevent turbine corrosion and deposition of solids on the turbine blades.

Since the CT unit NSPS for NO_X was last revised, CTs have improved their tolerance to the water or steam necessary to control the NO_X emissions below the current NSPS level. However, there is still a point at which the amount of water or steam injected into the turbine seriously degrades the turbine's reliability and operational life. With the manufacturers' existing turbine designs and standard combustors, this generally occurs below a NO_X emission level of about 25 ppmvd when firing natural gas and 42 ppmvd when firing fuel oil in conventional combustion turbines. For the larger "F" class combustion turbines, wet injection has been used to achieve a level of 42 ppmvd when firing natural gas (i.e., FPL Lauderdale Repowering Project).

The advanced combustor designs available for Power Block 2 will be capable of achieving low NO_X emissions without the use of water or steam injection (dry) while firing natural gas. Considering the water use issues prevalent in Florida, dry low NO_X combustion controls are preferred. This analysis disregards further consideration of wet NO_X control CTs when natural gas is used.

Dry Low NO_x Combustor Design

CT manufacturers have committed that their future technology will support lower NO_X emissions without water injection on natural gas. Dry low NO_x combustors premix turbine fuel and air prior to combustion in the primary zone resulting in a homogeneous air/fuel mixture. For this reason, the peak and average flame temperature are the same, causing a decrease in thermal NO_x emissions in comparison to a conventional diffusion burner. The more recent designs are operated in total premix mode, but require a load transition to achieve optimal performance. Total premix mode generally occurs in the 50 to 65 percent load range. Currently, premix burners are limited in application to natural gas and loads above approximately 50 percent due to flame stability considerations. During oil-firing, water or steam injection is employed to control NO_x emissions. The Westinghouse dry low NO_X combustor design currently available is capable of combustor-controlled NO_X emissions of 35 ppmvd while burning natural gas. Fuel oil burning requires water injection and has NO_X emissions of 42 ppmvd. Fuel oil burning will be limited to no more than 13,762,806 gallons per year, based on an aggregate of 1,000 total hours per year between the two CTs at full load and is expected to have only a minor impact on water usage.

Selective Catalytic Reduction

SCR is a post-combustion method for control of NO_X emissions. The SCR process combines vaporized ammonia with NO_X in the presence of a catalyst to form nitrogen and water. The vaporized ammonia is injected into the exhaust gases prior to passage through the catalyst bed. The following primary reactions take place:

$$4NH_3 + 4NO + 0_2 \rightarrow 4N_2 + 6H_20 \quad (1)$$

$$4NH_3 + 2NO_2 + 0_2 \rightarrow 3N_2 + 6H_20 \quad (2)$$

The performance and effectiveness of SCR systems is directly dependent on catalyst operating temperatures. The optimum temperature range for SCR operation is 600 to 750°F. Below this temperature range, reduction reactions (1) and (2) above will not proceed, resulting in large quantities of ammonia slip. At temperatures exceeding the optimal range, oxidation of NH_3 will take place resulting in an increase in NO_x emissions. At temperatures above about 800°F, permanent damage to the catalyst occurs. NO_x removal efficiencies for SCR systems typically range from 70 to 90 percent.

Flue gas from a CT will typically range from 950°F to 1,100°F. Accordingly, an SCR device would be installed at an intermediate point of the HRSG after several rows of tubes, where a temperature of approximately 700°F occurs. The narrow SCR temperature window dictates that the SCR catalyst be precisely located in the HRSG. A recent report indicated that effective SCR operation becomes very difficult for units that see a variation in gas flow and temperature through the HRSG due to load changes or ambient temperature swings (Boericke, 1990). Another recent report indicates that maintaining the catalyst in the narrow SCR temperature window over the entire CC unit operating load range can be difficult (Shorr, 1991). Therefore, SCR performance will be difficult to maintain to very low NO_x levels if the CC unit load varies or if significant temperature swings occur.

Catalyst NO_X reduction efficiency will be affected by the NO_X concentration at the SCR inlet. The reaction mechanism requires both NO_X and ammonia to occupy a catalytic reaction site at the same time. This is a random event. The lower the NO_X concentration, the less likely it is that any one ammonia gas molecule and NO_X gas molecule will meet on

a reaction site. Therefore, as the SCR inlet concentration of NO_X decreases, the catalyst needs to become larger and/or the amount of ammonia added needs to be increased (leading to increased ammonia slip) for similar NO_X reduction efficiencies. The dry low NO_X combustors have relatively low NO_X emissions and will therefore require a greater volume of catalyst than a standard combustor would for the same NO_X removal efficiency.

Catalyst NO_X reduction efficiency also will be affected by the type of fuel being burned. When firing fuel oil, the SCR catalyst will oxidize approximately three percent of the SO_2 in the flue gas to SO_3. Catalytic reduction efficiency is therefore reduced when available reaction sites are occupied by sulfur compounds. Additionally, the ammonia present in the flue gas will react with the SO_3 to form ammonia sulfate salts and the water in the flue gas will react with the SO_3 to form sulfuric acid mist. The formation of ammonia sulfate salts will reduce the amount of ammonia available for reaction with the NO_X. Ammonium bisulfate, one of the ammonia salts formed, will also reduce a CC unit's thermal efficiency by coating the heat transfer surfaces of the HRSG and potentially limit unit availability due to forced outages for HRSG cleanup. Both the ammonia sulfate salts and the sulfuric acid mist will increase the amount of particulate matter emitted in the flue gas to a level of approximately 16 lbs/hr per CT in the form of ammonium bisulfate (38 percent increase). This particulate will predominately consist of matter less than 10 microns in size (PM_{10}).

Catalyst life expectancy also can be affected by the type of fuel burned. Catalyst poisoning can be caused by such trace elements as arsenic, beryllium, cadmium, chromium, copper, lead, manganese, mercury, and nickel, all of which can be found in fuel oil. Arsenic, the major poison, can be deposited on catalyst surfaces in the form of gaseous arsenic oxide, which can clog the small pores of the catalyst and prevent the ammonia/nitrogen oxide mixture from being catalytically oxidized. Due to the potential for chemical contamination with fuels other than natural gas, application of SCR to CTs has been primarily limited to

natural gas-fired units.

Selective Non-Catalytic Reduction

Nitrogen oxide emissions from other types of combustion sources also have been controlled through installation of selective noncatalytic reduction (SNCR) systems such as Thermal $DeNO_x$ and NO_xOUT. Chemical reactions for the Thermal $DeNO_x$ process are as follows:

$$4NO + 4NH_3 + 0_2 \rightarrow 4N_2 + 6\ H_20 \quad (3)$$

$$4\ NH_3 + 5\ 0_2 \rightarrow 4NO + 6\ H_20 \quad (4)$$

The NO_xOUT process is similar with the exception that urea is used in place of NH_3. The critical design parameter for both SNCR processes is the reaction temperature. At temperatures below 1,600°F, rates for both reactions decrease allowing unreacted NH_3 to exit with the exhaust stream. Temperatures between 1,600 and 2,000°F will favor Reaction (3), resulting in a reduction in NO_x emissions. Reaction (4) will dominate at temperatures above approximately 2,000°F causing an increase in NO_x emissions. Temperatures below 1,300°F result in ammonia slipping through the system unreacted without any corresponding reduction in NO_x emissions. As reported earlier, the temperature at the outlet of a CT unit utilizing dry low NO_x combustors, is too low (950°F to 1,100°F) for such a system. Accordingly, this alternative is judged not to be technically feasible for application on a CC unit.

SCONO$_x$™

SCONO$_x$™ is a NO_x and CO control system exclusively offered by Goal Line Environmental Technologies (GLET). GLET is a partnership formed by Sunlaw Energy Corporation and Advanced Catalyst Systems, Inc.

The SCONO$_x$™ system employs a single catalyst to simultaneously oxidize CO to CO_2 and NO to NO_2. NO_2 formed by the oxidation of NO is subsequently absorbed onto the catalyst surface through the use of a potassium carbonate absorber coating. The SCONO$_x$™ oxidation/absorption cycle reactions are:

$$CO + 1/2\ O_2 \rightarrow CO_2 \quad (5)$$

$$NO + 1/2\ O_2 \rightarrow NO_2 \quad (6)$$

$$2NO_2 + K_2CO_3 \rightarrow CO_2 + KNO_2 + KNO_3 \quad (7)$$

CO_2 produced by reaction (5) and (6) is released to the atmosphere as part of the CT/HRSG exhaust gas stream.

As shown in Reaction (7), the potassium carbonate catalyst coating reacts with NO_2 to form potassium nitrites and nitrates. Prior to saturation of the potassium carbonate coating, the catalyst must be regenerated. This regeneration is accomplished by passing a dilute hydrogen-reducing gas across the surface of the catalyst in the absence of O_2. Hydrogen in the reducing gas reacts with the nitrites and nitrates to form water and elemental nitrogen. CO_2 in the regeneration gas reacts with potassium nitrites and nitrates to form potassium carbonate; this compound is the catalyst absorber coating present on the surface of the catalyst at the start of the

oxidation/absorption cycle. The SCONO$_x$™ regeneration cycle reaction is:

$$KNO_2 + KNO_3 + 4\,H_2 + CO_2 \rightarrow K_2CO_3 + 4\,H_2O_{(g)}) + N_2 \qquad (8)$$

Water vapor and elemental nitrogen are released to the atmosphere as part of the CT/HRSG exhaust stream. Following regeneration, the SCONO$_x$™ catalyst has a fresh coating of potassium carbonate, allowing the oxidation/absorption cycle to begin again. There is no net gain or loss of potassium carbonate after both the oxidation/absorption and regeneration cycles have been completed.

Since the regeneration cycle must take place in an oxygen-free environment, the section of catalyst undergoing regeneration is isolated from the exhaust gas stream using a set of louvers. Each catalyst section is equipped with a set of upstream and downstream louvers. During the regeneration cycle, these louvers close and valves open allowing fresh regeneration gas to enter and spent regeneration gas to exit the catalyst section being regenerated. At any given time, 75 percent of the catalyst sections will be in the oxidation/absorption cycle, while 25 percent will be in regeneration mode. A regeneration cycle is typically set to last for 3 to 5 minutes.

Regeneration gas is produced by reacting natural gas with O_2 present in ambient air. The SCONO$_x$™ system uses a gas generator produced by Surface Combustion. This unit uses a two-stage process to produce hydrogen and carbon dioxide. In the first stage, natural gas and ambient air are reacted across a partial oxidation catalyst at 1,900°F to form CO and hydrogen. Steam is added and the gas mixture is then passed across a low temperature shift catalyst, forming CO_2 and additional hydrogen. The resulting gas stream is diluted to less than 4 percent hydrogen using steam or another inert gas. The regeneration gas reactions are:

$$CH_4 + 1/2\ O_2 + 1.88\ N_2 \rightarrow CO + 2\ H_2 + 1.88\ N_2 \quad (9)$$

$$CO + 2\ H_2 + H_2O + 1.88\ N2_2 \rightarrow CO_2 + 3\ H_2 + 1.88\ N_2 \quad (10)$$

The SCONO$_x$™ operates at a temperature range of 300 to 700°F and, therefore, must be installed in the appropriate temperature section of a HRSG. For SCONO$_x$™ systems installed in locations of the HRSG above 500°F, a separate regeneration gas generator is not required. Instead, regeneration gas is produced by introducing natural gas directly across the SCONO$_x$™ catalyst that reforms the natural gas.

The SCONO$_x$™ system catalyst is subject to reduced performance and deactivation due to exposure to sulfur oxides. For this reason, an additional catalytic oxidation/absorption system (SCONO$_x$™) to remove sulfur compounds is installed upstream of the SCONO$_x$™ catalyst. During regeneration of the SCONO$_x$™ catalyst, either hydrogen sulfide or SO_2 is released to the atmosphere as part of the CT/HRSG exhaust gas stream. The absorption portion of the SCONO$_x$™ process is proprietary. SCONO$_x$™ oxidation/absorption and regeneration reactions are:

$$CO + 1/2\ O_2 \rightarrow CO_2 \quad (11)$$

$$SO_2 + 1/2\ O_2 \rightarrow SO_3 \quad (12)$$

$$SO_3 + SORBER \rightarrow [SO_3 + SORBER] \quad (13)$$

$$[SO_3 + SORBER] + 4\ H_2 \rightarrow H_2S + 3\ H_2O \quad (14)$$

Utility materials needed for the operation of the SCONO$_x$™ control system include ambient air, natural gas, water, steam, and electricity. The primary utility material is natural gas used for regeneration gas production. Steam is used as the carrier/dilution gas for the regeneration gas. Electricity is required to operate the computer control

system, control valves, and louver actuators.

Commercial experience to date with the SCONO$_x$™ control system is limited to one small combined cycle (CC) power plant located in Los Angeles. This power plant, owned by GLET partner Sunlaw Energy Corporation, utilizes a GE LM2500 turbine equipped with water injection to control NO_x emissions to approximately 25 ppmvd. The SCONO$_x$™ control system was installed at the Sunlaw Energy facility in December 1996 and has achieved a NO_x exhaust concentration of 3.5 ppmv resulting in an approximate 85 percent NO_x removal efficiency.

Technical Feasibility

All of the combustion process control technologies presented above (water/steam injection and good combustor design and dry low NO_x combustor design) would be potentially feasible for the Power Block 2 CTs. Of the post-combustion stack gas treatment technologies, SNCR is not feasible because the temperature required for this technology (between 1,600 and 2,000°F) exceeds that found in CT exhaust gas streams (approximately 1,000°F). The SCONO$_x$™ control technology is not considered to be technically feasible because it has not been commercially demonstrated on large CTs. The CTs planned for the Hines Energy Complex Power Block 2, Westinghouse 501 F units, each have a nominal generating capacity of 165 MW which are approximately six times larger than the nominal 25-MW GE LM2500 utilized at the Sunlaw Energy Corporation Los Angeles facility. Technical problems associated with scale-up of the SCONO$_x$™ technology given the large differences in machine flow rates are unknown. Additional concerns with the SCONO$_x$™ control technology include process complexity (multiple catalytic oxidation / absorption / regeneration systems), reliance on only one supplier, and the relatively brief (approximately 18 months)

operating history of the technology.

The BACT analysis for NO_x for the Power Block 2 CTs evaluated the use of dry low NO_x combustors available from Westinghouse and the application of post-combustion SCR control technologies. The dry low NO_x combustors are expected to achieve 35 ppmvd corrected to 15 percent oxygen when firing natural gas and with water injection achieve 42 ppmvd corrected to 15 percent oxygen when firing distillate oil. Steam/water injection technology for natural gas firing was not evaluated because it results in NO_x emissions that are comparable to those achieved by dry low NO_x combustor technology and has associated water use and lower heat rate considerations. The water consumption and sludge treatment/disposal requirements associated with water/steam injection do not exist for dry low-NO_x combustors, making dry low NO_x combustor technology preferable to wet injection as the primary control for natural gas firing. The SCR system was evaluated based on achieving a NO_x concentration of 6 ppmvd corrected to 15 percent oxygen when firing only natural gas. This represents a control efficiency of about 83 percent which is at the upper ranges of removal efficiencies established as BACT with SCR. Information regarding energy, environmental, and economic impacts and proposed BACT limits for NO_x are provided in the following sections.

4.7.2 Energy and Environmental Impacts

The use of advanced dry low NO_x combustor technology will not have a significant adverse impact on CT heat rate.

The installation of SCR technology would cause an increase in back pressure on the CTs due to the pressure drop across the catalyst bed. The back pressure would also

increase with the installation of additional catalyst volume. Higher NOx removal would require additional catalyst volume resulting in greater energy penalty. The energy penalty would be approximately 0.5 percent for SCR installed on Power Block 2. Additional energy would be needed for the pumping of aqueous NH_3 from storage to the injection nozzles and generation of steam for NH_3 vaporization. Energy penalty due to CT back pressure is projected to be 7,971,600 kwh per year for each CT while reducing NOx to 6 ppmvd corrected to 15 percent oxygen. The total SCR energy penalty including dilution air fans is estimated to be 8,672,400 kwh per year for each CT which is equivalent to an energy loss of 83,992 MMBtu/yr. This is equivalent to the use of about 84 million ft^3 of natural gas annually based on a gas heating value of 1,000 Btu per ft^3.

There are no significant adverse environmental effects due to the use of advanced dry low NO_x combustor technology. Application of SCR technology would result in the following environmental impacts:

- NH_3 emissions due to *ammonia slip*; NH_3 emissions are estimated to total 124 tpy (at base load and 59°F ambient temperature) for a typical SCR design and ammonia slippage rate of 10 ppmvd for each CT. Ammonia slip is much lower during the early stages of catalyst usage and increases with age. Increasing efficiency, such as reducing the already low exhaust NOx emissions of 6 ppm to a lower level can also potentially increase ammonia slip. This is especially true because the SCR design is already at the upper range of its maximum reduction efficiency.
- Ammonium bisulfate and ammonium sulfate particulate emissions due to the reaction of NH_3 with SO_3 present in the exhaust gases; as a result, total particulate matter emissions would increase. This effect is more of a concern

when firing oil since the PM emission rate would increase by about 38 percent during oil firing. While the NO_x reduction using SCR with oil is about 27 tons/year/CT, an additional 4 tons/year of particulate would result directly from operation of the SCR during oil firing.

- A human health risk due to potential leaks from the storage of large quantities of NH_3. The use of aqueous ammonia, although still regulated under EPA's regulations implementing Section 112r of the Clean Air Act, is less hazardous than anhydrous ammonia.

4.7.3 Economic Impacts

An assessment of economic impacts was performed by comparing control costs between a baseline case of advanced dry low NO_x combustor technology and baseline technology with the addition of SCR controls. Dry low-NO_x technology provided by Westinghouse is expected to achieve a NO_x exhaust concentration of 35 ppmvd at 15 percent O_2. SCR technology was premised to achieve NO_x concentrations of 6 ppmvd at 15 percent O_2 for natural gas-firing. The NO_x concentration of 6 ppmvd is representative of the maximum NO_x removal efficiencies determined as BACT for natural gas-fired CTs equipped with dry low NO_x combustor technology and SCR controls. As supplied by Westinghouse, the 501 F unit is equipped with dry low NO_x combustors. Westinghouse does not offer any other option with respect to combustor type or design.

The cost impact analysis was conducted using the OAQPS factors previously summarized in Table 4-1 and the project-specific factors discussed above. Emission reductions were calculated assuming base load operation for 8,760 hr/yr at an annual average ambient temperature of 59°F. Specific capital and annual operating costs for

the SCR control system are summarized in Tables 4-8 and 4-9, respectively.

Cost effectiveness for the application of SCR technology to the Hines Energy Complex Power Block 2 for natural gas firing was determined to be $2,694 per ton of NO_x removed. This control cost is for an SCR system achieving NO_x levels of 6 ppmvd at 15 percent oxygen while firing natural gas with an initial NO_x level of 35 ppmvd using dry low NO_x combustor technology available from Westinghouse. Achieving NO_x levels of 6 ppmvd at 15 percent oxygen while firing natural gas results in a NO_x reduction of 883 tons/year (at 100 percent load).

Achieving NO_x levels of 15 ppmvd at 15 percent oxygen while firing oil results in only a NO_x reduction of 27.3 tons/year/CT (at 100 percent load). However, an additional 4 tons/year/CT of fine PM will be generated from the use of oil. The increase in PM emissions represents about a 40 percent increase in PM emissions over that proposed. Moreover, the PM emissions result from the gaseous reaction of SO_3 and ammonia forming ammonium salts compounds such as ammonium sulfate and bisulfate. These compounds are acidic and can be deposited within the catalyst and HRSG surfaces or emitted as fine particulate matter. Given the backup nature of fuel oil and the potential technical and environmental consequences of using an SCR during fuel oil firing, an emissions limit of 42 ppmvd using wet injection is proposed as BACT.

4.7.4 Proposed BACT Emission Limitations

NO_x BACT emission limits proposed for the Hines Energy Complex Power Block 2 CTs, are based on the application of dry low NO_x combustors achieving NOx levels to 35 ppmvd and a gas-only SCR system achieving 45 lb/hour, 24-hour block average, based

on 6 ppmvd. The emission level proposed is equivalent to 0.17 lb/MW which is over 9 times lower than the recently promulgated EPA new source performance standards (NSPS) for steam electric units. This new NSPS has a NOx limit for new sources of 1.6 lb/MW (September 16, 1998; 63FR179).

Reducing NO_x levels while firing oil also has marginal benefits. The use of oil is for back up purposes and will not exceed a total of 13,762,806 gallons per year, based on an aggregate of 1,000 hours per year of operation between the 2 CTs at full load. The use of SCR while firing oil will also increase fine PM emissions by about 16 lb/hr. This is about a 40 percent increase in the PM emission rate when firing oil and an upward adjustment in the proposed emission rate (42.6 lb/hr at 59 °F turbine inlet) would be required. The proposed emission rate using wet injection is equivalent to 1.2 lb/MW (net) which is 25 percent lower than the recently promulgated NSPS. Moreover, this emission rate is only for the backup fuel. Therefore, FPC does not propose to utilize the SCR system during oil firing.

4.8 BACT ANALYSIS FOR SO_2 AND H_2SO_4 MIST

4.8.1 Potential Control Technologies

The NSPS established by EPA for emissions from CTs sets a maximum SO_2 level in the flue gas of 150 ppmvd or a maximum fuel sulfur content of 0.8 percent by weight (40 CFR 60, Subpart GG). Technologies employed to control SO_2 and H_2SO_4 mist emissions from combustion sources consist of fuel treatment and post-combustion add-on controls; i.e., flue gas desulfurization (FGD) systems.

Fuel Treatment

Fuel treatment technologies are applied to gaseous, liquid, and solid fuels to reduce their sulfur contents prior to delivery to end fuel users. For wellhead natural gas containing sulfur compounds (e.g., hydrogen sulfide) and for crude oil, a variety of technologies are used by fuel suppliers to remove these sulfur compounds prior to delivery to customers.

Flue Gas Desulfurization

FGD systems remove SO_2 from exhaust streams by utilizing an alkaline reagent to form sulfite and sulfate salts. The reaction of SO_2 with the alkaline chemical can be performed using either a wet- or dry-contact system. FGD wet scrubbers typically employ sodium, calcium, or dual-alkali reagents using packed or spray towers. Wet FGD systems will generate wastewater and wet sludge streams requiring treatment and disposal. In a dry FGD system, an alkaline slurry is injected into the combustion process exhaust stream. The liquid sulfite/sulfate salts that form from the reaction of the alkaline slurry with SO_2 are dried by heat contained in the exhaust stream and subsequently removed by downstream PM control equipment

Technical Feasibility

Current RBLC documents do not list any natural gas- or fuel oil-fired CC units that are required to use flue gas desulfurization (FGD) systems to meet SO_2 or H_2SO_4 emission requirements. The maximum emissions rates for Power Block 2 using pipeline natural gas and distillate fuel are equivalent to 0.0033 and 0.057 lb/MMBtu, respectively. These levels are clearly within the ranges established as BACT for other projects.

The high pressure drops across FGD systems make them technically infeasible for application on CC units. Also, addition of an FGD system would be an inappropriate

method of SO_2 or H_2SO_4 control, because emissions of these pollutants will be low. The significant capital and operating costs associated with FGD would make the project economically infeasible.

4.8.2 Proposed BACT Emission Limitations

Because post-combustion SO_2 and H_2SO_4 mist controls are not applicable, use of low sulfur fuel is considered to represent BACT for the Hines Energy Complex Power Block 2 CTs. Natural gas utilized at the Project will contain no more than 1.0 grain of sulfur per 100 scf and the distillate fuel oil will contain no more than 0.05 percent sulfur, by weight. Based on economic, energy, and environmental considerations, firing natural gas as the primary fuel and limiting the amount of time low sulfur fuel oil operation will be allowed (i.e., a total of 13,762,806 gallons per year, based on an aggregate of 1,000 hours per year of operation at full load) is proposed as BACT for SO_2 and H_2SO_4 emissions.

4.9 SUMMARY OF PROPOSED BACT EMISSION LIMITS

Emission rates and methods of compliance proposed as BACT for each pollutant subject to review are summarized in Table 4-10.

Table 4-1. Capital and Annual Operating Cost Factors

Cost Item	Factor
Direct Capital Costs	
Sales tax	0.06 x purchased equipment cost
Freight	0.05 x purchased equipment cost
Foundations and supports	0.08 x purchased equipment cost
Handling and erection	0.14 x purchased equipment cost
Electrical	0.04 x purchased equipment cost
Piping	0.02 x purchased equipment cost
Insulation	0.01 x purchased equipment cost
Painting	0.01 x purchased equipment cost
Indirect Capital Costs	
Engineering	0.10 x purchased equipment cost
Construction and field expenses	0.05 x purchased equipment cost
Contractor fees	0.10 x purchased equipment cost
Start-up	0.02 x purchased equipment cost
Performance testing	0.01 x purchased equipment cost
Contingencies	0.10 x purchased equipment cost
Direct Annual Operating Costs	
Supervisor labor	0.15 x total operator labor cost
Indirect Annual Operating Costs	
Overhead	0.60 x total of operating, supervisory, labor and maintenance materials.
Property taxes	0.01 x total capital investment
Insurance	0.01 x total capital investment

Source: EPA, 1990b.

e 4-2. RBLC CO Summary – Natural Gas-Fired Combustion Turbines

Facility Name	City	Permit Dates Issuance	Last Update	Process Description	Thruput Rate	Emission Limit	Control System Description	Con Effici
INTERNATIONAL PAPER CO. RIVERDALE MILL	SELMA	1/11/93	3/24/95	TURBINE, STATIONARY (GAS-FIRED) WITH DUCT BURNER	40 MW	22.1 LB/HR	DESIGN	
FLORIDA GAS TRANSMISSION COMPANY	MOBILE	8/5/93	5/12/94	TURBINE, NATURAL GAS	12,600 BHP	0.42 GM/HP HR	AIR-TO-FUEL RATIO CONTROL, DRY COMBUSTION CONTROLS	
MEAD COATED BOARD, INC.	PHENIX CITY	3/12/97	5/31/97	COMBINED CYCLE TURBINE (25 MW)	568 MMBTU/HR	28 PPMVD@15% O2 (GAS)	PROPER DESIGN AND GOOD COMBUSTION PRACTICES	
UNOCAL	WILMINGTON	7/18/89	12/5/94	TURBINE, GAS (SEE NOTES)		10 PPM @ 15% O2	OXIDATION CATALYST	7
ORANGE COGENERATION LP	BARTOW	12/30/93	1/13/95	TURBINE, NATURAL GAS, 2	368 MMBTU/H	30 PPMVD	GOOD COMBUSTION	
TIGER BAY LP	FT. MEADE	5/17/93	1/13/95	TURBINE, GAS	1,615 MMBTU/H	49 LB/H	GOOD COMBUSTION PRACTICES	
KISSIMMEE UTILITY AUTHORITY	INTERCESSION CITY	4/7/93	1/13/95	TURBINE, NATURAL GAS	869 MMBTU/H	54 LB/H	GOOD COMBUSTION PRACTICES	
KISSIMMEE UTILITY AUTHORITY	INTERCESSION CITY	4/7/93	1/13/95	TURBINE, NATURAL GAS	367 MMBTU/H	40 LB/H	GOOD COMBUSTION PRACTICES	
AUBURNDALE POWER PARTNERS, LP	AUBURNDALE	12/14/92	1/13/95	TURBINE,GAS	1,214 MMBTU/H	15 PPMVD	GOOD COMBUSTION PRACTICES	
FLORIDA POWER CORPORATION POLK COUNTY SITE	BARTOW	2/25/94	1/13/95	TURBINE, NATURAL GAS (2)	1,510 MMBTU/H	25 PPMVD	GOOD COMBUSTION PRACTICES	
PANDA-KATHLEEN, L.P.	LAKELAND	6/1/95	5/20/96	COMBINED CYCLE COMBUSTION TURBINE (TOTAL 115MW)	75 MW	25 PPM @ 15% O2	COMBUSTION CONTROLS	
KEY WEST CITY ELECTRIC SYSTEM	KEY WEST	9/28/95	5/31/96	TURBINE, EXISTING CT RELOCATION TO A NEW PLANT	23 MW	20 PPM @ 15% O2 FULL LD	GOOD COMBUSTION	
HARTWELL ENERGY LIMITED PARTNERSHIP	HARTWELL	7/28/92	3/24/95	TURBINE, GAS FIRED (2 EACH)	1,817 M BTU/HR	25 PPMVD @ FULL LOAD	FUEL SPEC: CLEAN BURNING FUELS	
MID-GEORGIA COGEN.	KATHLEEN	4/3/96	8/19/96	COMBUSTION TURBINE (2), NATURAL GAS	116 MW	10 PPMVD	COMPLETE COMBUSTION	
PORTSIDE ENERGY CORP.	PORTAGE	5/13/96	5/31/97	TURBINE, NATURAL GAS-FIRED	63 MEGAWATT	12 LBS/HR	GOOD COMBUSTION AND EMISSIONS NOT TO EXCEED 10 PPMVD AT 15% OXYGEN	
PORTSIDE ENERGY CORP.	PORTAGE	5/13/96	5/31/97	TURBINE, NATURAL GAS-FIRED	63 MEGAWATT	40 LBS/HR	GOOD COMBUSTION AND EMISSIONS NOT TO EXCEED 40 PPMVD AT 15% OXYGEN	
KENTUCKY UTILITIES COMPANY	MERCER	3/10/92	3/24/95	TURBINE, #2 FUEL OIL/NATURAL GAS (8)	1,500 MM BTU/HR (EAC	75 LB/HR (EACH)	COMBUSTION CONTROL	
INTERNATIONAL PAPER	MANSFIELD	2/24/94	4/17/95	TURBINE/HRSG, GAS COGEN	338 MM BTU/HR TURB	185.9 LB/HR	COMBUSTION CONTROL	
FORMOSA PLASTICS CORPORATION, LOUISIANA	BATON ROUGE	3/2/95	4/17/95	TURBINE/HRSG, GAS COGENERATION	450 MM BTU/HR	25.8 LB/HR	PROPER OPERATION	
GEORGIA GULF CORPORATION	PLAQUEMINE	3/26/96	4/21/97	GENERATOR, NATURAL GAS FIRED TURBINE	1,123 MM BTU/HR	972.4 TPY CAP FOR 3 TURB.	GOOD COMBUSTION PRACTICE AND PROPER OPERATION	
FORMOSA PLASTICS CORPORATION, BATON ROUGE PLANT	BATON ROUGE	3/7/97	4/28/97	TURBINE/HSRG, GAS COGENERATION	450 MM BTU/HR	70 LB/HR	COMBUSTION DESIGN AND CONSTRUCTION.	
UNION CARBIDE CORPORATION	HAHNVILLE	9/22/95	5/31/97	GENERATOR, GAS TURBINE	1,313 MM BTU/HR	198.6 LB/HR	NO ADD-ON CONTROL GOOD COMBUSTION PRACTICE	
PEABODY MUNICIPAL LIGHT PLANT	PEABODY	11/30/89	3/24/95	TURBINE, 38 MW NATURAL FAS FIRED	412 MMBTU/HR	40 PPM @ 15% O2	GOOD COMBUSTION PRACTICES	
BALTIMORE GAS & ELECTRIC - PERRYMAN PLANT	PERRYMMAN		3/24/95	TURBINE, 140 MW NATURAL GAS FIRED ELECTRIC	140 MW	20 PPM @ 15% O2	GOOD COMBUSTION PRACTICES	
DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATION	LOWESVILLE	12/20/91	3/24/95	TURBINE, COMBUSTION	1,247 MM BTU/HR	60 LB/HR	COMBUSTION CONTROL	
DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATION	LOWESVILLE	12/20/91	3/24/95	TURBINE, COMBUSTION	1,313 MM BTU/HR	59 LB/HR	COMBUSTION CONTROL	
NEWARK BAY COGENERATION PARTNERSHIP	NEWARK	11/1/90	7/7/93	TURBINE, NATURAL GAS FIRED	585 MMBTU/HR	0.0055 LB/MMBTU	CATALYTIC OXIDATION	8
LAKEWOOD COGENERATION, L.P.	LAKEWOOD TOWNSHIP	4/1/91	5/29/95	TURBINES (NATURAL GAS) (2)	1,190 MMBTU/HR (EACH	0.026 LB/MMBTU	TURBINE DESIGN	
NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEWARK	6/9/93	5/29/95	TURBINES, COMBUSTION, NATURAL GAS-FIRED (2)	617 MMBTU/HR (EACH	1.8 PPMDV	OXIDATION CATALYST	
WILLIAMS FIELD SERVICES CO. - EL CEDRO COMPRESSOR	BLANCO	10/29/93	3/2/94	TURBINE, GAS-FIRED	11,257 HP	50 PPM @ 15% O2	COMBUSTION CONTROL	
MARATHON OIL CO. - INDIAN BASIN N.G. PLAN	CARLSBAD	1/11/95	4/26/95	TURBINES, NATURAL GAS (2)	5,500 HP	13.2 LBS/HR	LEAN-PREMIXED COMBUSTION TECHNOLOGY.	6
MILAGRO, WILLIAMS FIELD SERVICE	BLOOMFIELD		5/29/95	TURBINE/COGEN, NATURAL GAS (2)	800 MMCF/DAY	27.6 PPM @ 15% O2		
SOUTHWESTERN PUBLIC SERVICE COMPANY/CUNNINGHAM STA	HOBBS	2/15/97	3/31/97	COMBUSTION TURBINE, NATURAL GAS	100 MW	SEE FACILITY NOTES	GOOD COMBUSTION PRACTICES	
LORDSBURG L.P.	LORDSBURG	6/18/97	9/29/97	TURBINE, NATURAL GAS-FIRED, ELEC. GEN.	100 MW	27 LBS/HR	DRY LOW-NOX TECHNOLOGY BY MAINTAINING PROPER AIR-FUEL RATIO.	
NEVADA POWER COMPANY, HARRY ALLEN PEAKING PLANT	LAS VEGAS	9/18/92	3/24/95	COMBUSTION TURBINE ELECTRIC POWER GENERATION	600 MW (8 UNITS 75	152.5 TPY (EACH TURBINE)	PRECISION CONTROL FOR THE LOW NOX COMBUSTOR	
NEVADA COGENERATION ASSOCIATES #2	LAS VEGAS	1/17/91	3/24/95	COMBINED-CYCLE POWER GENERATION	85 MW POWER OUTP	39.98 LBS/HR	CATALYTIC CONVERTER	
BROOKLYN NAVY YARD COGENERATION PARTNERS L.P.	NEW YORK CITY	6/6/95	6/30/95	TURBINE, NATURAL GAS FIRED	240 MW	4 PPM @ 15% O2		
SELKIRK COGENERATION PARTNERS, L.P.	SELKIRK	6/18/92	9/13/94	COMBUSTION TURBINES (2) (252 MW)	1,173 MMBTU/HR (EACH	10 PPM	COMBUSTION CONTROLS	
SELKIRK COGENERATION PARTNERS, L.P.	SELKIRK	6/18/92	9/13/94	COMBUSTION TURBINE (79 MW)	1,173 MMBTU/HR	25 PPM	COMBUSTION CONTROL	
SARANAC ENERGY COMPANY	PLATTSBURGH	7/31/92	9/13/94	TURBINES, COMBUSTION (2) (NATURAL GAS)	1,123 MMBTU/HR (EACH	3 PPM	OXIDATION CATALYST	
PASNY/HOLTSVILLE COMBINED CYCLE PLANT	HOLTSVILLE	9/1/92	9/13/94	TURBINE, COMBUSTION GAS (150 MW)	1,146 MMBTU/HR (GAS)	8.5 PPM	COMBUSTION CONTROL	
KAMINE/BESICORP BEAVER FALLS COGENERATION FACILITY	BEAVER FALLS	11/9/92	9/13/94	TURBINE, COMBUSTION (NAT. GAS & OIL FUEL) (79MW)	650 MMBTU/HR	9.5 PPM	COMBUSTION CONTROLS	
SITHE/INDEPENDENCE POWER PARTNERS	OSWEGO	11/24/92	9/13/94	TURBINES, COMBUSTION (4) (NATURAL GAS) (1012 MW)	2,133 MMBTU/HR (EACH	13 PPM	COMBUSTION CONTROLS	
PROJECT ORANGE ASSOCIATES	SYRACUSE	12/1/93	3/31/95	GE LM-5000 GAS TURBINE	550 MMBTU/HR	92 LB/HR TEMP > 20F	NO CONTROLS	
PROJECT ORANGE ASSOCIATES	SYRACUSE	12/1/93	3/31/95	STACK (TURBINE AND DUCT BURNER)	715 MMBTU/HR	106.4 LB/HR TEMP > 20F	OXIDATION CATALYST	8
CNG TRANSMISSION	WASHINGTON COURT HOUSE	8/12/92	4/5/95	TURBINE (NATURAL GAS) (3)	5,500 HP (EACH)	0.015 G/HP-HR	FUEL SPEC: USE OF NATURAL GAS	
PORTLAND GENERAL ELECTRIC CO.	BOARDMAN	5/31/94	8/6/97	TURBINES, NATURAL GAS (2)	1,720 MMBTU	15 PPM @ 15% O2	GOOD COMBUSTION PRACTICES	
HERMISTON GENERATING CO.	HERMISTON	4/1/94	5/1/95	TURBINES, NATURAL GAS (2)	1,696 MMBTU	15 PPM @ 15% O2	GOOD COMBUSTION PRACTICES	
GRAYS FERRY CO. GENERATION PARTNERSHIP	PHILADELPHIA	11/4/92	7/20/94	TURBINE (NATURAL GAS & OIL)	1,150 MMBTU	0.0055 LB/MMBTU (GAS)*	COMBUSTION	
BLUE MOUNTAIN POWER, LP	RICHLAND	7/31/96	9/23/96	COMBUSTION TURBINE WITH HEAT RECOVERY BOILER	153 MW	3.1 PPM @ 15% O2	OXIDATION CATALYST. AT 75% NG LIMIT SET TO 22.1 PPM	8
BUCKNELL UNIVERSITY	LEWISBURG	11/26/97	11/30/97	NG FIRED TURBINE, SOLAR TAURUS T-7300S	5 MW	50 PPMV@15%O2	GOOD COMBUSTION	
ECOELECTRICA, L.P.	PENUELAS	10/1/96	5/6/98	TURBINES, COMBINED-CYCLE COGENERATION	461 MW	33 PPMDV	COMBUSTION CONTROLS	
WEST CAMPUS COGENERATION COMPANY	COLLEGE STATION	5/2/94	10/31/94	GAS TURBINES	75 MW (TOTAL POW	300 TPY	INTERNAL COMBUSTION CONTROLS	
GORDONSVILLE ENERGY L.P.	FAIRFAX	9/25/92	3/24/95	TURBINES (2) (EACH WITH A SF)	2 X10(9) BTU/HR N	57 LBS/HR/UNIT	GOOD COMBUSTION PRACTICES	
GORDONSVILLE ENERGY L.P.	FAIRFAX	9/25/92	3/24/95	TURBINE FACILITY, GAS	1,331 X10(7) SCF/Y NAT	249.9 TOTAL TPY	GOOD COMBUSTION PRACTICES	
BEAR ISLAND PAPER COMPANY, L.P.	ASHLAND	10/30/92	5/7/97	TURBINE, COMBUSTION GAS	474 X10(6) BTU/HR N.	11 LBS/HR	GOOD COMBUSTION	
BEAR ISLAND PAPER COMPANY, L.P.	ASHLAND	10/30/92	5/7/97	TURBINE, COMBUSTION GAS (TOTAL)		48.2 TPY	GOOD COMBUSTION	
PATOWMACK POWER PARTNERS, LIMITED PARTNERSHIP	LEESBURG	9/15/93	5/7/97	TURBINE, COMBUSTION, SIEMENS MODEL V84.2 3	10 X109 SCF/YR NA	26 LB/HR	GOOD COMBUSTION OPERATING PRACTICES	
TENASKA WASHINGTON PARTNERS, L.P.	BELLINGHAM	5/29/92	4/5/95	COGENERATION PLANT, COMBINED CYCLE	2 MMBTU/HR	20 PPM @ 15% O2	COMBUSTION CONTROL	
WEPCU, PARIS SITE	PARIS	8/29/92	7/20/94	TURBINES, COMBUSTION (4)		25 LBS/HR (SEE NOTES)		

Table 4-3. Florida BACT CO Summary-Natural Gas-Fired CTGs

Permit Date	Source Name	Turbine Size (MW)	CO Emission Limit (ppmvd)	Control Technology
4/9/93	Kissimmee Utility Authority	40	30	Good combustion
4/9/93	Kissimmee Utility Authority	80	20	Good combustion
5/17/93	Central Florida Power, L.P. (Tiger Bay - Destec)	184	15	Good combustion
2/21/94	Polk Power Partners	84	25	Good combustion
2/24/94	Tampa Electric Company Polk Power Station	260	25	Good combustion
2/25/94	Florida Power Corp. Polk County Site	235	25	Good combustion
7/20/94	Pasco Cogen, Limited	42	28	Good combustion
3/7/95	Orange Cogeneration, L.P.	39	30	Good combustion
6/1/95	Panda-Kathleen	75	25	Good combustion
9/28/95	City of Key West	23	20	Good combustion
1/1/96	Seminole Electric Cooperative, Inc., Hardee Unit 3	140	20	Good combustion
5/1/98	City of Tallahassee Purdom Unit 8	160	25	Good combustion
7/10/98	City of Lakeland McIntosh Unit 5	250	25	Good combustion
12/4/98	Santa Rosa Energy Center	167	9	Good combustion

Source: FDEP, 1998.

Table 4-4. Direct and Indirect Capital Costs for CO Catalyst Installed on Westinghouse 501F CT

Cost Component/CT	Cost	Basis of Cost Component
Direct Capital Costs		
CO Associated Equipment	$100,000	Vendor Quote
Instrumentation	$10,000	10% of SCR Associated Equipment
Sales Tax		6% of SCR Associated Equipment/Catalyst
Freight	$35,000	5% of SCR Associated Equipment/Catalyst
Total Direct Capital Costs (TDCC)	$145,000	
Direct Installation Costs		
Foundation and supports	$59,600	8% of TDCC and RCC;OAQPS Cost Control Manual
Handling & Erection	$104,300	14% of TDCC and RCC;OAQPS Cost Control Manual
Electrical	$29,800	4% of TDCC and RCC;OAQPS Cost Control Manual
Piping	$14,900	2% of TDCC and RCC;OAQPS Cost Control Manual
Insulation for ductwork	$7,450	1% of TDCC and RCC;OAQPS Cost Control Manual
Painting	$7,450	1% of TDCC and RCC;OAQPS Cost Control Manual
Site Preparation	$5,000	Engineering Estimate
Buildings	$0	
Total Direct Installation Costs (TDIC)	$228,500	
Recurring Capital Costs (RCC)	$600,000	Catalyst; Vendor Based Estimate
Total Capital Costs	$973,500	Sum of TDCC, TDIC and RCC
Indirect Costs		
Engineering	$97,350	10% of Total Capital Costs; OAQPS Cost Control Manual
Construction and Field Expense	$48,675	5% of Total Capital Costs; OAQPS Cost Control Manual
Contractor Fees	$97,350	10% of Total Capital Costs; OAQPS Cost Control Manual
Start-up	$19,470	2% of Total Capital Costs; OAQPS Cost Control Manual
Performance Tests	$9,735	1% of Total Capital Costs; OAQPS Cost Control Manual
Contingencies	$97,350	10% of Total Capital Costs; OAQPS Cost Control Manual
Total Indirect Capital Cost (TInDC)	$369,930	
Total Direct, Indirect and Recurring Capital Costs (TDIRCC)	$1,343,430	Sum of TCC and TInCC

Table 4-5. Annualized Cost for CO Catalyst Installed on Westinghouse 501F CT

Cost Component/CT	Cost	Basis of Cost Estimate
Direct Annual Costs		
Operating Personnel	$6,240	8 hours/week at $15/hr
Supervision	$936	15% of Operating Personnel;OAQPS Cost Control Manual
Inventory Cost	$23,480	Capital Recovery (11.74%) for 1/3 catalyst
Catalyst Disposal Cost	$32,060	$28/1,000 lb/hr mass flow over 3 years; developed from vendor quotes
Contingency	$6,272	10% of Direct Annual Costs
Total Direct Annual Costs (TDAC)		
Energy Costs		
Heat Rate Penalty	$159,432	0.2% of MW output; EPA, 1993 (Page 6-20)
MW Loss Penalty	$43,680	2 days replacement energy costs @ $0.01 kWh each three period
Fuel Escalation	$6,093	Escalation of fuel over inflation; 3% of energy costs
Contingency	$20,921	10% of Energy Costs
Total Energy Costs (TDEC)	$230,126	
Indirect Annual Costs		
Overhead	$4,306	60% of Operating/Supervision Labor and Ammonia
Property Taxes		
Insurance	$13,434	1% of Total Capital Costs
Annualized Total Direct Capital	$87,279	11.74% Capital Recovery Factor of 10% over 20 years times sum of TDCC, TDIC and TInCC
Annualized Total Direct Recurring	$241,260	40.21% Capital Recovery Factor of 10% over 3 years times RCC
Total Indirect Annual Costs	$346,279	
Total Annualized Costs	$576,404	Sum of TDAC, TEC and TIAC
Cost Effectiveness	$2,177	Combustion Turbine

4-6. RBLC NO_x Summary – Natural Gas-Fired Combustion Turbines

Facility Name	City	Permit Dates Issuance	Last Update	Process Description	Thruput Rate	Emission Limits	Control System Description	Control Efficiency	
INTERNATIONAL PAPER CO. RIVERDALE MILL	SELMA	1/11/93	3/24/95	TURBINE, STATIONARY (GAS-FIRED) WITH DUCT BURNER	40 MW	0.08 LB/MMBTU (GAS)	LOW NOX BURNERS (ON THE DUCT BURNER) STEAM INJECTI ON INTO THE TURBINE		BA
FLORIDA GAS TRANSMISSION COMPANY	MOBILE	8/5/93	5/12/94	TURBINE, NATURAL GAS	12,600 BHP	0.58 GM/HP HR	AIR-TO-FUEL RATIO CONTROL, DRY LOW NOX COMBUSTION	71	BA
SOUTHERN NATURAL GAS COMPANY	SELMA	12/4/96	12/18/95	9150 HP GE MS3002G NATURAL GAS FIRED TURBINE		53 LB/HR			BA
MEAD COATED BOARD, INC	PHENIX CITY	3/12/97	5/31/97	COMBINED CYCLE TURBINE (75 MW)	568 MMBTU/HR	25 PPMVD@ 15% O2 (GAS)	DRY LOW NOX COMBUSTOR DESIGN FIRING GAS		BA
SOUTHERN NATURAL GAS	AUBURN	3/2/98	4/24/98	9160 HP GE MODEL MS3002G NATURAL GAS FIRED TURBINE	9,160 HP	53 LB/HR			BA
ALABAMA POWER COMPANY	MCINTOSH	12/17/97	4/24/98	COMBUSTION TURBINE W/ DUCT BURNER (COMBINED CYCLE)	100 MW	15 PPM	DRY LOW NOX BURNERS		BA
GOAL LINE, LP ICEFLOE	ESCONDIDO	11/3/92	8/4/94	TURBINE, COMBUSTION (NATURAL GAS) (42.4 MW)	386 MMBTU/HR	5 PPMVD @ 15% OXYGEN	WATER INJECTION & SCR W/ AUTOMATIC AMMONIA INJECT	88	BA
UNOCAL	WILMINGTON	7/18/89	12/5/94	TURBINE, GAS (SEE NOTES)		9 PPM @ 15% O2	SELECTIVE CATALYTIC REDUCTION (SCR), WATER INJECTN	80	BA
NORTHERN CALIFORNIA POWER AGENCY	LODI	10/2/97	3/16/98	GE FRAME 5 GAS TURBINE	325 MMBTU/HR	25 PPMVD @ 15% O2	DRY LOW NOX BURNERS		LA
SOUTHERN CALIFORNIA GAS COMPANY	WHEELER RIDGE	5/14/97	3/16/98	VARIABLE LOAD NATURAL GAS FIRED TURBINE COMPRESSOR	50 MMBTU/HR	25 PPMVD @ 15% O2	DRY LOW NOX COMBUSTOR		LA
TEMPO PLASTICS	VISALIA	12/31/96	4/23/98	GAS TURBINE COGENERATION UNIT		0.109 LB/MMBTU	LOW-NOX COMBUSTOR		LA
CALRESOURCES LLC		1/10/97	3/16/98	SOLAR MODEL 1100 SATURN GAS TURBINE	14 MMBTU/HR	69 PPMVD @15% O2	NO CONTROL		LA
NORTHWEST PIPELINE CORPORATION	LA PLATA 8" STATION"	5/29/92	7/20/94	TURBINE, SOLAR TAURUS	45 MMBTU/HR	95 PPMVD (UNTIL 11/98)	DRY LOW NOX COMBUSTOR (BY 11/01/98)		BA
PHOENIX POWER PARTNERS	GREELEY	5/11/93	3/24/95	TURBINE (NATURAL GAS)	311 MMBTU/HR	22 PPM @ 15% O2	DRY LOW NOX COMBUSTION		BA
ORANGE COGENERATION LP	BARTOW	12/30/93	1/13/95	TURBINE, NATURAL GAS, 2	268 MMBTU/H	15 PPM @ 15% O2	DRY LOW NOX COMBUSTOR		BA
TIGER BAY LP	FT. MEADE	5/17/93	1/13/95	TURBINE, GAS	1,615 MMBTU/H	15 PPM @ 15% O2	DRY LOW NOX COMBUSTOR		BA
FLORIDA GAS TRANSMISSION	PERRY	9/27/93	4/11/94	TURBINE, GAS	122 MMBTU/H	25 PPM @ 15% O2	DRY LOW NOX COMBUSTOR		BA
KISSIMMEE UTILITY AUTHORITY	INTERCESSION CITY	4/7/93	1/13/95	TURBINE, NATURAL GAS	869 MMBTU/H	15 PPM @ 15% O2	DRY LOW NOX COMBUSTOR		BA
KISSIMMEE UTILITY AUTHORITY	INTERCESSION CITY	4/7/93	1/13/95	TURBINE, NATURAL GAS	367 MMBTU/H	15 PPM @ 15% O2	DRY LOW NOX COMBUSTOR		BA
AUBURNDALE POWER PARTNERS, LP	AUBURNDALE	12/14/92	1/13/95	TURBINE,GAS	1,214 MMBTU/H	15 PPMVD @ 15 % O2	DRY LOW NOX COMBUSTOR		BA
FLORIDA POWER CORPORATION POLK COUNTY SITE	BARTOW	2/25/94	1/13/95	TURBINE, NATURAL GAS (2)	1,510 MMBTU/H	12 PPMVD @15 % O2	DRY LOW NOX COMBUSTOR		BA
GAINESVILLE REGIONAL UTILITIES	GAINESVILLE	4/11/95	5/29/95	SIMPLE CYCLE COMBUSTION TURBINE, GAS/NO 2 OIL B-UP	74 MW	15 PPM AT 15% OXYGEN	DRY LOW NOX BURNERS GE FRAME UNIT, CAN ANNULAR COMBUSTORS		BA
PANDA-KATHLEEN, L.P.	LAKELAND	6/1/95	5/20/96	COMBINED CYCLE COMBUSTION TURBINE (TOTAL 115MW)	75 MW	15 PPM @ 15% O2	DRY LOW NOX BURNER		BA
KEY WEST CITY ELECTRIC SYSTEM	KEY WEST	9/28/95	5/31/96	TURBINE, EXISTING CT RELOCATION TO A NEW PLANT	23 MW	25 PPM @ 15% O2	WATER INJECTION		BA
HARTWELL ENERGY LIMITED PARTNERSHIP	HARTWELL	7/28/92	3/24/95	TURBINE, GAS FIRED (2 EACH)	1,817 M BTU/HR	25 PPM @ 15% O2	MAXIMUM WATER INJECTION		BA
GEORGIA POWER COMPANY, ROBINS TURBINE PROJECT	ROBINS AIR FORCE BASE	5/13/94	3/24/95	TURBINE, COMBUSTION, NATURAL GAS	80 MW	25 PPM	WATER INJECTION, FUEL SPEC: NATURAL GAS		BA
MID-GEORGIA COGEN	KATHLEEN	4/3/96	8/19/96	COMBUSTION TURBINE (2), NATURAL GAS	116 MW	9 PPMVD	DRY LOW NOX BURNER WITH SCR		BA
KENTUCKY UTILITIES COMPANY	MERCER	3/10/92	3/24/95	TURBINE, #2 FUEL OIL/NATURAL GAS (8)	1,300 MM BTU/HR (EACH)	42 PPM @ 15% O2, N. GAS	WATER INJECTION		BA
INTERNATIONAL PAPER	MANSFIELD	3/24/94	4/17/95	TURBINE/HRSG, GAS COGEN	338 MM BTU/HR TURBINE	25 PPMV 15% O2 TURBINE	DRY LOW NOX COMBUSTOR/COMBUSTION CONTROL		BA
FORMOSA PLASTICS CORPORATION, LOUISIANA	BATON ROUGE	3/2/95	4/17/95	TURBINE/HRSG, GAS COGENERATION	450 MM BTU/HR	9 PPMV	DRY LOW NOX BURNER/COMBUSTION DESIGN AND CONTROL		LA
GEORGIA GULF CORPORATION	PLAQUEMINE	3/28/96	4/21/97	GENERATOR, NATURAL GAS FIRED TURBINE	1,123 MM BTU/HR	25 PPMV-CORR. TO 15%O2	CONTROL NOX USING STEAM INJECTION		BA
FORMOSA PLASTICS CORPORATION, BATON ROUGE PLANT	BATON ROUGE	3/7/97	4/28/97	TURBINE/HSRG, GAS COGENERATION	450 MM BTU/HR	9 PPMV	DRY LOW NOX BURNER/COMBUSTION DESIGN AND CONSTRUCTION		BA
UNION CARBIDE CORPORATION	HAHNVILLE	9/22/95	5/31/97	GENERATOR, GAS TURBINE	1,313 MM BTU/HR	25 PPMV CORR. TO 15% O2	DRY LOW NOX COMBUSTOR		BA
PEABODY MUNICIPAL LIGHT PLANT	PEABODY	11/20/89	3/24/95	TURBINE, 38 MW NATURAL FAS FIRED	412 MMBTU/HR	25 PPM @ 15% O2	WATER INJECTION		BA
SOUTHERN MARYLAND ELECTRIC COOPERATIVE (SMECO)	EAGLE HARBOR	10/1/89	3/24/95	TURBINE, NATURAL GAS FIRED ELECTRIC	90 MW	199 LB/HR	WATER INJECTION		BA
PEPCO - CHALK POINT PLANT	EAGLE HARBOR	6/25/90	7/20/94	TURBINE, 105 MW NATURAL GAS FIRED ELECTRIC	105 MW	73 PPM @ 15% O2	DRY PREMIX AND WATER INJECTION		BA
PEPCO - CHALK POINT PLANT	EAGLE HARBOR	6/25/90	7/20/94	TURBINE, 84 MW NATURAL GAS FIRED ELECTRIC	84 MW	25 PPM @ 15% O2	QUIET COMBUSTION AND WATER INJECTION		BA
BALTIMORE GAS & ELECTRIC - PERRYMAN PLANT	PERRYMMAN		3/24/95	TURBINE, 140 MW NATURAL GAS FIRED ELECTRIC	140 MW	15 PPM @ 15% O2	DRY BURN LOW NOX BURNERS	91	BA
PEPCO - STATION A	DICKERSON	5/31/90	7/20/94	TURBINE, 124 MW NATURAL GAS FIRED	125 MW	42 PPM @ 15% O2	WATER INJECTION		BA
SOUTHERN NATURAL GAS COMPANY	BAY SPRINGS	12/17/96	3/24/97	TURBINE, NATURAL GAS-FIRED	9,160 HORSEPOWER	110 PPMV @ 15% O2, DRY	PROPER TURBINE DESIGN AND OPERATION		BA
DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATION	LOWESVILLE	12/20/91	3/24/95	TURBINE, COMBUSTION	1,247 MM BTU/HR	287 LB/HR	MULTINOZZLE COMBUSTOR, MAXIMUM WATER INJECTION		BA
DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATION	LOWESVILLE	12/20/91	3/24/95	TURBINE, COMBUSTION	1,313 MM BTU/HR	119 LB/HR	MULTINOZZLE COMBUSTOR, MAXIMUM WATER INJECTION		BA
NEWARK BAY COGENERATION PARTNERSHIP	NEWARK	11/1/90	7/7/93	TURBINE, NATURAL GAS FIRED	985 MMBTU/HR	0.033 LB/MMBTU	STEAM INJECTION AND SCR	84	BA
PEDRICKTOWN COGENERATION LIMITED PARTNERSHIP	OLDMANS TOWNSHIP	2/23/90	4/30/93	TURBINE, NATURAL GAS FIRED	1,000 MMBTU/HR	0.044 LB/MMBTU	STEAM INJECTION AND SCR	93	BA
LINDEN COGENERATION TECHNOLOGY	LINDEN	1/21/92	4/30/93	TURBINE, NATURAL GAS FIRED	50 X E12 BTU/YR	33.8 LB/HR	STEAM INJECTION AND SCR	94.5	BA
LAKEWOOD COGENERATION, L.P.	LAKEWOOD TOWNSHIP	4/1/91	5/29/95	TURBINES (NATURAL GAS) (2)	1,190 MMBTU/HR (EACH)	0.033 LB/MMBTU	SCR, DRY LOW NOX BURNER	64	BA
NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEWARK	6/8/93	5/29/95	TURBINES, COMBUSTION, NATURAL GAS-FIRED (2)	617 MMBTU/HR (EACH)	8.3 PPMDV	SCR		BA
WILLIAMS FIELD SERVICES CO. - EL CEDRO COMPRESSOR	BLANCO	10/29/93	3/2/94	TURBINE, GAS-FIRED	11,257 HP	42 PPM @ 15% O2	SOLONOX COMBUSTOR, DRY LOW NOX TECHNOLOGY	66	BA
MARATHON OIL CO. - INDIAN BASIN N.G. PLAN	CARLSBAD	1/11/95	4/26/95	TURBINES, NATURAL GAS (2)	5,500 HP	7.4 LBS/HR	LEAN-PREMIXED COMBUSTION TECHNOLOGY, DRYALOW NOX	69	BA
MILAGRO, WILLIAMS FIELD SERVICE	BLOOMFIELD		5/29/95	TURBINE/COGEN, NATURAL GAS (2)	900 MMCF/DAY	9 PPM @ 15% O2	DRY LOW NOX (GENERAL ELECTRIC MODEL PG6541B)	94	BA
SOUTHWESTERN PUBLIC SERVICE CO/CUNNINGHAM STATION	HOBBS	11/4/96	12/30/96	COMBUSTION TURBINE, NATURAL GAS	100 MW	15 PPM (SEE FAC. NOTES)	DRY LOW NOX COMBUSTION		BA
SOUTHWESTERN PUBLIC SERVICE COMPANY/CUNNINGHAM STA	HOBBS	2/15/97	3/31/97	COMBUSTION TURBINE, NATURAL GAS	100 MW	SEE FACILITY NOTES	DRY LOW NOX COMBUSTION		BA
LOROSBURG L.P.	LOROSBURG	8/18/97	9/29/97	TURBINE, NATURAL GAS-FIRED, ELEC. GEN.	100 MW	74.4 LBS/HR	DRY LOW-NOX TECHNOLOGY WHICH ADOPTS STAGED OR SCHEDULED COMBUSTION	80	BA
NEVADA POWER COMPANY, HARRY ALLEN PEAKING PLANT	LAS VEGAS	9/18/92	3/24/95	COMBUSTION TURBINE ELECTRIC POWER GENERATION	600 MW (8 UNITS 75 EACH)	88.5 TPY (EACH TURBINE)	LOW NOX COMBUSTOR		BA
NEVADA COGENERATION ASSOCIATES #2	LAS VEGAS	1/17/91	3/24/95	COMBINED-CYCLE POWER GENERATION	85 MW POWER OUTPUT	61.26 LBS/HR	SELECTIVE CATALYTIC SYSTEM ON ONE UNIT		BA
BROOKLYN NAVY YARD COGENERATION PARTNERS L.P.	NEW YORK CITY	6/6/95	8/30/95	TURBINE, NATURAL GAS FIRED	240 MW	3.5 PPM @ 15% O2	SCR		LA
SELKIRK COGENERATION PARTNERS, L.P.	SELKIRK	6/18/92	9/13/94	COMBUSTION TURBINES (2) (252 MW)	1,173 MMBTU/HR (EACH)	9 PPM GAS	STEAM INJECTION AND SCR		BA
SELKIRK COGENERATION PARTNERS, L.P.	SELKIRK	6/18/92	9/13/94	COMBUSTION TURBINE (79 MW)	1,173 MMBTU/HR	25 PPM GAS	STEAM INJECTION		BA
SARANAC ENERGY COMPANY	PLATTSBURGH	7/31/92	9/13/94	TURBINES, COMBUSTION (2) (NATURAL GAS)	1,123 MMBTU/HR (EACH)	9 PPM	SCR		BA
PASNY/HOLTSVILLE COMBINED CYCLE PLANT	HOLTSVILLE	9/1/92	9/13/94	TURBINE, COMBUSTION GAS (150 MW)	1,146 MMBTU/HR (GAS)*	9 PPM	DRY LOW NOX		BA
KAMINE/BESICORP CORNING L.P.	SOUTH CORNING	11/5/92	9/13/94	TURBINE, COMBUSTION (79 MW)	663 MMBTU/HR	9 PPM	DRY LOW NOX OR SCR		BA
KAMINE/BESICORP BEAVER FALLS COGENERATION FACILITY	BEAVER FALLS	11/9/92	9/13/94	TURBINE, COMBUSTION (NAT. GAS & OIL FUEL) (79MW)	660 MMBTU/HR	9 PPM	DRY LOW NOX OR SCR		BA
SITHE/INDEPENDENCE POWER PARTNERS	OSWEGO	11/24/92	9/13/94	TURBINES, COMBUSTION (4) (NATURAL GAS) (1012 MW)	2,133 MMBTU/HR (EACH)	4.5 PPM	SCR AND DRY LOW NOX		BA
PROJECT ORANGE ASSOCIATES	SYRACUSE	12/1/93	3/31/95	GE LM-5000 GAS TURBINE	550 MMBTU/HR	25 PPM, 47 LB/HR	STEAM INJECTION, FUEL SPEC: NATURAL GAS ONLY	60	BA

4-6. RBLC NO_x Summary – Natural Gas-Fired Combustion Turbines

Facility Name	City	Permit Dates		Process Description	Thruput Rate	Emission Limits	Control System Description	Cont
		Issuance	Last Update					Effici
PROJECT ORANGE ASSOCIATES	SYRACUSE	12/1/93	3/31/95	STACK (TURBINE AND DUCT BURNER)	715 MMBTU/HR	26 PPM, 69 LB/HR	NO CONTROLS FOR NOX ON STACK *SEE TURBINE NOX DATA	
CNG TRANSMISSION	WASHINGTON COURT HOUS	8/12/92	4/5/95	TURBINE (NATURAL GAS) (3)	5,500 HP (EACH)	1.6 G/HP-HR*	LOW NOX COMBUSTION	
PACIFIC GAS TRANSMISSION COMPANY	MADRAS	6/19/90	7/20/94	TURBINE GAS, COMPRESSOR STATION	110 MMBTU/HR	199 PPM @ 15% O2	LOW NOX BURNER DESIGN	3
PORTLAND GENERAL ELECTRIC CO.	BOARDMAN	5/31/94	8/6/97	TURBINES, NATURAL GAS (2)	1,720 MMBTU	4.5 PPM @ 15% O2	SCR	8
HERMISTON GENERATING CO.	HERMISTON	4/1/94	5/1/95	TURBINES, NATURAL GAS (2)	1,696 MMBTU	4.5 PPM @ 15% O2	SCR	8
GRAYS FERRY CO. GENERATION PARTNERSHIP	PHILADELPHIA	11/4/92	7/20/94	TURBINE (NATURAL GAS & OIL)	1,150 MMBTU	9 PPMVD (NAT. GAS)*	DRY LOW NOX BURNER, COMBUSTION CONTROL	
FLEETWOOD COGENERATION ASSOCIATES	FLEETWOOD	4/22/94	11/22/94	NG TURBINE (GE LM6000) WITH WASTE HEAT BOILER	360 MMBTU/HR	21 LB/HR	SCR WITH LOW NOX COMBUSTORS	4
PROCTOR AND GAMBLE PAPER PRODUCTS CO (CHARMIN)	MEHOOPANY	5/31/95	11/27/95	TURBINE, NATURAL GAS	580 MMBTU/HR	55 PPM @ 15% O2	STEAM INJECTION	7
BLUE MOUNTAIN POWER, LP	RICHLAND	7/31/96	9/23/96	COMBUSTION TURBINE WITH HEAT RECOVERY BOILER	153 MW	4 PPM @ 15% O2	DRY LNB WITH SCR WATER INJECTION IN PLACE WHEN FIRING OIL	8
BUCKNELL UNIVERSITY	LEWISBURG	11/26/97	11/30/97	NG FIRED TURBINE, SOLAR TAURUS T-7300S	5 MW	25 PPMV@15%O2	SOLONOX BURNER: LOW NOX BURNER	
ECOELECTRICA, L.P.	PENUELAS	10/1/98	5/6/98	TURBINES, COMBINED-CYCLE COGENERATION	461 MW	60 LB/HR	STEAM/WATER INJECTION AND SELECTIVE CATALYTIC REDUCTION (SCR)	7
WEST CAMPUS COGENERATION COMPANY	COLLEGE STATION	5/2/94	10/31/94	GAS TURBINES	75 MW (TOTAL POWER)	200 TPY	INTERNAL COMBUSTION CONTROLS	
GORDONSVILLE ENERGY L.P.	FAIRFAX	9/25/92	3/24/95	TURBINES (2) (EACH WITH A SF)	2 X10(9) BTU/HR N GAS	9 PPMDV/UNIT @ 15% O2	SCR WITH WATER INJECTION	8
GORDONSVILLE ENERGY L.P.	FAIRFAX	9/25/92	3/24/95	TURBINE FACILITY, GAS	1,331 X10(7) SCF/Y NAT GAS	245 TOTAL TPY	SELECTIVE CATALYTIC REDUCTION (SCR) W/ WATER INJEC	8
BEAR ISLAND PAPER COMPANY, L.P.	ASHLAND	10/30/92	5/7/97	TURBINE, COMBUSTION GAS	474 X10(6) BTU/HR N. GAS	9 PPM	SELECTIVE CATALYTIC REDUCTION (SCR)	74
BEAR ISLAND PAPER COMPANY, L.P.	ASHLAND	10/30/92	5/7/97	TURBINE, COMBUSTION GAS (TOTAL)		69.7 TPY	SCR	
PATOWMACK POWER PARTNERS, LIMITED PARTNERSHIP	LEESBURG	9/15/93	5/7/97	TURBINE, COMBUSTION, SIEMENS MODEL V84.2, 3	10 X109 SCF/YR NAT GAS	131 LB/HR(GAS), 339 OIL	DRY LOW NOX COMBUSTOR, DESIGN, WATER INJECTION	
NORTHWEST PIPELINE COMPANY	SUMAS	8/13/92	4/5/95	TURBINE, GAS-FIRED	12,100 HP	196 PPM @ 15% O2	ADVANCED DRY LOW NOX COMBUSTOR (BY 07/01/95)	7
TENASKA WASHINGTON PARTNERS, L.P.	BELLINGHAM	5/29/92	4/5/95	COGENERATION PLANT, COMBINED CYCLE	2 MMBTU/HR	7 PPM @ 15% O2 (GAS)	STAGED LOW NOX DUCT BURNERS, STEAM INJECTION, SELECTIVE CATALYTIC REDUCTION (SCR	9
WEPCU, PARIS SITE	PARIS	8/29/92	7/20/94	TURBINES, COMBUSTION (4)		25 PPM @ 15% O2	GOOD COMBUSTION PRACTICES	

C, 1998.

Table 4-7. Florida BACT NOx Summary-Natural Gas-Fired CTGs

Permit Date	Source Name	Turbine Size (MW)	NOx Emission Limit (ppmvd)	Control Technology
8/17/92	Orlando Cogeneration, L.P.	79	15	Dry low-NOx combustors
8/17/92	Florida Power Corp. University of Florida	43	25	Steam injection
12/17/92	Auburndale Power Partners	104	25	Steam injection
			15	Steam injection
4/9/93	Kissimmee Utility Authority	40	25	Water injection
			15	Dry low-NOx combustors
4/9/93	Kissimmee Utility Authority	80	25	Water injection
			15	Dry low-NOx combustors
5/17/93	Central Florida Power, L.P. (Tiger Bay - Destec)	184	25	Dry low-NOx combustors
		184	15	Dry low-NOx combustors
2/21/94	Polk Power Partners	84	25	Dry low-NOx combustors
			15	Dry low-NOx combustors
2/24/94	Tampa Electric Company Polk Power Station	260	25	Nitrogen diluent injection
2/25/94	Florida Power Corp. Polk County Site	235	12	Dry low-NOx combustors/SCR
7/20/94	Pasco Cogen, Limited	42	25	Wet injection
3/7/95	Orange Cogeneration, L.P.	39	25	Dry low-NOx combustors
4/11/95	Gainesville Regional Utilities Deerhaven CT3	74	15	Dry low-NOx combustors
6/1/95	Panda-Kathleen	75	15	Dry low-NOx combustors
9/28/95	City of Key West (relocated unit)	23	75	Water injection
1/1/96	Seminole Electric Cooperative, Inc., Hardee Unit 3	140	15	Dry low-NOx combustors
5/98	City of Tallahassee Purdom Unit 8	160	12	Dry low-NOx combustors
7/10/98	City of Lakeland McIntosh Unit 5	250	25	Dry low-NOx combustors
7/10/98	City of Lakeland McIntosh Unit 5	250	9	Dry low-NOx combustors or SCR (effective 5/1/2002)
12/4/98	Santa Rosa Energy Center	167	6	SCR
		167	9	Dry low-NOx combustors

Source: FDEP, 1998.

Table 4-8. Capital Cost for Selective Catalytic Reduction for Westinghouse 501F Combustion Turbine with HRSG (35 ppmvd to 6 ppmvd - gas only)

Cost Component/CT	Cost	Basis of Cost Component
Direct Capital Costs		
SCR Associated Equipment	$593,750	Vendor Based Estimate
Ammonia Storage Tank	$126,101	$35 per 1,000 lb mass flow developed from vendor quotes
HRSG Modification	$432,346	$120 per 1,000 lb mass flow developed from vendor quotes
Instrumentation	$59,375	10% of SCR Associated Equipment
Taxes	$82,313	6% of SCR Associated Equipment and Catalyst
Freight	$68,594	5% of SCR Associated Equipment
Total Direct Capital Costs (TDCC)	$1,362,478	
Direct Installation Costs		
Foundation and supports	$171,248	8% of TDCC and RCC;OAQPS Cost Control Manual
Handling & Erection	$299,684	14% of TDCC and RCC;OAQPS Cost Control Manual
Electrical	$85,624	4% of TDCC and RCC;OAQPS Cost Control Manual
Piping	$42,812	2% of TDCC and RCC;OAQPS Cost Control Manual
Insulation for ductwork	$21,406	1% of TDCC and RCC;OAQPS Cost Control Manual
Painting	$21,406	1% of TDCC and RCC;OAQPS Cost Control Manual
Site Preparation	$5,000	Engineering Estimate
Buildings	$15,000	Engineering Estimate
Total Direct Installation Costs (TDIC)	$662,181	
Recurring Capital Costs (RCC)	$778,125	Catalyst; Vendor Based Estimate
Total Capital Costs (TCC)	$2,802,783	Sum of TDCC, TDIC and RCC
Indirect Costs		
Engineering	$280,278	10% of Total Capital Costs; OAQPS Cost Control Manual
PSM/RMP Plan	$75,000	Engineering Estimate
Construction and Field Expense	$140,139	5% of Total Capital Costs; OAQPS Cost Control Manual
Contractor Fees	$280,278	10% of Total Capital Costs; OAQPS Cost Control Manual
Start-up	$56,056	2% of Total Capital Costs; OAQPS Cost Control Manual
Performance Tests	$28,028	1% of Total Capital Costs; OAQPS Cost Control Manual
Contingencies	$280,278	10% of Total Capital Costs; OAQPS Cost Control Manual
Total Indirect Capital Cost (TinCC)	$1,140,058	
Total Direct, Indirect and Recurring Capital Costs (TDIRCC)	$3,942,841	Sum of TCC and TinCC

Table 4-9. Annualized Cost for Selective Catalytic Reduction for Westinghouse 501F Combustion Turbine with HRSG (35 ppmvd to 6 ppmvd - gas only)

Cost Component/CT	Cost	Basis of Cost Component
Direct Annual Costs		
Operating Personnel	18,720	24 hours/week at $15/hr
Supervision	2,808	15% of Operating Personnel;OAQPS Cost Control Manual
Ammonia	384,520	$300 per ton NH_3 for Aqueous
PSM/RMP Update	25,000	Engineering Estimate
Inventory Cost	30,451	Capital Recovery (11.74%) for 1/3 catalyst
Catalyst Disposal Cost	33,627	$28/1,000 lb/hr mass flow over 3 years; developed from vendor quotes
Contingency	49,513	10% of Direct Annual Costs
Total Direct Annual Costs (TDAC)	544,638	
Energy Costs		
Electrical	35,040	80kW/h @ $0.05/kWh times Capacity Factor
MW Loss and Heat Rate Penalty	638,072	0.5% of MW output; EPA, 1993 (Page 6-20) and $3/mmBtu additional fuel costs
Replacement Energy	58,094	3 days outage each 3 years @ $0.01/kWhr
Fuel Escalation	20,193	Escalation of fuel over inflation; 3% of energy costs
Contingency	75,140	10% of Energy Costs
Total Energy Costs (TEC)	826,540	
Indirect Annual Costs		
Overhead	$243,629	60% of Operating/Supervision Labor and Ammonia
Property Taxes	$39,428	1% of Total Capital Costs
Insurance	$39,428	1% of Total Capital Costs
Annualized Total Direct Capital	$371,538	11.74% Capital Recovery Factor of 10% over 20 years times sum of TDCC, TDIC and TInCC
Annualized Total Direct Recurring	$312,884	40.21% Capital Recovery Factor of 10% over 3 years times RCC
Total Indirect Annual Costs (TIAC)	$1,006,907	
Total Annualized Costs	$2,378,085	Sum of TDAC, TEC and TIAC
Cost Effectiveness	$2,694	
Tons NO_x Emissions Removed	882.82	82.3% Removal by SCR System; 35 ppmvd (243.25 lb/hr) to 6 ppmvd (41.7 lb/hr)

Table 4-10. Summary of Proposed BACT Control Technologies and Emission Limits

Pollutant		Control Technology	Proposed BACT Emission Limits (ppmvd)[a]	(lb/hr)
Siemens-Westinghouse 501FD CTs				
PM/PM_{10}	(gas)	Natural gas and limited use of low-sulfur fuel oil Efficient and complete combustion	10%[b]	NA
	(oil)		20%[b]	NA
CO	(gas)	Efficient and complete combustion	25	86
	(oil)		30	92
VOC	(gas)	Efficient and complete combustion	8	16
	(oil)		11	22
NO_x	(gas)	Use of dry low-NO_x burners and SCR	6	42[c]
	(oil)		42	303[c,d]
$S0_2/H_2SO_4$ mist		Natural gas and limited use of low-sulfur fuel oil	NA	NA

a - the ppmvd values are the computational basis for the lb/hr numbers; the lb/hr numbers are the actual emission limitations.
b - percent opacity, a surrogate for PM limits
c - based on a 24 hr block average as measured by CEMS
d - based on a FBN content of 0.015% or less; the emission limit for NOx is adjusted for higher FBN contents up to a max of 0.030%

5.0 AMBIENT AIR QUALITY MONITORING DATA ANALYSIS

5.1 PSD PRECONSTRUCTION MONITORING APPLICABILITY

Based on the worst-case proposed source emissions data and air quality modelling results for the proposed Power Block 2, ambient air quality monitoring is not required for SO_2, PM_{10}, or NO_2 because the maximum predicted impacts are less than the PSD pre-construction monitoring *de minimis* values for those pollutants (FDEP Rule 62-212.400). Table 5-1 compares the maximum predicted concentrations with the *de minimis* levels. For ozone (O_3), annual volatile organic compound (VOC) emissions from Hines Power Block 2 are predicted to exceed 100 tons per year, so ambient monitoring data were obtained from existing monitoring sites in the region surrounding the plant site.

5.2 OZONE AIR QUALITY MONITORING DATA

Regional FDEP ambient ozone monitoring data are available that can be used to characterize the existing conditions in the vicinity of the site. The FDEP data from these monitors for 1996 and 1997 are summarized in Table 5-2.

Ambient ozone data have been collected by FDEP in the Lakeland, Tampa, St. Petersburg, and Sarasota metropolitan areas. Given the rural nature of the Hines Energy Complex site, existing concentrations should be lower than in these urbanized areas. Data from Lakeland and Hillsborough County monitors for 1996 and 1997, which are the two most recent years available, are given in Table 5-2 because these monitors are located closest to the Hines Energy Complex.

The Tampa Bay region, as well as most of Florida and the Southeast, experienced elevated O_3 levels in May 1998. These data have not been quality-assured, and the DEP has petitioned EPA to exclude some of the data due to outside influences such as smoke from

large fires burning in Mexico at the time.

The 1996 and 1997 ambient air quality data show that Polk County is attaining the AAQS for ozone. In addition, Polk County is in compliance with all other ambient air quality standards.

TABLE 5-1
SUMMARY OF MAXIMUM MODELED POWER BLOCK 2 IMPACTS VS.
PSD MONITORING *DE MINIMIS* VALUES

Pollutant	Averaging Period	Highest Modeled Concentration (ug/m^3)	PSD Demin. Level (ug/m^3)	Significance
Sulfur Dioxide (SO_2)	24-Hour	4.04	13	NO
Particulate Matter (PM_{10})	24-Hour	1.79	10	NO
Nitrogen Dioxide (NO_2)	Annual	0.33	14	NO

FPC, December 1998

TABLE 5-2

REGIONAL OZONE AMBIENT AIR QUALITY DATA

POLLUTANT	LOCATION	SITE #	CONCENTRATION (ug/m^3)	
			1-HOUR	
			HIGH	2ND HI
O_3 (1996)	HILLSBOROUGH BAY	1800081G03	263	212
	TAMPA	4360035G02	246	220
	TAMPA	4360065G01	238	222
	TAMPA	4360068G01	195	167
	LAKELAND	2160005F01	187	167
	LAKELAND	2160006F01	195	187
O_3 (1997)	HILLSBOROUGH BAY	1800081G03	210	206
	TAMPA	4360035G02	226	220
	TAMPA	4360065G01	218	214
	TAMPA	4360068G01	216	204
	LAKELAND	2160005F01	204	200
	LAKELAND	2160006F01	216	197

6.0 AIR QUALITY MODELLING APPROACH

This section summarizes the air quality modelling protocol and input parameters utilized in the air impact determinations presented in Section 7.0. Included are descriptions of the models, meteorology, options selected, listings of modelling parameters for the proposed facilities and existing sources, receptor locations, and step-by-step procedures that were used to develop the necessary projected impacts.

The scope of the required modelling analysis is limited to those pollutants that were determined to be subject to PSD review in Section 3.0, Table 2-5 (CO, NO_x, SO_2, PM, VOC (O_3), and sulfuric acid mist). Not all of the pollutants will require the full PSD air quality analysis; for some, impact identification of the new facilities alone will be sufficient.

As indicated in Table 2-5, there will be a significant increase in VOC emissions, triggering PSD review for ozone. Ozone formation cannot be simulated with a simple Gaussian dispersion model. However, the U.S. EPA Guideline on Air Quality Models (EPA, 1990a) indicates that "the use of models incorporating complex chemical mechanisms should be considered only on a case-by-case basis with proper demonstration of applicability. These are generally regional models not designed for the evaluation of individual sources but used primarily for region-wide evaluations." The proposed facility is not subject to a VOC emissions impact assessment and an ozone modelling analysis is not appropriate.

The proposed source emissions of sulfuric acid mist are shown in Table 2-5 to be above the PSD significant emission rates. However, the PSD regulations do not define significant impact levels nor are ambient air quality standards established for this pollutant. Hence, the air quality impact assessment for sulfuric acid mist is limited to prediction of the maximum impacts from the proposed facility.

6.1 GENERAL MODELLING APPROACH

The PSD regulations require an air quality impact assessment consisting 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. These analyses are discussed in greater detail in the following sections under specific modelling methodologies. The modelling approach followed EPA and FDEP guidelines for determining compliance with applicable PSD increments and ambient air quality standards.

A screening analysis was performed to determine the worst-case emissions case to be used as input to the refined modelling analysis. In the refined analysis, the worst-case and five years of meteorological data were used to predict the highest ambient concentrations of applicable criteria pollutants. These results were compared to the PSD significance levels for each pollutant in order to determine whether additional modelling was necessary. All predicted maximum concentrations were less than the PSD significance values.

6.2 MODEL SELECTION AND OPTIONS

6.2.1 Dispersion Model Selection

The area surrounding the Hines Energy Complex has been determined to be a rural area based upon the technique for urban/rural determinations documented in the EPA "Guideline on Air Quality Models", which applies land use criteria. Based upon this determination, the rural dispersion option was used in both regulatory air quality dispersion models that were used for this application. The EPA SCREEN3 model was used to evaluate the load and ambient temperature conditions that are predicted to produce the highest ambient impacts. The resulting worst-case emissions were used as input to the refined ISCST3 dispersion model (Version 98226) for a comprehensive evaluation of the ambient air impacts of proposed Power Block 2. The ISCST3 model is a referenced EPA dispersion model recommended for use in urban or rural areas, and for application to point, area, and volume sources. The ISCST3 model can predict ambient pollutant concentrations and period of occurrence for 1-hour, 3-hour, 8-hour, 24-hour, and annual averaging periods at each receptor for each full year of hourly meteorological data used.

6.2.2 Dispersion Model Options

The model's Regulatory Default option was used for this analysis. The ISCST3 model was applied without terrain adjustment data because the area in which the Polk County Site is located has very little relief (e.g., a net change in ground level elevation in the range of only 10 feet). The ISCST3 model's building downwash options were applied because the stacks for the proposed sources will be less than the stack height at which downwash effects may occur.

In the 1992 PSD application for the Hines Energy Complex, expected emissions from both Power Block 1 and Power Block 2 were included in the dispersion modelling analysis. The analysis evaluated the total impact of the two power blocks with respect to PSD increment consumption and ambient air quality impacts. Power Block 1 has been constructed and is now operational. With approval from FDEP personnel obtained on November 23, 1998, it was determined that the analysis for proposed Power Block 2 should be updated to include use of the latest version of ISC and the most recently-approved five years of meteorological data. Therefore, this analysis re-evaluates the incremental impact of Power Block 2 on the ambient air quality surrounding the Hines Energy Complex. For purposes of model input, the two stacks for Power Block 2 were co-located; therefore, one source was input to the model.

The air quality impact assessment for PM assumed that all PM emissions were PM_{10} emissions. This assumption simplified the PM modelling analysis and makes for a conservative approach to modelling PM impacts.

6.3 METEOROLOGICAL DATA

The air quality modelling analysis used hourly preprocessed National Weather Service (NWS) surface meteorological data from Tampa, Florida, and concurrent twice-daily upper air soundings from Ruskin, Florida, for the years 1987-1991. The meteorological data were supplied by FDEP in the preprocessed format required by the ISCST3 model. The preprocessed hourly meteorological data file for each year of record used in the analysis contains 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, used in the modelling analysis, was obtained from NWS Local Climatological Data summaries for Tampa.

6.4 EMISSIONS INVENTORY

6.4.1 Proposed Source

The proposed combined-cycle facility will have the capability of firing natural gas and low sulfur fuel oil. The fuel scenarios evaluated for the proposed source include natural gas firing at 100%, 80%, 65% and 50% load at 32°F, 59°F, and 105°F ambient temperature; and fuel oil firing at 100%, 80%, 65% and 50% load at 22°F, 59°F, and 105°F ambient temperature. The differences in the lowest temperatures between natural gas and oil are due to the so-called "shaft limit" difference when operating on these fuels. This limit is the point at which the greatest mass emissions occur.

The emissions inventories for the proposed source and fuel scenarios identified above are presented in Tables 6-1 through 6-6. The pollutant emission rates shown in those tables are representative of BACT as demonstrated in Section 4.0. The air quality modelling analysis for the proposed sources assumed that maximum design capacity emissions represent actual emissions for purposes of determining PSD increment consumption.

The proposed source worst-case fuel scenario was determined by modelling each temperature and load scenario for each fuel using the SCREEN3 model. In addition to the ambient temperature cases previously discussed, loads of 50%, 80%, and 100% were evaluated in the screening analysis. The results indicated that the full load case at 105°F. was the worst-case scenario for purposes of dispersion modelling for SO_2 and for NOx while firing oil. For CO, PM, and NOx while firing gas, the 50% load case was the worst-case scenario for dispersion modelling purposes. Complete SCREEN3 model outputs have been submitted to the FDEP under separate cover.

6.4.2 Existing Sources

The results of the proposed source significant impact area analysis (which is described in Section 7.0) indicated that the proposed facility's air quality impacts are less than the PSD significant impact levels. Therefore, no additional significant impact modelling analysis for PSD Class II increment consumption or ambient air quality standard impact is necessary.

6.5 RECEPTOR LOCATIONS

A description of the receptor grids used in this modelling analysis is presented below.

6.5.1 Receptor Grid for Proposed Source Significant Impact Analysis

This modelling analysis used a polar receptor grid beginning at 500 meters (m) and extending out to cover a 50 kilometer (km) radius centered over the proposed source. The polar grid consisted of 36 radials, each separated by 10-degree increments and extending outward at ring distances of 500 m, 1 km, and 1.5, 2.0, 2.5, 5.0, 10.0, 15.0, 20.0, 25.0, 30.0, 35.0, 40.0, 45.0, and 50.0 km with reference to the proposed source location.

In addition, receptors were placed at 100-meter intervals along the plant property boundary to assess the potential impact at the FPC property line. An additional Cartesian receptor grid with receptors placed at 100-meter intervals was input to assess concentrations near the property line closest to the source, which is to the southeast of the facility.

In total, the receptor grid consisted of 648 receptors and is shown in Figures 6-1 and 6-2.

The modelling results indicated no significant impacts for the PSD pollutants.

6.5.2 Receptor Grid for Class I PSD Analysis

A network of 13 discrete receptors was placed at the boundary of the Chassahowitzka National Wilderness Area (NWA) in order to reassess the potential incremental impact of the proposed source on that Class I area. The NWA receptors were obtained from the FDEP and were also used in the modelling analysis for the 1992 PSD application. The coordinates of these receptor points are listed in Table 6-7.

6.6 BUILDING DOWNWASH EFFECTS

Based on the building dimensions associated with structures planned at the Hines Energy Complex, the 38.1 meter stacks for the proposed Power Block 2 will be less than the calculated value (61.0 meters) at which downwash effects would not be expected to occur. Therefore, the potential for building downwash was considered in the modelling analysis.

The procedures used for addressing the effects of building downwash are those recommended in the ISC Dispersion Model User's Guide. The building height, length, and width are input to the Building Parameter Input Program (BPIP) model, which uses these parameters to create the effective wind direction-specific building dimensions for input to the model. For short stacks (i.e., physical stack height is less than $H_b + 0.5\ L_b$, where H_b is the building height and L_b is the lesser of the building height or projected width), the Schulman and Scire (1980) method is used. If this

method is used, then direction-specific building dimensions are input for H_b and L_b for 36 radial directions, with each direction representing a 10-degree sector.

For cases where the physical stack is greater than $H_b + 0.5\ L_b$, the Huber-Snyder (1976) method is used. In the case of the proposed CC units, the HRSG structures are the dominant buildings of influence. The dimensions of the HRSG structures are 24.4 meters high (H_b) and 13.7 meters wide (M_W). Since the proposed stack height of 38.1 meters is more than $H_b + 0.5\ L_b$, only the Huber-Snyder downwash algorithm is used by the ISCST model.

TABLE 6-1

COMBUSTION TURBINE UNIT (165 MW)

ESTIMATED [1] PERFORMANCE ON NATURAL GAS

100% LOAD

CONDITIONS			
Ambient Temperature (°F)	32	59	105
Ambient Relative Humidity (%)	60	60	60
Load Condition (%)	100	100	100
Elevation (ft) (above MSL)	163	163	163
Maximum Heat Input Rate (MMBtu/hr)[2]	1,946	1,822	1,626
EMISSIONS (lb/hr)			
Carbon Monoxide (25 ppm)	91	86	75
Nitrogen Oxides (at 15% O_2) (6 ppmvd)[3]	45	42	38
Sulfur Dioxide	6.0	5.5	5.0
Particulate Matter (PM_{10})	9.8	9.3	8.5
Opacity (%)	10	10	10
Volatile Organic Compounds (8 ppmvd)	17	16	14
Sulfuric Acid Mist	0.60	0.55	0.50
STACK PARAMETERS			
Stack Height (ft)	125	125	125
Stack Diameter (ft)	19.0	19.0	19.0
Stack Gas Temperature (°F)	206	206	206
Stack Gas Exit Velocity (ft/sec)	64	61	55

Notes: [1] Emission estimates based on manufacturer's data

[2] For CTs the heat-input rate is based on the higher heating value (HHV) of the fuel (1,050 Btu/SCF).

[3] Not corrected to ISO conditions.

MSL = Mean Sea Level Neg. = Negligible

TABLE 6-2

COMBUSTION TURBINE UNIT (165 MW)

ESTIMATED [1] PERFORMANCE ON NATURAL GAS

80% LOAD

CONDITIONS			
Ambient Temperature (°F)	32	59	105
Ambient Relative Humidity (%)	60	60	60
Load Condition (%)	80	80	80
Elevation (ft) (above MSL)	163	163	163
Maximum Heat Input Rate (MMBtu/hr)[2]	1,657	1,561	1,408
EMISSIONS (lb/hr)			
Carbon Monoxide (25 ppm)	77	73	66
Nitrogen Oxides (at 15% O_2) (6 ppmvd)[3]	38	36	32
Sulfur Dioxide	5.0	4.7	4.3
Particulate Matter (PM_{10})	9.7	9.2	8.4
Opacity (%)	10	10	10
Volatile Organic Compounds (8 ppmvd)	14	13	12
Sulfuric Acid Mist	0.50	0.45	0.40
STACK PARAMETERS			
Stack Height (ft)	125	125	125
Stack Diameter (ft)	19.0	19.0	19.0
Stack Gas Temperature (°F)	201	201	201
Stack Gas Exit Velocity (ft/sec)	54	51	48

Notes: [1] Emission estimates based on manufacturer's data

[2] For CTs the heat-input rate is based on the higher heating value (HHV) of the fuel (1,050 Btu/SCF).

[3] Not corrected to ISO conditions.

MSL = Mean Sea Level Neg. = Negligible

TABLE 6-3

COMBUSTION TURBINE UNIT (165 MW)

ESTIMATED [1] PERFORMANCE ON NATURAL GAS

50% LOAD

CONDITIONS			
Ambient Temperature (°F)	32	59	105
Ambient Relative Humidity (%)	60	60	60
Load Condition (%)	50	50	50
Elevation (ft) (above MSL)	163	163	163
Maximum Heat Input Rate (MMBtu/hr)[2]	1,171	1,113	1,011
EMISSIONS (lb/hr)			
Carbon Monoxide (200 ppm)	540	518	468
Nitrogen Oxides (at 15% O_2) (10 ppmvd)[3]	45	42	38
Sulfur Dioxide	3.5	3.4	3.1
Particulate Matter (PM_{10})	9.6	9.2	8.4
Opacity (%)	10	10	10
Volatile Organic Compounds (8 ppmvd)	31	30	27
Sulfuric Acid Mist	0.35	0.30	0.25
STACK PARAMETERS			
Stack Height (ft)	125	125	125
Stack Diameter (ft)	19.0	19.0	19.0
Stack Gas Temperature (°F)	201	201	201
Stack Gas Exit Velocity (ft/sec)	46	45	42

Notes: (1) Emission estimates based on manufacturer's data

(2) For CTs the heat-input rate is based on the higher heating value (HHV) of the fuel (1,050 Btu/SCF).

(3) Not corrected to ISO conditions.

MSL = Mean Sea Level Neg. = Negligible

TABLE 6-4

COMBUSTION TURBINE UNIT (165 MW)

ESTIMATED [1] PERFORMANCE ON FUEL OIL

100% LOAD

CONDITIONS			
Ambient Temperature (°F)	22	59	105
Ambient Relative Humidity (%)	60	60	60
Load Condition (%)	100	100	100
Elevation (ft) (above MSL)	163	163	163
Maximum Heat Input Rate (MMBtu/hr)[2]	1,943	1,776	1,581
EMISSIONS (lb/hr)			
Carbon Monoxide (30 ppm)	113	92	92
Nitrogen Oxides (at 15% O_2) (42 ppmvd)[3]	332	303	270
Sulfur Dioxide	104	95	84
Particulate Matter (PM_{10})	46	43	37
Opacity (%)	20	20	20
Volatile Organic Compounds (8 ppmvd)	24	22	19
Sulfuric Acid Mist	10	9	8
STACK PARAMETERS			
Stack Height (ft)	125	125	125
Stack Diameter (ft)	19.0	19.0	19.0
Stack Gas Temperature (°F)	289	289	289
Stack Gas Exit Velocity (ft/sec)	74	69	62

Notes: [1] Emission estimates based on manufacturer's data

[2] For CTs the heat-input rate is based on the higher heating value (HHV) of the fuel (1,050 Btu/SCF).

[3] Not corrected to ISO conditions.

MSL = Mean Sea Level Neg. = Negligible

TABLE 6-5

COMBUSTION TURBINE UNIT (165 MW)

ESTIMATED [1] PERFORMANCE ON FUEL OIL

80% LOAD

CONDITIONS			
Ambient Temperature (°F)	22	59	105
Ambient Relative Humidity (%)	60	60	60
Load Condition (%)	80	80	80
Elevation (ft) (above MSL)	163	163	163
Maximum Heat Input Rate (MMBtu/hr)[2]	1,590	1,467	1,323
EMISSIONS (lb/hr)			
Nitrogen Oxides (at 15% O_2) (42 ppmvd)[3]	269	248	224
Sulfur Dioxide	85	78	71
Particulate Matter (PM_{10})	46	41	37
Opacity (%)	20	20	20
Volatile Organic Compounds (8 ppmvd)	23	22	19
Sulfuric Acid Mist	8	7	6
STACK PARAMETERS			
Stack Height (ft)	125	125	125
Stack Diameter (ft)	19.0	19.0	19.0
Stack Gas Temperature (°F)	289	289	289
Stack Gas Exit Velocity (ft/sec)	72	67	61

Notes: (1) Emission estimates based on manufacturer's data

(2) For CTs the heat-input rate is based on the higher heating value (HHV) of the fuel (1,050 Btu/SCF).

(3) Not corrected to ISO conditions.

MSL = Mean Sea Level Neg. = Negligible

TABLE 6-6

COMBUSTION TURBINE UNIT (165 MW)

ESTIMATED [1] PERFORMANCE ON FUEL OIL

50% LOAD

CONDITIONS			
Ambient Temperature (°F)	22	59	105
Ambient Relative Humidity (%)	60	60	60
Load Condition (%)	50	50	50
Elevation (ft) (above MSL)	163	163	163
Maximum Heat Input Rate (MMBtu/hr)[2]	1,150	1,063	966
EMISSIONS (lb/hr)			
Nitrogen Oxides (at 15% O_2) (42 ppmvd)[3]	192	177	161
Sulfur Dioxide	61	57	52
Particulate Matter (PM_{10})	46	41	39
Opacity (%)	20	20	20
Volatile Organic Compounds (8 ppmvd)	171	161	144
Sulfuric Acid Mist	6	5	5
STACK PARAMETERS			
Stack Height (ft)	125	125	125
Stack Diameter (ft)	19.0	19.0	19.0
Stack Gas Temperature (°F)	284	284	284
Stack Gas Exit Velocity (ft/sec)	57	54	50

Notes: (1) Emission estimates based on manufacturer's data

(2) For CTs the heat-input rate is based on the higher heating value (HHV) of the fuel (1,050 Btu/SCF).

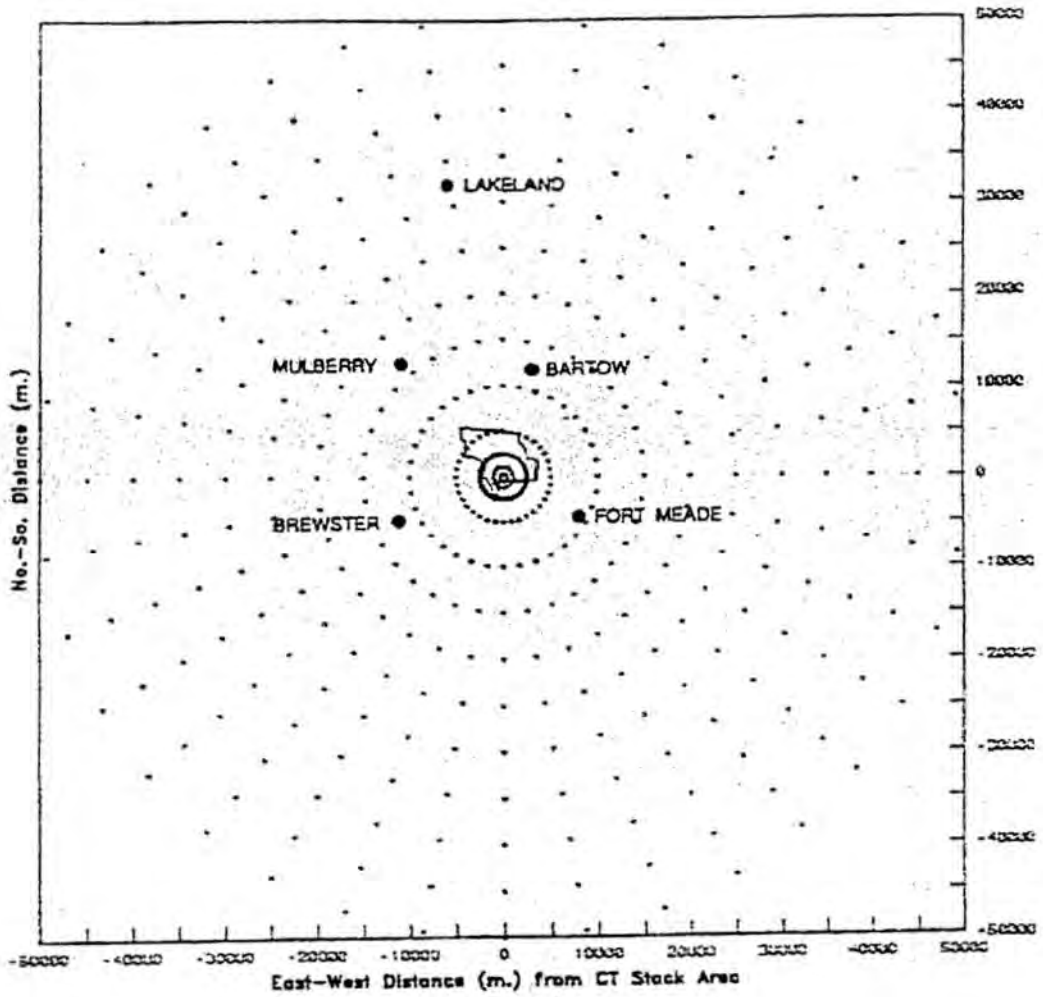
(3) Not corrected to ISO conditions.

MSL = Mean Sea Level Neg. = Negligible

TABLE 6-7
RECEPTOR GRID FOR PSD CLASS I AREA

Point	UTM Coordinates		Distance from Polk County Site *		
	East (km)	North (km)	X (km)	Y (km)	Distance (km)
1	340.3	3,165.7	-74.0	91.82	117.9
2	340.3	3,167.7	-74.0	93.82	119.5
3	340.3	3,169.8	-74.0	95.92	121.1
4	340.7	3,171.9	-73.6	98.02	122.6
5	342.0	3,174.0	-72.3	100.12	123.5
6	343.0	3,176.2	-71.3	102.32	124.7
7	343.7	3,178.3	-70.6	104.42	126.0
8	342.4	3,180.6	-71.9	106.72	128.7
9	341.1	3,183.4	-73.2	109.52	131.7
10	339.0	3,183.4	-75.3	109.52	132.9
11	336.5	3,183.4	-77.8	109.52	134.3
12	334.0	3,183.4	-80.3	109.52	135.8
13	331.5	3,183.4	-82.8	109.52	137.3

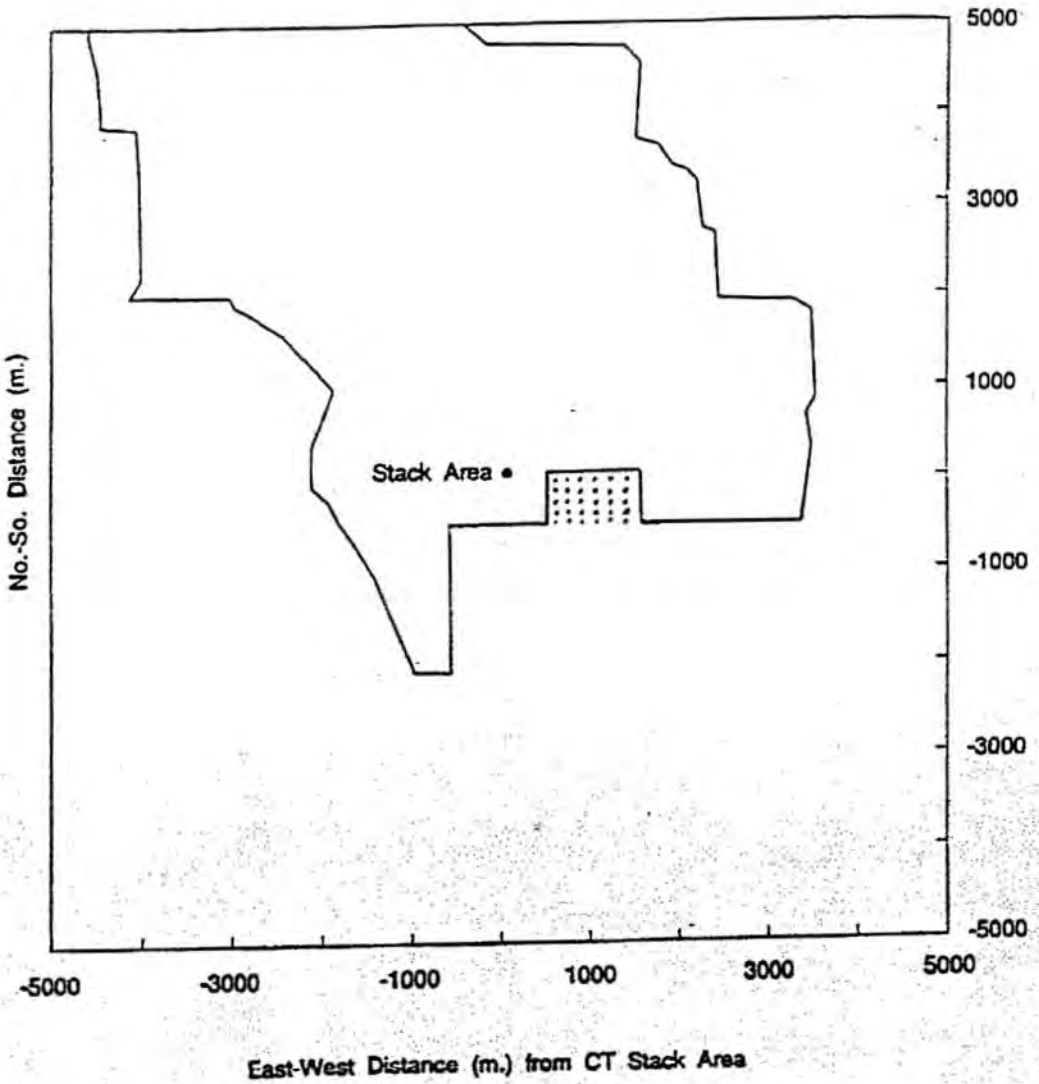
* Location of "zero point" for Hines Energy Complex is 414.300 km East; 3,073.880 km North



Florida Power
CORPORATION

Hines Energy Complex

FIGURE 6-1
RECEPTOR GRID FOR SIGNIFICANT IMPACT ANALYSIS



Florida Power
CORPORATION

Hines Energy Complex

FIGURE 6-2
ADDITONAL SIGNIFICANT IMPACT ANALYSIS
RECEPTORS

7.0 AIR QUALITY IMPACT ANALYSIS RESULTS

This section summarizes the results of the modelling analyses conducted as described in Section 6.0.

7.1 Power Block 2

7.1.1 Worst-case Operation Analysis

As indicated in Section 6.4.1, the proposed CC facility was evaluated for both the primary fuel, natural gas, and the back-up fuel, fuel oil, to determine the worst-case impacts. Since the emissions on fuel oil are higher for the criteria pollutants than for natural gas, the analysis of short-term impacts focused on the fuel oil case. Based on the results of the SCREEN3, it was determined that 100% load would produce the maximum ground-level impacts, except for CO emissions, which are highest at 50% load. Therefore, full load conditions were modelled for all pollutants except CO. As previously discussed, the proposed Power Block 2 emissions input was for the 105°F case, since it produced the highest predicted impacts in the SCREEN3 analysis.

Subsequent runs for annual averages were made using the emissions and stack parameters associated with the conservative 105°F case, but took into account the maximum of 1000 hours per year of fuel oil firing and added 7,760 hours per year of emissions from natural gas firing.

7.1.2 Significant Impact Analysis

Once the worst-case operating scenario was determined, the next step in the analysis was to determine whether the ambient air quality impact from the proposed Power Block 2 is considered significant under the PSD rules. The worst-case emissions scenario for each pollutant was modeled at the receptor locations described in Section 6.5.1.

The results of the significant impact analysis are presented in Table 7-1. As indicated in Table 7-1, there were no predicted impacts greater than the PSD significance thresholds.

Thus, no further analysis is required for purposes of PSD increment consumption and AAQS compliance analysis. A complete set of the ISCST3 model output files have been submitted to the FDEP under separate cover.

7.2 PSD INCREMENT ANALYSIS

7.2.1 Class II Area

Because the maximum predicted ambient air quality impacts are less than the PSD significance levels, no additional PSD Class II increment analysis is required.

7.2.2 Class I Area

Although the proposed project will be located approximately 118 km from the nearest boundary of the nearest Class I PSD area, which is the Chassahowitzka National Wilderness Area (NWA), the impacts of the proposed project were modelled. In its proposed New Source Review reform package, EPA has proposed PSD significance levels for Class I areas. FDEP has approved the use of these proposed values for purposes of assessing significant impacts at Class I areas in Florida (personal communication with Mr. Cleve Holladay, November 23, 1998). These values are listed in Table 7-2.

A summary of the project's maximum predicted impact on the Class I area is presented in Table 7-2. As indicated, the predicted maximum impacts are below the EPA significance values for particulate matter (PM), SO_2, and NO_2. Because ISCST3 was used to conservatively estimate the impact of Power Block 2 emissions on the NWA, no further analysis is required for those pollutants.

7.3 Air Toxics Analysis

Concentrations of sulfuric acid mist were modelled with ISCST3 in the same way that SO_2 was modelled. As with SO_2, highest emissions of this pollutant occur while using fuel oil. The predicted maximum 24-hour average concentration of sulfuric acid mist is 0.36 ug/m^3. This is well below the former FDEP ambient reference concentration (ARC) of 2.4 ug/m^3. Therefore, no adverse impacts will occur from emissions of sulfuric acid mist from Power Block 2.

TABLE 7-1
SUMMARY OF SIGNIFICANT IMPACT ANALYSIS CONCENTRATIONS
PSD CLASS II AREAS

Pollutant	Averaging Period	Maximum [1] Predicted Concentration (ug/m^3)	Location [2]		Year	Significance Level (ug/m^3)	Distance to Significance (km)	Significant Impact (Yes/No)
			X (m)	Y (m)				
Carbon Monoxide	1-Hour	345.6	-433	250	1988	2,000	None	No
	8-Hour	114.4	400	-200	1991	500	None	No
Nitrogen Dioxide	Annual	0.36	-492	-87	1990	1	None	No
Sulfur Dioxide	3-Hour	12.7	400	-200	1991	25	None	No
	24-Hour	3.55	400	-200	1991	5	None	No
	Annual	0.02	2500	5000	1990	1	None	No
Particulate Matter (PM_{10}) [3]	24-Hour	2.89	400	-200	1991	5	None	No
	Annual	0.07	-492	-87	1990	1	None	No
Sulfuric Acid Mist	24-Hour	0.36	400	-200	1991	N/A	N/A	N/A

(1) Short-term values are highest values for this analysis.
(2) With respect to zero point of 414.30 km E; 3,073.88 km N.
(3) As a conservative approach, all project emissions of particulate matter were assumed to be in the form of PM_{10}.

N/A = Not applicable

FPC, 1998

TABLE 7-2
SUMMARY OF MAXIMUM MODELED IMPACTS VS.
PSD CLASS I SIGNIFICANCE VALUES

Pollutant	Averaging Period	Highest Modeled Concentration (ug/m^3)	PSD Class I Signif. Level (ug/m^3)	Significance
Sulfur Dioxide (SO_2)	3-Hour	0.79	1.0	NO
	24-Hour	0.17	0.2	NO
	Annual	0.001	0.1	NO
Particulate Matter (PM_{10})	24-Hour	0.07	0.3	NO
	Annual	0.003	0.2	NO
Nitrogen Dioxide (NO_2)	Annual	0.014	0.1	NO

8.0 ADDITIONAL IMPACTS ANALYSIS

8.1 INTRODUCTION

The PSD guidelines indicate that, in addition to demonstrating that the proposed source will neither cause nor contribute to violations of the applicable PSD increments and AAQS, an additional impacts analysis must be conducted for those pollutants subject to PSD review. As indicated in Table 2-5, those pollutants include CO, NO_X, SO_2, PM, VOC (O_3), and sulfuric acid mist. This additional impacts analysis includes an analysis of air quality impacts due to growth induced by the project, an analysis of air quality impacts on soils and vegetation, and an analysis of project impacts on visibility.

As has been demonstrated in Section 7.0 of this application, the proposed project will have an insignificant impact at the NWA, located from 118 to 135 km from the proposed source. In spite of this distance, FPC is providing a general assessment of the impact of Power Block 2 on air quality-related values (AQRV) analysis as a part of this application.

8.2 IMPACTS DUE TO GROWTH

The growth analysis considers air quality impacts due to emissions resulting from the industrial, commercial, and residential growth associated with the project. Only impacts related to permanent growth are considered; emissions from temporary sources and mobile sources are not addressed in the growth analysis. The analysis of socioeconomic effects presented in Chapter 7.0 of the Site Certification Application serves as the basis for this growth analysis.

Up to 500 people will be employed at the Hines Energy Complex site during any one year of the construction phase for Power Block 2, and approximately 4 new permanent jobs will be filled to operate the new facility. It is anticipated that the majority of the construction workers will commute from their current residences, whereas approximately 2 of the 4 new operational employees will migrate into the Polk County area. Based on the average household size of 2.53 persons, a total of 5 persons (workers and their families) are predicted to move into the area as a result of Power Block 2. This will have an insignificant impact on the population of Polk County.

Development of industries supporting the new CC facility are expected to be negligible. Raw materials consumed by the facility (fuels, supplies, etc.) will be delivered to the site in usable form from outside of the region. Further processing, such as water treatment, will be accomplished entirely onsite.

Electricity sales, on the other hand, will be spread out over a large region as part of FPC's generating capacity that will serve to meet increasing residential, commercial, and industrial demand throughout its system, which covers a large portion of the state of Florida.

In summary, there will be little residential growth associated with the FPC project, and there is little potential for new industrial development nearby as a result of the new facility. Impacts resulting from the new development are expected to be small and well-distributed throughout the area.

8.3 VEGETATION, SOILS, AND WILDLIFE ANALYSES

As previously discussed, the predicted maximum impacts from Power Block 2 on the NWA are less than the PSD Class I and Class II significance levels. Therefore, the project will have a negligible impact on the soils, vegetation, wildlife, and visibility of the area surrounding the plant as well as the more distant Class I area. A general discussion of air quality-related values (AQRVs) of the NWA follows.

The U.S. Department of the Interior (National Park Service) in 1978 administratively defined AQRVs to be:

> All those values possessed by an area except those that are not affected by changes in air quality and include all those assets of an area whose vitality, significance, or integrity is dependent in some way upon the air environment. These values include visibility and those scenic, cultural, biological, and recreational resources of an area that are affected by air quality.
>
> Important attributes of an area are those values or assets that make an area significant as a national monument, preserve, or primitive area. They are assets that are to be preserved if the area is to achieve the purposes for which it was set aside.

In a November 1996 report entitled "Air Quality and Air Quality Related Values in Chassahowitzka National Wildlife Refuge and Wilderness Area," the US Fish and Wildlife Service discussed vegetation, soils, wildlife, visibility, and water quality as potential AQRVs in the NWA. Effects from air pollution on visibility have been evaluated in the NWA, but the other potential AQRVs have not been specifically evaluated by the Fish and Wildlife Service for Chassahowitzka. Since specific AQRVs have not been identified for the Chassahowitzka NWA, this AQRV analysis evaluates the effects of air quality on general vegetation types and wildlife found on the Chassahowitzka NWA.

Vegetation type AQRVs and their representative species types have been defined as:

> Marshlands - black needlerush, saw grass, salt grass, and salt marsh cordgrass

Marsh Islands - cabbage palm and eastern red cedar

Estuarine Habitat - black needlerush, salt marsh cordgrass, wax myrtle

Hardwood Swamp - red maple, red bay, sweet bay and cabbage palm

Upland Forests - live oak, scrub oak, longleaf pine, slash pine, wax myrtle and saw palmetto

Mangrove Swamp - red, white and black mangrove

Wildlife AQRVs included: endangered species, waterfowl, marsh and waterbirds, shorebirds, reptiles and mammals.

A screening approach was used which compared the maximum predicted ambient concentration of air pollutants of concern in the Chassahowitzka NWR with effect threshold limits for both vegetation and wildlife as reported in the scientific literature. A literature search was conducted which specifically addressed the effects of air contaminants on plant species reported to occur in the NWR. While the literature search focused on such species as cabbage palm, eastern red cedar, lichens and species of the hardwood swamplands and mangrove forest, no specific citations that addressed these species were found. It was recognized that effect threshold information is not available for all species found in the Chassahowitzka NWR, although studies have been performed on a few of the common species and on other similar species which can be used as models. Maximum concentrations and depositions were predicted using the ISCST model and five years of meteorological data as described in Sections 6.0 and 7.0.

8.3.1 Vegetation

The effects of air contaminants on vegetation occur primarily from sulfur dioxide, nitrogen dioxide, ozone, and particulates. Effects from minor air contaminants such as fluoride, chlorine, hydrogen chloride, ethylene, ammonia, hydrogen sulfide, carbon monoxide, and pesticides have been reported in the literature. However, most of these air contaminants have not resulted in major effects (i.e., crop damage). Some air contaminants, such as ethylene, are widely distributed but, due to low concentrations, do not result in injury to plants. Others such as CO do not cause damage at concentrations normally found under

ambient concentrations. There are no predicted fluoride emissions from the proposed project.

Injury to vegetation from exposure to various levels of air contaminants can be termed acute, physiological or chronic. Acute injury occurs as a result of a short-term exposure to a high contaminant concentration and is typically manifested by visible injury symptoms ranging from chlorosis (discoloration) to necrosis (dead areas). Physiological or latent injury occurs as the result of a long-term exposure to contaminant concentrations below that which results in acute injury symptoms, while chronic injury results from repeated exposure to low concentrations over extended periods of time, often without any visible symptoms, but with some effect on the overall growth and productivity of the plant.

Since predicted maximum pollutant concentrations at the NWA are below significance levels, no adverse effects to vegetation will be caused by the proposed project.

8.3.2 Soils

Air contaminants can affect soils through fumigation by gaseous forms, accumulation of compounds transformed from the gaseous state, or by the direct deposition of particulate matter or particulate matter to which certain contaminants are absorbed. Gaseous fumigation of soils does not directly affect the soil but rather the organisms found in the soil. Concentrations several orders of magnitude higher than the predicted values are required before any adverse effects from fumigation are observed. It is more likely that effects on soils and the organisms (plants and animals) found in the soils could occur from the deposition of trace elements over the life of the project. Thus, this analysis of effects on soils specifically addresses the deposition of trace elements and potential pathways for movements into the vegetation.

8.3.2.1 Lead

Lead (Pb) is found naturally occurring in all plants, although it is nonessential for growth (Chapman, 1966; Valkovic, 1975; Gough and Shacklette, 1976). Plants vary in their sensitivity to lead. Many plants tolerate high concentrations of lead, while others exhibit retarded growth at 10 ppm in solution culture (Valkovic, 1975). Orange seedlings grown on soils with lead concentrations ranging from 150-200 ppm did not exhibit adverse effects (Chapman, 1966). Gough et al. (1979) reported that a lead soil concentration of 30 to 100 g/g generally retarded the growth of plants. The negligible amount of lead emissions from Power Block 2 will not contribute to a soil concentration toxic to plants.

8.3.2.2 Mercury

Mercury (Hg) is not an essential element for plant growth. It is typically used as a seed fungicide. In general, Hg is not concentrated in plants grown on soils containing normal levels of Hg. Soil bound Hg is typically not available for plant uptake, although many plants cannot prevent the uptake of gaseous Hg through the roots (Huckabee and Jansen, 1975). Most higher vascular plants are resistant to toxicity from high Hg concentrations even though high concentrations are present in plant tissue. Concentrations of 0.5-50 ppm ($HgCl_2$) were found to inhibit the growth of cauliflower, lettuce, potato, and carrots (Bell and Rickard, 1974). Gough et al. (1979) noted apparently healthy spanish moss plants with a mercury content of 0.5 mg/kg. The extremely small amount of mercury emissions from the proposed power block will not contribute to concentrations toxic to plants.

8.3.3 Wildlife

Compared with other threats to wildlife, such as pesticides, the toxicological relationships between air pollution and effects on wildlife are not well understood (Newman and Schreiber, 1988). The limited understanding is based primarily on reports of symptoms observed in the field and on information extrapolated from laboratory studies. Information on controlled wildlife studies is limited in the scientific literature. Most studies report symptoms of various air pollutants but do not provide toxicity levels. Those studies that do provide toxicity levels are limited to four air contaminants, SO_2, NO_2, O_3, and particulates.

Since the predicted maximum pollutant impacts are less than Class I significance levels, no adverse impacts to wildlife will occur from the proposed Power Block 2 emissions.

In addition to the impacts on wildlife from the primary pollutants, the Fish and Wildlife Service is concerned about the effects on wildlife resulting from acid deposition (FWS, 1992). Existing acid deposition conditions in Florida were investigated during the five year Florida Acid Deposition Study (ESE, 1986 and 1987) and the two year follow-up program called the Florida Acid Deposition Monitoring Program (ESE, 1988 and 1989). The data collected in these programs indicate that Florida precipitation is only about two-thirds as acidic as precipitation across the southeastern United States and less than half as acidic as precipitation in the midwestern and northeastern United States (ESE, 1988). There is no evidence of a temporal trend in precipitation acidity since the late 1970s (ESE, 1989). The Clean Air Act Amendments of 1990 require significant reductions in SO_2 and NO_2 emissions from existing uncontrolled utility plants nationwide and some of these reductions will occur at plants in the general vicinity of the NWA. These emission reductions will undoubtedly improve on the already good estimated acid deposition conditions in the NWR.

Due to the small emission increases that will be caused by the proposed project and the resulting insignificant concentrations, increase, if any in acid deposition will be negligible.

8.4 VISIBILITY IMPACTS

A visibility analysis was performed for both Power Blocks 1 and 2 in the 1992 PSD application. No adverse increase in visibility degradation was predicted in that analysis. Since the maximum predicted SO_2 and NOx impacts from Power Block 2 are predicted to be less than the Class I significance levels, there will be little, if any incremental impact to the area's visibility. This approach was confirmed in conversations with FDEP staff.

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10.1.6 Coastal Zone Management Certification

There are no federal licenses, permits or activities required for Power Block 2 which are subject to federal consistency review and affect land or water use. This section is therefore not applicable.

10.2 ZONING DESCRIPTIONS

Zoning was addressed as part of the 1994 Certification preceding, therefore, this section is not applicable. For further information, refer to Section 10.2 of the 1992 SCA. The Siting Board's Final Order and Land Use Recommended Order is included in Section 10.4.4 of this SCA.

10.3 LAND USE PLAN DESCRIPTION

Land use was addressed as part of the 1994 Certification preceding, therefore, this section is not applicable. For further information, refer to Section 10.3 of the 1992 SCA. The Siting Board's Final Order and Land Use Recommended Order is included in Section 10.4.4 of this SCA.

10.4 EXISTING STATE PERMITS OR APPLICATIONS

This section contains state permits or certifications which are applicable to the Hines Energy Complex.

10.4.1 Ultimate Site Capacity (3000 MW) and Power Block 1 Certification

This section contains the Final Orders and Certifications issued for the Hines Energy Complex.

10.4.1.1

10.4.1.1 Ultimate Site Capacity (3000 MW) and Power Block 1 Certification

This section contains the Final Order and Certification issued for the Hines Energy Complex in January 1994.

STATE OF FLORIDA
BEFORE THE GOVERNOR AND CABINET
SITTING AS THE SITING BOARD

IN RE: APPLICATION FOR POWER PLANT CERTIFICATION OF FLORIDA POWER CORPORATION POLK COUNTY SITE PA 92-33	DOAH CASE NO. 92-5308 EPP OGC CASE NO. 92-1494

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FEB 09 1994
Hopping Boyd Green & Sams

FINAL ORDER APPROVING CERTIFICATION

On January 25, 1994, this matter came before the Governor and Cabinet, sitting as the Siting Board, pursuant to the Florida Electrical Power Plant Siting Act (PPSA), Section 403.501 et seq., Florida Statutes (1993), for final agency action concerning a recommended order dated December 3, 1993, attached as Exhibit 1, which recommends site certification for the Florida Power Corporation Polk County site. By order dated February 26, 1993, the Board found the Polk site to be consistent and in compliance with existing land use plans and zoning ordinances. On February 25, 19992, the Public Service Commission certified the need for 470 MW of natural gas-fired combined cycle generating capacity at the site.

No party has filed exceptions to the Recommended Order. On January 5, 1994, Florida Power Corporation (FPC) filed an uncontested Motion for Correction of Scriverner's Error. FPC's motion suggests that an inadvertent omission of the word "steam" from proposed Condition II as recommended creates an arguable ambiguity concerning when supplemental site certification must be sought for expansion of the site's generating capacity.

Upon consideration, the motion is GRANTED. The Siting Board ORDERS that, in accordance with past practice, the word "steam" be inserted at the appropriate location in Condition II to avoid any future uncertainty as to the applicability of supplemental certification proceedings under Section 403.517, Florida Statutes. FPC shall be required to utilize the supplemental site certification procedure whenever, in accordance with Section 403.519, Florida Statutes, it desires permission to expand the steam electric generating capacity of the Polk site beyond that authorized by this Order.

Having reviewed the recommended order and otherwise being fully advised, it is ORDERED:

1. Pursuant to Section 120.57 (1)(b)(10), Florida Statutes (1993), the Recommended Order dated December 3, 1993, (Exhibit 1) is APPROVED and ADOPTED by the Board.

2. The Board APPROVES certification for the location, construction and operation of 470 MW of natural gas-fired combined cycle generating capacity at the FPC Polk County Site as proposed in the Site Certification Application, subject to the Conditions of Certification contained in Appendix A to Exhibit 1, as modified by this Order.

3. The FPC Polk County Site is certified for an ultimate site capacity of 3000 MW fueled by coal gas, natural gas, and fuel oil, subject to need determination by the Florida Public Service Commission as required by law, supplemental application review and approval by the Board pursuant to Section 403. 517, Florida Statutes, and compliance with the Conditions of

Certification contained in Appendix A to Exhibit 1, as modified by this Order.

4. Condition of Certification II shall read as follows:

Any anticipated facility expansions beyond the certified initial nameplate capacity of 470 MW, production increases, or process modifications which may result in new, different, or increased discharges of pollutants, change in the type of fuel as described in XIII.A., or expansion in the steam electric generating capacity shall be reported by submissio of a supplemental application pursuant to Chapter 403, F.S.

5. The Board DELEGATES to the Department of Environmental Protection the authority to assure and enforce compliance by Florida Power Corporation and its agents with all of the Conditions of Certification imposed by this Order.

NOTICE OF RIGHTS

Any party to this certification proceeding has the right to seek judicial review of this Order under Section 120.68, Florida Statutes, by the filing of a notice of appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department of Environmental Protection, Office of General Counsel, 2600 Blair Stone Road, Tallahassee, FL 32399-2400; and by filing a copy with the appropriate District Court of Appeal. The notice of appeal must be filed within 30 days from the date this Order is filed with the Clerk of the Siting Board.

DONE and ORDERED this 27th day of January, 1994, at Tallahassee, Florida, pursuant to a vote of the Governor and Cabinet sitting as the Siting Board, at a duly-noticed and constituted Cabinet meeting on January 25, 1994.

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to S120.52 Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Clerk) 1/27/94 Date

THE GOVERNOR AND CABINET
SITTING AS THE SITING BOARD

BY
THE HONORABLE LAWTON CHILES

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing has been sent by U.S. Mail, to the following listed persons:

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Certificate of Service (continued)

Sara Fotopulos, Chief Counsel
Environmental Protection Commission
of Hillsborough County
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Tampa FL 33605

Joseph L. Valenti, Director
Tampa Port Authority
P O Box 2192
Tampa FL 33601

this 27th day of January, 1994.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

R T Donelan

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STATE OF FLORIDA
DIVISION OF ADMINISTRATIVE HEARINGS

IN RE: APPLICATION FOR POWER PLANT CERTIFICATION OF FLORIDA POWER CORPORATION POLK COUNTY SITE PA 92-33	)	DOAH CASE NO. 92-5308EPP OGC CASE NO. 92-1494

RECOMMENDED ORDER

Pursuant to notice, a certification hearing was held on October 26, 1993, in Bartow, Florida and on November 2, 1993, in Tallahassee, Florida, before the Division of Administrative Hearings, by its duly designated Hearing Officer, Diane K. Kiesling.

APPEARANCES

Florida Power Corporation:	Gary P. Sams Richard W. Moore Attorneys at Law Hopping Boyd Green & Sams 123 South Calhoun Street Tallahassee, Florida 32301 Pamela I. Smith Corporate Counsel Post Office Box 14042 St. Petersburg, Florida 33733-4042
Department of Environmental Protection:	Richard T. Donelan, Jr. Marcy LaHart Assistant General Counsels 2600 Blair Stone Road Tallahassee, Florida 32399-2400
Southwest Florida Water Management District:	Richard Tschantz Martin D. Hernandez Assistant General Counsels 2370 Broad Street Brooksville, Florida 34609-6899
Polk County, Florida:	Beth Harlan Assistant County Attorney Post Office Box 60 Bartow, Florida 33830

Parties

In addition to the parties which appeared at the hearing, the Department of Community Affairs (DCA), the Trustees of the Internal Improvement Trust Fund, the Department of Transportation (DOT), the Central Florida Regional Planning Council (CFRPC), the Florida Game and Fresh Water Fish Commission (FGFWFC), Hillsborough County, the Environmental Protection Commission of Hillsborough County, and Tampa Port Authority have party status in this proceeding but did not appear at the certification hearing.

Other parties to this certification proceeding include Estech, Incorporated and C&G Citrus L.P. (collectively, Estech), IMC Fertilizer, Inc., (IMC), and U.S. Agri-Chemical Corporation (USAC). These parties are the mining companies which currently own and/or operate mines on the proposed Polk County Site. They are admitted as parties for the limited purpose of accepting the conditions of certification which are specifically applicable to them.

STATEMENT OF THE ISSUE

In this proceeding, Florida Power Corporation (FPC) seeks approval to construct and operate 470 MW of natural gas-fired advanced design combined cycle (NGCC) generating capacity at its proposed Polk County Site. Additionally, FPC seeks a determination that the Polk County Site has the environmental resources necessary to support an ultimate capacity of 3,000 MW of combined cycle generating capacity fueled by a combination of

State of Florida
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Tallahassee, FL 32399-1550
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Sharyn L. Smith
Director

Ann Cole
Clerk

December 3, 1993

Honorable Lawton Chiles
Governor
State of Florida
The Capitol
Tallahassee, FL 32399

Honorable Jim Smith
Secretary of State
State of Florida
The Capitol, PL-02
Tallahassee, FL 32399-0250

Honorable Robert A. Butterworth
Attorney General
State of Florida
The Capitol
Tallahassee, FL 32399-1050

Honorable Tom Gallagher
Treasurer and Insurance
Commissioner
State of Florida
The Capitol
Tallahassee, FL 32399-0300

Honorable Bob Crawford
Commissioner of Agriculture
State of Florida
The Capitol
Tallahassee, FL 32399-0810

Honorable Gerald A. Lewis
Comptroller
State of Florida
The Capitol, Plaza Level
Tallahassee, FL 32399-0350

Honorable Betty Castor
Commissioner of Education
State of Florida
The Capitol
Tallahassee, FL 32399

Re: Florida Power Corporation Polk County Power Station Application PA 92-33
DOAH Case No. 92-5308EPP

Dear Siting Board:

Enclosed is my Recommended Order in the referenced case. Exhibits received in evidence and the transcript of the hearing have been delivered to Richard T. Donelan, Jr., at the Department of Environmental Regulation.

As required by Section 120.58(5), Florida Statutes, please provide the Division of Administrative Hearings a copy of your final order in this case within 15 days of rendition.

Sincerely,

DIANE K. KIESLING
Hearing Officer

DKK:smc

Enclosure as noted

Copies furnished:

Gary P. Sams
Richard W. Moore
Pamela I. Smith
Richard Donelan
Hamilton S. Oven, Jr.
Lucky T. Osho
Karen Brodeen
Michael Palecki
M. B. Adelson
Carolyn S. Holifield
Doug Leonard
Julia Greene
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Mark Carpanini
Martin D. Hernandez
Richard Tschantz
James Antista
Sara M. Fotopulos
Joseph L. Valenti
Don E. Duden

natural gas, coal-derived gas and distillate fuel oil. Such an ultimate site capacity certification may be granted pursuant to Section 403.517, Florida Statutes and Rule 17-17.231, Florida Administrative Code.

PRELIMINARY STATEMENT

This proceeding was held pursuant to the Florida Electrical Power Plant Siting Act, Chapter 403, Part II, Florida Statutes, and Chapter 17-17, Florida Administrative Code, to consider FPC's application for power plant site and ultimate site capacity certification of the Polk County Site. The ultimate site capacity would consist of 3,000 MW of generating capacity, including 1,000 MW of NGCC capacity and 2,000 MW of coal gas-fired combined cycle (CGCC) capacity, plus any later-identified linear facilities. The Polk County Site initially will include three linear facilities: an upgraded transmission line, a backup natural gas pipeline, and a reclaimed water pipeline from the City of Bartow.

Pursuant to Section 403.519, Florida Statutes, the PSC issued a determination of need for the first 470 MW of combined cycle generating capacity at FPC's proposed Polk County Site on February 25, 1992.

As required by subsections 403.508(1) and (2), Florida Statutes, a land use hearing was held before the undersigned hearing officer on December 7, 1992. By Order dated February 26, 1993, the Governor and Cabinet, sitting as the Siting Board, adopted the Recommended Order in toto, holding that the proposed project is consistent and in compliance with existing land use

plans and zoning ordinances of Polk County and Hillsborough County, Florida.

After proper notice, a certification hearing as required by Section 403.508(3), Florida Statutes, was held in Bartow, Florida on October 26, 1993, and in Tallahassee, Florida, on November 2, 1993.

FPC presented the oral or written testimony of 15 witnesses and its Exhibits FPC-1 through FPC-23 were received into evidence.

Testifying on behalf of FPC were Kathleen Small, Eric Major, George Fantozzi, Harold Frediani, Dale Williams, Tom Adams, Charles Gupton, Phillip Murdock, Christopher Squires, Doug Coomer, Analee Moore, Fred Shanholtzer, John Cochran, Stephen Niles, and Doug Fulle.

No other party presented witnesses during the hearing. Exhibits DEP-1 through DEP-3 of the Department of Environmental Protection (DEP) were received into evidence. Additionally, one person testified at the public hearing held on October 26, 1993, in Bartow, Florida.

The transcript of the proceedings was filed on November 29, 1993. The parties timely filed a joint proposed order. The proposed findings of fact are adopted in substance as modified in this Recommended Order.

FINDINGS OF FACT

Project Site and Vicinity

1. FPC's proposed Polk County Site is located on approximately 8,200 acres in southwest Polk County, Florida, in

an area dominated by phosphate mining activities. The Polk County Site is approximately 40 miles east of Tampa, 3 miles south of Bartow and 3.5 miles northwest of Fort Meade. Homeland, the nearest unincorporated community, lies about one mile to the northeast of the site boundary.

2. The Polk County Site is bounded on the north by County Road (CR) 640 and along the southeast and south by a U.S. Agri-Chemical Corporation (USAC) mine. CR 555 runs north-south through the site.

3. The Polk County Site is comprised of land in four different phases of mining activity: mine pits, clay settling ponds associated with phosphate mining, land which has been mined and reclaimed, and land which has yet to be mined. Approximately one-half of the Polk County Site is subject to mandatory reclamation.

4. Land uses adjacent to the Polk County Site consist almost entirely of phosphate mining activities. One mobile home is located at the intersection of CR 640 and CR 555 approximately 2 miles from the proposed location of the principal generating facilities.

General Project Description

5. The initial generating capacity at the Polk County Site will be NGCC units. Under what has been designated as the Case A' scenario, ultimate site development will consist of 1,000 MW of NGCC and 2,000 MW of CGCC generating capacity, for a total of 3,000 MW. Under the alternative Case C scenario, the ultimate site capacity would consist of 3,000 MW of all NGCC

capacity. The Case C scenario was initially developed as the worst case scenario for the socioeconomic impact analysis (i.e., the one that would produce the least amount of economic benefit.) The combined cycle units which initially burn natural gas can be modified to burn coal gas if necessary to meet changes in fuel supply or pricing. However, under the proposed ultimate site capacity, CGCC generating capacity will be limited to a maximum of 2,000 MW out of the total of 3,000 MW.

6. At ultimate buildout the major facilities at the Polk County Site will include the plant island, cooling pond, solid waste disposal areas, and brine pond.

7. The plant island will be located on mining parcels SA-11, SA-13 and the northerly portion of SA-12. The plant island ultimately will contain the combined cycle power block, oil storage tanks, water and sewage treatment facilities, coal gasification facilities, coal pile and rail loop, and coal handling facilities. The cooling pond at ultimate buildout will be located in mining parcels N-16, N-15 and N-11B, with a channel through N-11C. Mining parcels N-11C, P-3, Phosphoria, Triangle Lakes and P-2, if not used as a solid waste disposal area, will be used as water crop areas to collect rainfall for supplying the cooling pond. The brine pond will receive wastewater reject from the reverse osmosis (RO) water treatment system and will be located on mining parcel SA-9. Two solid waste disposal areas (SWDA) are planned for ultimate development of the Polk County Site. The SWDAs will be mining parcel SA-8 initially and mining parcel P-2 in later phases, if necessary.

Coal gasification slag will be the predominant solid waste to be disposed of in the SWDAs.

8. Other areas included within the Polk County Site are mine parcels N-11A, N-13, N-9B, Tiger Bay East, Tiger Bay, the northerly 80 acres of N-9, SA-10 and the southerly 225 acres of SA-12. Along with providing a buffer for the Polk County Site facilities, these parcels also will provide drainage to Camp Branch and McCullough Creek.

9. Linear facilities associated with the initial 470 MW of generating capacity at the Polk County Site will include a 230 kilovolt (kV) transmission line upgrade, a reclaimed water pipeline, and a backup natural gas pipeline.

Site Selection

10. A comprehensive process was used to select the Polk County Site. The goal of that process was to identify a site which could accommodate 3,000 MW of generating capacity and offer characteristics including: (1) multi-unit and clean coal capability; (2) technology and fuel flexibility; (3) cost effectiveness; (4) compatibility with FPC's commitment to environmental protection; (5) ability to comply with all government regulations; and (6) consistency with state land use objectives.

11. The site selection process included the entire State of Florida. Participants in the site selection process included a variety of FPC departments, environmental and engineering consultants, and an eight-member Environmental Advisory Group (EAG) composed of environmental, educational, and community

leaders. In October, 1990, with the concurrence of the EAG, the Polk County Site was selected.

12. The ultimate basis for the selection of the Polk County Site was the disturbed nature of the site as a result of extensive phosphate mining activities. The Polk County Site also is compatible with FPC's load center and transmission line network, and is accessible to rail and highway transportation systems.

PSC Need Determination

13. On February 25, 1992, the PSC issued Order No. 25805 determining the need for the first 470 MW of generating capacity at the Polk County Site. The PSC concluded in its order that the first two combined cycle units (470 MW) at the Polk County Site will contribute to FPC's electric system reliability and integrity. It also concluded that the first two units would enable FPC to meet winter reserve margin criteria and to withstand an outage of its largest unit at the time of system peak demand. The PSC stated that it was important for FPC to secure a site to meet future needs and that the first two units would contribute toward this goal.

Basis for Ultimate Site Capacity

14. The Site Certification Application (SCA), including the Sufficiency Responses, addressed the impacts associated with 3,000 to 3,200 MW of generating capacity under several scenarios. FPC eliminated or modified several of the scenarios by filing a Notice of Limitations which addressed the capacity and environmental effects of 1,000 MW of NGCC and 2,000 MW of

CGCC generating capacity at the Polk County Site. Throughout the SCA, Sufficiency Responses and Notice of Limitations, the capacity constraints and environmental effects were analyzed under a worst case scenario, i.e., the maximum environmental effects that could be expected at ultimate site capacity.

15. An ultimate site capacity determination will significantly reduce the time and expense associated with processing supplemental applications for future units at the Polk County Site under the expedited statutory procedures of the Power Plant Siting Act. This will allow FPC to respond more quickly to changes in growth and demand. An ultimate site capacity determination also provides FPC the assurance that the Polk County Site has the land, air and water resources to support future coal gas-fired generating capacity.

Project Schedule and Costs

16. Construction of the initial 470 MW of NGCC generating capacity is scheduled to begin in 1994. These units will go into operation in 1998 and 1999. Based on current load forecasts, it is expected that approximately one 250 MW unit will be added every other year to the Polk County Site. Under this schedule, ultimate site development of 3,000 MW would occur about 2018.

17. Capital investment for the Polk County Site is expected to be approximately $3.4 billion for the 1,000 MW NGCC/2000 MW CGCC Case A' scenario and approximately $1.7 billion for the all NGCC Case C scenario.

Project Design

18. Generating units for the Polk County Site will be advanced design combined cycle units firing natural gas and/or coal gas, with low sulfur fuel oil as backup. Each combined cycle unit will consist of one or two combustion turbines (CT), a heat recovery steam generator (HRSG) for each CT and one or two steam turbines (ST). The first 470 MW of generating capacity will consist of two CTs firing natural gas, two HRSGs and one or two STs. At ultimate site capacity, the Polk County Site will consist of 12 CTs, 12 HRSGs, and 6 to 12 STs.

19. A combined cycle unit is a generating system that consists of two sequential generating stages. In the first stage, the natural gas, coal gas or fuel oil is burned to operate the CT. Hot exhaust gas from the CT is passed through the HRSG to produce steam to operate the ST. The CT and steam from the HRSG can be arranged to drive individual generators or a single generator.

20. In later phases of the Polk County Site, up to 2,000 MW of combined cycle generation may be fired on coal gas. The combined cycle units that were initially constructed to operate on natural gas can be modified to operate on coal gas. Under the Case A' scenario, two coal gasification plants would be built to produce coal gas for the combined cycle units.

21. Associated with the coal gasification phase of the project will be the expansion of the plant island to accommodate the storage and handling of coal. Coal will be transported onsite by railroad. A rail loop for coal trains will be

constructed on the plant island. It will be sized to accommodate a 100-car coal train. The coal storage area and limestone stockout will be located within the coal loop. Limestone is used in the coal gasification process as a fluxing agent to improve the viscosity of the coal slag, a by-product of the coal gasification process. The coal storage area, including the coal piles and emergency coal stockout system, will be lined with an impervious liner, and runoff from the coal storage area will be recycled to the coal gasification plants.

22. The cooling pond for the Polk County Site will be located north and east of the plant island. Water from the cooling pond will be used for producing steam and condenser cooling. The cooling pond will be constructed initially in mining parcel N-16 and then in parcels N-15 and N-11B for later phases. These areas are mined-out pits which are surrounded by earthen dams. These dams will be upgraded where required to provide stability equivalent to the requirements of Chapter 17-672, Florida Administrative Code, for phosphate dams.

Soil and Foundation Stability

23. To evaluate the existing soil conditions at the Polk County Site, more than 165 test borings were made. The plant island is an existing mine pit which has been partially filled with sand tailings from phosphate mining operations. Underlying the sand is the Hawthorn formation which is often used as the base for deep load bearing foundations. Foundations for the heavier loads of power plant facilities will require pile foundations or similar types of deep foundations that will extend into the Hawthorn formation.

24. The potential for sinkhole development at the Polk County Site was investigated by reviewing historic sinkhole records, aerial photographs, well drillers' logs, and by drilling three deep borings at the site. The investigation demonstrated that the potential for sinkhole development at the Polk County Site is low and acceptable for this type of construction.

Construction Activities

25. Construction of the Polk County Site will be phased over an approximately 25-year period beginning in 1994. The development of the Polk County Site is expected to take place in seven phases. Changes in the scope or sequence of the individual phases may occur depending on capacity needs over time.

26. During Phase I, the initial earthwork and dewatering activities required for the construction of the plant island and cooling pond will take place. The initial cooling pond and plant island area will be dewatered and fill will be placed in SA-11 and SA-13 for the initial power plant construction. Water from the dewatering activities will be conserved by storage in mining parcels SA-8, SA-9, SA-10, N-15 and the northerly part of SA-12, except for quantities used in IMC's recirculation system. Clay consolidation will commence for other parcels, such as N-11A, N-11B, N-11C, N-13 and N-9B. Phosphate mining and related operations will still function in parcels P-2, P-3, Phosphoria, Triangle Lakes, and N-9.

27. The initial vertical power plant construction for the first 470 MW of generating capacity will take place in Phase II.

Water stored in Phase I, along with reclaimed water from the City of Bartow, will be used to fill the cooling pond in parcel N-16. Any excess reclaimed water from the City of Bartow, if necessary, will be stored in the eastern portion of N-16. Mining parcels SA-10, the southerly part of SA-12, and a portion of the offsite Estech Silver City plant site will be configured for drainage enhancement to McCullough Creek. Mining parcel SA-8 will be prepared to receive solid waste and parcel SA-9 will be prepared to receive wastewater from the RO system and neutralization basin. Wildlife habitat creation and enhancement will begin in parcels N-9B and N-13.

28. Phase III of the Polk County Site represents the operation of the power plant from 235 MW to 1,500 MW, currently projected as NGCC capacity. The plant island, which will contain the generating units, will be located on mining parcels SA-11 and SA-13. The cooling pond will be located in N-16 and will receive reclaimed water from the City of Bartow and water crop from mining parcels P-3, Phosphoria, P-2, Triangle Lakes, N-15, N-11B, N-11C, the northerly end of SA-12 and the east end of N-16.

29. Phase IV will encompass the development of the Polk County Site from 1,500 MW to 2,000 MW, currently projected as NGCC capacity. In conjunction with the additional generating units onsite, the cooling pond in N-16 will be enlarged to 1,219 acres. Other portions of the Polk County Site would remain the same as in Phase III.

30. During Phase V, coal gasification is projected to be introduced to the Polk County Site. Generating capacity will be

increased to 2,250 MW of which 1,000 MW are projected to be NGCC and the remaining 1,250 MW will be CGCC. To accommodate the coal gasification facilities, the northerly portion of SA-12 would be filled. The balance of the site would remain as described in Phase IV.

31. During Phase VI, the generating capacity at the Polk County Site is projected to increase from 2,250 MW to 3,000 MW. This generating capacity will be a combination of 1,000 MW on NGCC and 2,000 MW on CGCC. During this phase, the cooling pond will be enlarged to 2,260 acres and will include parcels N-16, N-15 and N-11B, and a channel through N-11C. Earthwork will be required in N-15 and N-11B to repair and improve dams, and add slope protection on the dam inner faces and seeding on the exterior faces.

32. Phase VII will be the final phase of the Polk County Site. During this phase, if the solid waste disposal area in mining parcel SA-8 were to become full it would be closed and mining parcel P-2 would be prepared to receive solid waste from the power plant operations. Parcels P-3 and Phosphoria will be available for mitigation, if necessary, as a result of activities in parcel P-2. This phase might not occur if coal slag is successfully recycled.

Fuel Supply

33. Fuel for the initial 470 MW of combined cycle generation will consist primarily of natural gas, with light distillate fuel oil as backup. Natural gas will be delivered by pipeline to the Polk County Site at a rate of 3.75 million cubic

feet per hour. FPC currently plans to receive natural gas from the proposed Sunshine Pipeline for which certification is being sought in a separate proceeding. The Application for the Sunshine Pipeline was filed with DEP in August 1993. The other source for natural gas will be the backup natural gas pipeline which is being certified in this proceeding as an associated linear facility.

34. Fuel oil will be delivered to the site by tanker truck, and enough fuel oil will be stored onsite for three days of operation for each combined cycle unit. At ultimate development, three 4-million gallon oil tanks will be located on the Polk County Site. All fuel handling and storage facilities, including unloading areas, pump areas, piping system, storage tanks, and tank containment areas will meet the requirements of DEP Chapter 17-762, Florida Administrative Code, and applicable National Fire Prevention Association Codes.

35. At ultimate site development, the combined cycle units would use both natural gas and coal gas as primary fuels, and fuel oil as a backup fuel. As with the initial phase of operation, natural gas will be supplied by pipeline. At 1,000 MW of NGCC capacity, six to eight million cubic feet per hour of natural gas will be required. Coal for the coal gasification units will be delivered by railroad. For 2,000 MW of CGCC generating capacity, approximately 15,000 to 20,000 tons of coal a day will be required.

Linear Facilities

36. The initial 470 MW of NGCC generation includes three associated linear facilities: a 230-kV transmission line

upgrade, a reclaimed water pipeline, and a backup natural gas pipeline.

230-kV Transmission Line

37. The 230-kV transmission line will be routed from the existing FPC Barcola Substation within the Polk County Site to the FPC Ft. Meade Substation adjacent to CR 630. The transmission line corridor is approximately 1,000 feet wide within the Polk County Site boundary and narrows to 500 feet as the corridor leaves the site. The transmission line corridor follows several linear facilities including an existing transmission line right-of-way, CR 555 and CR 630. Land uses along the corridor are primarily phosphate mining, agricultural and industrial. Wetlands within the transmission line corridor are minimal and are associated primarily with roadside ditches. Where the transmission line crosses McCullough Creek, the creek will be spanned.

38. The 230-kV transmission line will be constructed using single shaft tubular steel poles with a double circuit configuration for two 230-kV circuits. The transmission line structures will range in height from 110 feet to 145 feet. The conductor for the transmission line is a 1590 ACSR conductor that is approximately 1.54 inches in diameter. Conductor span lengths between structures will range from 500 to 900 feet.

39. The transmission line will be constructed in six phases. During the first phase, the right-of-way will be cleared. Clearing in upland areas will be done using mowers and other power equipment. Clearing in wetlands, if necessary, will

be accomplished by restrictive clearing techniques. After the right-of-way has been cleared, existing structures which will be replaced with new transmission line structures will be removed by unbolting them from their foundations and removing the structures with a crane. Foundations for new transmission line structures will be vibrated into the ground using a vibratory hammer or placed into an augured hole and backfilled. After the foundations are in place, new structures will be assembled on the foundations using a crane. Insulation and pole hardware will be mounted on the structures after erection. In the fifth phase of construction, conductors will be placed on a structure by pulling the conductors through a stringing block attached to the structure. During the final phase of construction, the structures will be grounded and any construction debris will be removed from the right-of-way. The construction of the 230-kV transmission line is estimated to require approximately 17 weeks. Construction of the transmission line will meet or exceed standards of the National Electrical Safety Code; FPC transmission design standards; Chapter 17-814, Florida Administrative Code; and the Florida Department of Transportation Utility Accommodation Guide, where applicable.

40. Electric and magnetic fields from the 230-kV transmission line will comply with the standards set forth in Chapter 17-814, Florida Administrative Code. Audible noise from the transmission line should occur only during rainy weather and will not exceed 39.1 dBA at the edge of the right-of-way. Since the transmission line is not located near many residences,

interference to television and AM radio reception should be minimal. If interference does occur, it can be identified easily and corrected on an individual basis.

Backup Natural Gas Pipeline

41. The backup natural gas pipeline will originate at the Florida Gas Transmission pipeline in Hillsborough County at CR 39. The backup pipeline corridor runs generally east for 18 miles until it enters the Polk County Site at the western boundary of the plant island. The pipeline corridor is 1,000 feet wide and it generally follows linear facilities such as Jameson Road, a Tampa Electric Company transmission line, the CSX Railroad, Durrance Road, and Agricola Road. Several subalternate corridors are proposed in Polk County where the backup natural gas pipeline crosses phosphate mining land. The subalternate corridors, all of which are proposed for certification, are necessary to maintain flexibility in routing the backup natural gas pipeline around active mining operations.

42. The uses of land crossed by the backup natural gas pipeline corridor consist primarily of phosphate mining and some agriculture. There are only two areas of residential land use along the corridor, one along Jameson Road in Hillsborough County, and the other near Bradley Junction along Old Highway 37 in Polk County. Ecological areas crossed by the natural gas pipeline corridor include a portion of Hookers Prairie in Polk County, some isolated wetlands associated with phosphate mining activities, and the South Prong Alafia River near CR 39 in Hillsborough County.

43. The backup natural gas pipeline will consist of a metering facility, a scraper trap for pipeline cleaning, a maximum 30-inch buried pipeline made of high strength steel, a pressure regulating station, a cathodic protection system for corrosion control, and a Supervisory Control and Data Acquisition (SCADA) system to monitor and operate the pipeline. The pipe to be used for the natural gas pipeline will be manufactured in accordance with standards specified in 49 CFR 192 and the industrial standards referenced therein. Pipe thickness will vary depending on the population of the area crossed. External corrosion control for the pipe will be provided by an external coating around the pipe and a cathodic protection system designed to prevent electrochemical corrosion of the pipe. Pipeline sections will be hydrostatically tested before leaving the factory to 125 percent of the design pressure.

44. Activities associated with the construction of the backup natural gas pipeline will include survey and staking of the right-of-way, right-of-way preparation, stringing of the pipe, bending, lineup welding and nondestructive testing, ditching, lowering in of pipeline sections, backfilling, tying in pipeline sections, testing and right-of-way restoration. Construction of the pipeline will take place typically within a 75 foot-wide right-of-way. A wider right-of-way may be required where specialized construction activities, such as jack and bore methods, are used. After construction, the natural gas pipeline will have a permanent 50-foot right-of-way. Where the pipeline

crosses federal and state highways or water courses, directional drilling or jack and bore construction methods will be used to minimize disturbance. Where the pipeline crosses the South Prong Alafia River, directional drilling will be used to locate the pipeline underneath the river bed.

45. Pipeline welding will be done by highly skilled personnel who have been qualified in accordance with 49 CFR 192. Pipeline welds will be visually inspected and a percentage of the welds will be x-rayed for analysis.

46. Once the pipeline is constructed, buried and tie-in welds completed, the pipeline will be hydrostatically tested. Hydrostatic testing will use water with a minimum test pressure of 125 percent of maximum operating pressure. Water for hydrostatic testing will be pumped from and returned to the Polk County Site cooling pond.

47. Construction of the pipeline will comply with Title 49 CFR Part 192, Transportation of Natural and Other Gas by Pipelines: Minimum Federal Safety Standards; Chapter 25-12, Florida Administrative Code; Safety of Gas Transportation by Pipeline; and the FDOT Utility Accommodation Guide.

48. After construction of the backup natural gas pipeline, the right-of-way will be restored and a 50-foot-wide permanent right-of-way will be maintained. Line markers will be located along the pipeline at regular intervals and warning signs will be posted where the pipeline crosses roads, railroads, or stream crossings.

49. The estimated cost for the pipeline construction is $611,100 per mile, or $11.2 million for the 18.2 mile pipeline route.

Reclaimed Water Pipeline

50. The reclaimed water pipeline will run from the City of Bartow to the cooling pond near the eastern side of the Polk County Site. The reclaimed water pipeline corridor follows the CSX Railroad and U.S. Highway 17/98 south from the southerly Bartow city limit turning west toward the Polk County Site just south of Homeland. Land uses along the corridor include phosphate mining, commercial sites, rural residences and recreation. The corridor does not cross any environmentally sensitive habitats.

51. The reclaimed water pipeline consists of a buried pipe, 24 to 36 inches in diameter, butterfly valves about every mile along the pipeline, and a flow meter. Pumping of reclaimed water will be provided by the Bartow Sewage Treatment Plant. Construction of the reclaimed water pipeline is similar to that of the natural gas pipeline and includes the following activities: survey and staking of the right-of-way, right-of-way preparation, ditching or trenching construction, stringing of the pipe and pipe installation, back filling, hydrostatic testing, and right-of-way restoration. Where the pipeline crosses state or federal highways or railroads, the pipe will be installed by using jack and bore construction. Construction of the reclaimed water pipeline is estimated to cost $500,000 per mile or $5,000,000 for the total length of the pipeline.

52. Construction of the reclaimed water pipeline will comply with the standards in Chapter 17-610, Florida Administrative Code, the Florida Department of Transportation Utility Accommodation Guide, and the EPA Guidelines for Water Reuse Manual. The pipeline will be hydrostatically tested prior to operation. Corrosion control of the pipeline will depend on the material used for the pipeline and the soil conditions. If a polyethylene or a polyvinylchloride material is used, no corrosion control will be necessary. If ductile iron is used, the soil will be tested for corrosive properties and, if necessary, the pipeline will be protected from corrosion with a poly wrap material.

Solid Waste Disposal

53. Various types of solid waste will be generated by the operation of the Polk County Site. Depending upon the type of solid waste, disposal may be made in the onsite solid waste disposal areas or it may be disposed of offsite.

54. Waste inlet air filters from the combustion turbines and general waste, such as office waste, yard waste and circulating water system screenings, will be recycled or disposed of offsite at the Polk County North Central Landfill. Solid waste from the well water pretreatment and blowdown pretreatment will be disposed of onsite in the solid waste disposal area to be constructed in mining parcel SA-8. Sulfur, a by-product of coal gasification, will be of marketable grade and will be stored in a molten state onsite and delivered to buyers by rail car or tanker truck. Slag, a by-product of coal

gasification, will be the largest volume of solid waste generated at the Polk County Site. Slag is potentially marketable and FPC will make efforts to recycle this by-product as construction aggregate. If slag is not marketable, it will be disposed of in the onsite solid waste disposal areas initially in mining parcel SA-8 and later, if necessary, in parcel P-2. Low volume spent acidic and basic solutions produced in the regeneration of demineralizer resin bed ion exchanges during operation of the facility will be treated in an elementary neutralization unit to render them non-hazardous. Other potentially hazardous waste will be tested and if determined hazardous will be disposed of in accordance with all applicable federal and state laws.

55. Onsite disposal of slag, and well water and blowdown pretreatment solids will be made in the solid waste disposal areas to be constructed in parcels SA-8 and later, if necessary, P-2. These parcels are clay lined impoundments that have clays generally 20 to 40 feet thick. Prior to disposal of any solid waste in a clay settling area, that area will be drained and the clays consolidated. The clays will be probed and if the clay thickness is less than 10 feet it will be refurbished or patched with a synthetic liner. Additionally, a geotextile net will be installed to provide tensile strength to the upper layer of clay. Perimeter leachate collection piping will be installed. Leachate in the interior of the solid waste disposal areas will be monitored and collected by the use of well points to maintain the leachate head at no greater than 4 feet. The solid waste

disposal area in parcel SA-8 will be closed by installing a two-foot thick soil cover which will be seeded and graded to provide water crop to parcel N-16. At closure, the leachate level will be pumped down to minimize the residual leachate head.

56. The clay which lines the base of the solid waste disposal areas decreases in permeability as it consolidates and the solids content of the clay increases. In the first 20 to 50 years of consolidation, the hydraulic gradient of the clay is reversed and water will drain upward. Analysis of the clay shows that it would take 60 to 100 years for leachate to seep through the clay liner. After closure and capping of the solid waste disposal area occurs and the leachate residual head is pumped out, leachate is not expected to break through the liner. Based on the design of the solid waste disposal areas and the analysis of the clay, the solid waste disposal areas in parcels SA-8, and later P-2, should provide equivalent or superior protection to that of a Class I landfill under Chapter 17-7.01, Florida Administrative Code.

Industrial Wastewater

57. The Polk County Site is designed to be a zero discharge facility. There will be no offsite surface water discharge of contaminated stormwater or cooling pond blowdown. Cooling pond blowdown will be treated first by a lime/soda ash softening pretreatment system. A portion of the softened effluent will be routed to the cooling pond and a portion will be treated further by reverse osmosis (RO). High quality water from the RO system will be reused in the power plant as process

water. The reject wastewater from the RO system will be sent to the brine pond for evaporation. In later stages of the Polk County Site operation, the RO reject wastewater will be concentrated prior to disposal in the brine pond.

58. The brine pond will be constructed in parcel SA-9, a waste clay settling pond. Parcel SA-9 has thick waste clay deposits which will act as a liner. A synthetic liner will be placed along the interior perimeter of the brine pond out to a point where the clay is at least 10 feet thick. The synthetic liner will prevent seepage of the brine through the embankment of the brine pond and will provide added protection near the perimeter of the brine pond where the clay liner is thinner.

Groundwater Impacts/Zone of Discharge

59. The brine pond and solid waste disposal areas will be located in waste clay settling ponds with thick clay liners. They will be constructed to minimize, if not eliminate, seepage of brine and leachate to groundwater. If brine or leachate should seep through the clay liner, dispersion and dilution will reduce chemical concentrations so that neither primary nor secondary groundwater quality standards will be exceeded at the boundary of the zone of discharge.

60. A zone of discharge has been established for the solid waste disposal area in parcel SA-8, the brine pond in parcel SA-9, and the cooling pond in parcels N-11B, N-15 and N-16. The zone of discharge will extend horizontally 100 feet out from the outside toe of the earthen dam along a consolidated boundary surrounding these facilities and vertically downward to

the top of the Tampa member of the Hawthorn Group. A groundwater monitoring plan will be implemented to monitor compliance with groundwater standards at the boundary of the zone of discharge.

Surficial Hydrology and Water Quality Impacts

61. The Polk County Site is located along the divide between the Peace River Drainage Basin and the Alafia River Drainage Basin. Water bodies near the site include McCullough Creek, Camp Branch, Six Mile Creek, Barber Branch, and South Prong Alafia River. Mining has disrupted or eliminated natural drainage patterns from the Polk County Site to these water bodies. Currently the only drainage from the Polk County Site to these water bodies is through federally permitted National Pollutant Discharge Elimination System (NPDES) outfalls to McCullough Creek and Camp Branch.

62. To assess the impact to the surficial hydrology of the Polk County Site and surrounding water bodies, the baseline condition was assumed to be the surficial hydrology which would be present under current mandatory reclamation plans for the mining parcels onsite and offsite. The baseline for non-mandatory parcels was assumed to be the minimum reclamation standards under the DEP/Bureau of Mine Reclamation (BOMR) (formerly within the Department of Natural Resources) Old Lands Program and the baseline for non-mandatory offsite parcels was considered to be the existing condition. The one water body onsite for which the baseline condition presently exists is Tiger Bay, which has been reclaimed and released. The baseline

condition for the Polk County Site ultimately would include elimination of seepage from N-16 to Tiger Bay and removal of the NPDES outfall weir from Tiger Bay to Camp Branch. These conditions will result in a lowering of the water table in Tiger Bay and the drying out of wetlands in that area. Under current reclamation plans, water bodies also will be created in parcels SA-12 and SA-11. Other than the reclaimed Tiger Bay and Tiger Bay East, DEP, Southwest Florida Water Management District (SWFWMD) and Polk County have not claimed jurisdiction over any of the water bodies onsite within areas in which phosphate mining activities have been or will be conducted.

63. The major construction activities which may impact offsite surface water bodies are the dewatering activities associated with the initial phase of construction. During this period, parcels SA-11, SA-13 and N-16 will be dewatered to allow earth-moving activities to take place. Dewatering effluent will be stored onsite, reused in IMC's recirculation system, or discharged in the event of above-average rainfall. After the earthwork is complete, the water will be returned to N-16. Based on this construction scenario, no adverse impact to offsite surface water bodies is expected from the construction activities associated with the Polk County Site.

64. The Polk County Site has been designed to function as a "zero discharge" facility. No surface water will be withdrawn from or discharged to any offsite surface water body as a result of plant operations. Certain non-industrial areas within the Polk County Site will be designed, however, to provide offsite

drainage to enhance flows to McCullough Creek and Camp Branch. Flow to McCullough Creek will be enhanced by drainage from parcel SA-10, an offsite portion of the Estech Silver City Plant Site, and the southerly portion of parcel SA-12. Drainage from parcels N-11A, N-13, N-9B, Tiger Bay East and Tiger Bay will enhance flows to Camp Branch. Additionally, FPC has agreed to explore the possibility of restoring drainage to Six Mile Creek if onsite water cropping produces more water than FPC needs for power plant operations and if such drainage can be accomplished without additional permits. The net effect of the drainage enhancement plans will be to equal or improve flows to McCullough Creek and Camp Branch over the baseline condition for the site.

65. There are several types of surface water systems to be developed on the Polk County Site. Surface water runoff from the plant island, other than that from the coal and limestone storage areas, will be routed to the site runoff pond and then used in the cooling pond as makeup water. Surface water runoff from the coal and limestone storage areas, as well as runoff from the active solid waste disposal area, will be routed to a lined recycle basin and will be used as process makeup water for the coal gasification plant. Surface water runoff from mining parcels N-11C, Triangle Lakes, N-11B and N-15 prior to its use as part of the cooling pond, P-3, Phosphoria, P-2 prior to its use as a solid waste disposal area, and SA-8 after it has been closed as a solid waste disposal area, will be directed to the cooling pond as makeup water. All of the surface water

management systems will meet the requirements of the SWFWMD Management and Storage of Surface Water rules.

Subsurface Hydrology and Impacts from Water Withdrawal

66. The Polk County Site will use a cooling pond for process water and for cooling water for the combined cycle units and the coal gasification facilities. For the initial 940 MW of generating capacity, makeup water for the cooling pond will come from onsite water cropping and reclaimed water from the City of Bartow. FPC has negotiated an agreement with the City of Bartow for 3.5 or more million gallons per day (mgd) of reclaimed water from its wastewater treatment facility.

67. At ultimate site capacity, the Polk County Site will require up to 23.6 mgd from a combination of offsite sources and groundwater for the operation of the power plant. FPC has agreed with the SWFWMD to obtain at least 6.1 mgd from reclaimed water and other offsite non-potable water sources, including the City of Bartow, for use as makeup water for the cooling pond. The additional 17.5 mgd of water may be withdrawn from the Upper Floridan Aquifer if additional sources of reclaimed water are not available. FPC has identified substantial amounts of reclaimed water that may be available.

68. A limited quantity of potable water from the Upper Floridan Aquifer will be needed to supply drinking water and other potable water needs for power plant employees. Well water from the Upper Floridan Aquifer will be treated, filtered and chlorinated in an onsite potable water treatment system prior to consumption. At ultimate site development, potable water

consumption is estimated to average 19,000 gallons per day, with a peak consumption of 36,000 gallons per day. As an alternative, FPC may connect with the City of Bartow or the City of Fort Meade potable water system.

69. The subsurface hydrology of the Polk County Site consists of three aquifer systems. The uppermost system is the surficial aquifer which is located in the upper 20 to 30 feet of soil. Due to mining operations, the surficial aquifer has been removed from the site except beneath highway rights-of-way and portions of some dams. Below the surficial aquifer lies the intermediate aquifer which is comprised of an upper confining layer approximately 120 feet thick, a middle water bearing unit about 60 feet thick, and a lower confining unit about 80 to 100 feet thick. This aquifer system provides potable water to some small quantity users in the area. Below the intermediate aquifer is the Floridan Aquifer, which consists of the Upper Floridan Aquifer, a discontinuous intermediate confining unit, and the Lower Floridan Aquifer. The Upper Floridan Aquifer provides a larger source of potable water for the area. The Lower Floridan Aquifer is characterized by poorer quality water and has not been used generally for water supply.

70. The principal impact to groundwater from construction of the Polk County Site will be from the dewatering activities in parcels N-16, SA-11 and SA-13. This impact, if not mitigated, could result in the lowering of groundwater levels in the surficial aquifer in adjacent wetlands. During construction, recharge trenches will be constructed in certain

locations near wetlands. Modeling analysis demonstrates that the recharge trenches will adequately mitigate any offsite groundwater impacts that otherwise would be caused by construction dewatering.

71. The principal groundwater impact from the operation of the Polk County Site will be the withdrawal of water from the Upper Floridan Aquifer for process water and cooling pond makeup. Water from the Upper Floridan Aquifer is the lowest quality of groundwater that can be used for the Polk County Site while maintaining the cooling pond as a zero discharge facility. The withdrawal of 17.5 mgd from the Upper Floridan Aquifer at ultimate site development will not adversely impact offsite legal users of groundwater and will comply with the SWFWMD consumptive use criteria for groundwater withdrawal.

Ecological Resources

72. The baseline for the ecological resources at the Polk County Site was established as the site condition that would exist following (i) mandatory reclamation under reclamation plans approved by the DEP/BOMR, and (ii) non-mandatory reclamation normally carried out by the mining companies. In the cases of Tiger Bay, which has been reclaimed and released by DEP/BOMR, and Tiger Bay East, which has revegetated naturally without reclamation, the ecological baseline was represented by the current condition of these parcels. This baseline methodology was proposed by FPC in a Plan of Study which was accepted by DEP in a Binding Written Agreement.

73. The predominant land cover that would occur under the baseline condition at the Polk County Site would be agriculture.

Poor Original

ely 70 percent of the Polk County Site, or ely 5,678 acres, would be developed as crop land, pasture. The remaining 30 percent of the site would med as non-agricultural uplands, wetlands and open es. Tiger Bay already has been reclaimed and released IR and Tiger Bay East has revegetated naturally. These ls represent one-fourth (524 acres) of the natural ider the ecological baseline condition. The quality of line land cover and vegetation was established by several onsite and offsite areas which have been and released.

Baseline aquatic resources at the Polk County Site f Tiger Bay and the aquatic resources which would have loped under existing reclamation plans. This baseline lude open water bodies and forested wetlands in parcels d SA-12, and forested and herbaceous wetlands in parcel Both Estech and IMC have exceeded their mine-wide mitigation obligations even without those wetlands. ty of the baseline open water bodies on the Polk County evaluated by surveying parcel N-16, which currently of open water habitat. The quality of wetlands was ed by surveying Tiger Bay, which contains wetlands that en reclaimed and released. The baseline aquatic were found to have significant fluctuations of l oxygen, and were characterized by encroachment of water hyacinth and other nuisance species. All of the areas sampled as representative of baseline conditions

showed significant eutrophication. No DEP or SWFWMD jurisdictional wetlands currently exist onsite, within areas in which phosphate mining activities have been or will be conducted, except in the reclaimed Tiger Bay and Tiger Bay East.

75. Baseline evaluation of threatened and endangered species, and species of special concern (listed species) was conducted by collecting information regarding regional habitat descriptions; plant species lists and ecological reports for the area; lists and ecological reports of birds, mammals, reptiles and amphibians common to the area; species checklists; reports of sightings or abundance estimates; interspecific relationships and food chains of important species; location of rare, threatened or endangered species or critical habitat for these species in the region; and occurrence of potential preexisting stresses. Information from the Florida Natural Areas Inventory and approved mine reclamation plans was reviewed. Visits were made to nearby reclaimed sites by land and low-flying helicopters. No listed plant species were found at the site or offsite study areas. Existing reclamation plans, and consequently the ecological baseline condition, do not require the planting of such species. Listed animal species which were observed at the Polk County Site and are expected under the baseline conditions include the American alligator, woodstork, southeastern kestrel, osprey, little blue heron, snowy egret and tricolored heron. The baseline conditions would provide suitable feeding habitat for these species, but only limited areas of suitable nesting habitat. Both the current condition

of the site and baseline condition provide feeding habitat for the American bald eagle, however, the nesting potential for this species will be greater after the implementation of the baseline condition.

76. Impacts to the baseline ecological resources from the construction and operation of the Polk County Site will be more than compensated by habitat creation and enhancement programs proposed by FPC. The primary impacts to the baseline ecological resources will occur when power plant facilities, such as the plant island, cooling pond, brine pond and solid waste disposal area are constructed, eliminating these parcels from the baseline ecological resources. Without development of the Polk County Site, these parcels would represent approximately 2,268 acres of viable lakes and upland and wetland habitats. FPC has proposed a total of 3,713 acres of viable wildlife habitat as part of the ultimate development of the Polk County Site. Accordingly, the available wildlife habitat after construction of the Polk County Site represents a net increase of 1,445 acres over the baseline ecological resource conditions. This increase in habitat, particularly in the buffer area, will be a net benefit for protected species.

77. In providing more wildlife habitat than baseline conditions, FPC has agreed to certain enhancement activities that will specifically offset any impact to baseline ecological resources. These enhancement programs include habitat and wetland creation in parcels N-9B and N-13; habitat creation and offsite drainage enhancement in parcel SA-10; implementation of

a wildlife habitat management plan and exotic vegetation control in parcels SA-10, N-9B and N-13; drainage enhancement to McCullough Creek and Camp Branch; and funding the acquisition of a 425 acre offsite area to serve as part of a wildlife corridor.

Air Pollution Control

78. Polk County has been designated by the U.S. Environmental Protection Agency (EPA) and DEP as an attainment area for all six criteria air pollutants.

79. Federal and state Prevention of Significant Deterioration (PSD) regulations provide that the project will be subject to "new source review." This review generally requires that the project comply with all applicable state and federal emission limiting standards, including New Source Performance Standards (NSPS), and that Best Available Control Technology (BACT) be applied to control emissions of PSD pollutants emitted in excess of applicable PSD significant emission rates. The project will limit emission rates to levels far below NSPS requirements. For the initial 470 MW phase of the Project, BACT must be applied for the following pollutants: sulfur dioxide (SO_2), nitrogen oxides (NO_x), particulates (PM and PM_{10}), volatile organic compounds (VOCs), carbon monoxide (CO), beryllium, inorganic arsenic, and benzene. For the ultimate site capacity, BACT is required for each of these pollutants, and sulfuric acid mist (H_2SO_4), mercury, and lead as well.

80. BACT is defined in DEP Rule 17-212.200(16), Florida Administrative Code, as:

> An emission limitation, including a visible emission standard, based on the maximum

> degree of reduction of each pollutant emitted which the Department, on a case-by-case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems and techniques (including fuel cleaning or treatment or innovative fuel combustion techniques) for control of each such pollutant.

The primary purpose of a BACT analysis is to minimize the allowable increases in air pollutants and thereby increase the potential for future economic growth without significantly degrading air quality. Such an analysis is intended to insure that the air emissions control systems for the project reflect the latest control technologies used in a particular industry and is to take into consideration existing and future air quality in the vicinity of the project. The BACT analysis for the project therefore evaluated technical, economic, and environmental considerations of available control technologies and examined BACT determinations for other similar facilities across the United States.

81. For the first 470 MW of NGCC units, BACT for SO_2 emissions from the CTs is the use of natural gas as the primary fuel and the use of low sulfur oil for a limited number of hours per year.

82. For the first 470 MW of NGCC units, BACT for CO, VOCs, PM, beryllium, arsenic, and benzene emissions from the CTs is efficient design and operation of the CTs, the inherent quality of natural gas (the primary fuel), and a limitation on the annual use of fuel oil.

83. For the first 470 MW of combined cycle units, BACT for NO_x emissions from the CTs is the use of advanced dry low NO_x combustors capable of achieving emissions of 12 parts per million by volume dry (ppmvd) at 15 percent oxygen when burning natural gas, water/steam injection to achieve 42 ppmvd at 15 percent oxygen when burning fuel oil, and limited annual fuel oil use.

84. For the first 470 MW of NGCC units, the DEP staff initially proposed BACT for NO_x emissions from the CTs as 9 ppmvd at 15 percent oxygen when burning natural gas, using dry low NO_x combustor technology. However, after careful consideration, it was determined that, because of the lack of proven technology to achieve such emission rate, it would be more appropriate to establish BACT at 73 lb/hour/CT (24-hour average, based on 12 ppmvd at 15 percent oxygen and 59° F) using dry low NO_x combustor technology and to require FPC to make every practicable effort to achieve the lowest possible NO_x emission rate with those CTs when firing natural gas. FPC also is required to conduct an engineering study to determine the lowest emission rate consistently achievable with a reasonable operating margin taking into account long-term performance expectations and assuming good operating and maintenance practices. Based on the results of that study, DEP may adjust the NO_x emission limit downward, but not lower than 55 lb/hour/CT (24-hour average, based on 9 ppmvd at 15 percent oxygen and 59° F.).

85. For the 99 MBtu/hour auxiliary boiler that is part of the initial phase of the project, BACT for NO_x emissions is low

NO_x burners, limited annual fuel oil use, and limited hours of annual operation. BACT for NO_x emissions from the 1300 kW diesel generator is combustion timing retardation with limited hours of annual operation.

86. For the 99 MBtu/hour auxiliary boiler and the diesel generator as part of the initial phase of the project, BACT for CO, VOC, SO_2, PM, benzene, beryllium, and arsenic emissions consists of good combustion controls, the inherent quality of the fuels burned, the use of low-sulfur fuel oil, and limited hours of operation.

87. For the fuel oil storage tank as part of the initial phase of the project, BACT is submerged filling of the tank.

88. For the coal gasification and other facilities to be built during later phases of the project, a preliminary BACT review was undertaken by FPC to support the demonstration that the Polk County Site has the ultimate capacity and resources available to support the full phased project.

Air Quality Impact Analysis

89. Air emissions from the project also must comply with Ambient Air Quality Standards for six criteria pollutants and Prevention of Significant Deterioration increments for three pollutants. Polk County and the contiguous counties are classified as Class II areas for PSD purposes; the nearest Class I area is the Chassahowitzka National Wilderness Area, located approximately 120 km. from the Site. An air quality analysis, undertaken in accordance with monitoring and computer modeling procedures approved in advance by EPA and DEP, demonstrated that

the project at ultimate capacity utilizing worst-case assumptions will comply with all state and federal ambient air quality standards as well as PSD Class I and II increments. For nitrogen dioxide, sulfur dioxide and particulate matter, air quality modeling was based on conservative assumptions, including background concentrations based upon the highest long-term and second highest short-term measured values (established through an onsite one-year air quality monitoring program and regional data), existing major sources at their maximum emissions, the estimated maximum emissions from certain other proposed projects, and the impacts of the proposed FPC project at ultimate site capacity. For other pollutants, detailed analyses were not performed because offsite impacts were predicted to be insignificant.

90. Impacts of the project's estimated emissions of certain hazardous air pollutants (antimony, arsenic, barium, beryllium, benzene, boron, cadmium, calcium, chromium, cobalt, copper, formaldehyde, magnesium, manganese, nickel, selenium, vanadium, and zinc) at ultimate capacity were compared to the DEP draft no-threat levels under DEP's draft "Air Toxics Permitting Strategy." All pollutants except arsenic were projected to be below the corresponding draft no-threat level. Because of the conservatism of DEP's draft no-threat levels, it was concluded that arsenic impacts would not pose a significant health risk to the population in the surrounding area.

91. Impacts on vegetation, soils, and wildlife in both the site area and the vicinity of the Chassahowitzka National

Wilderness Area, the nearest PSD Class I area, will be minimal. Visibility in the vicinity of the Chassahowitzka National Wilderness Area will not be impaired significantly by the project's emissions. Air quality impacts from commercial, industrial, and residential growth induced by the project are expected to be small and well-distributed throughout the area.

92. Impacts from the initial phase of the Project (470 MW) will comply with all State and federal ambient air quality standards as well as PSD Class I and II increments. The impacts from the initial phase of the Project are also well below the draft no-threat levels. The initial phase of the Project will not significantly impair visibility in the vicinity of the Chassahowitzka National Wilderness Area, and the impact on vegetation, soils, and wildlife in both the site area and the vicinity of the Chassahowitzka National Wilderness Area will be minimal. The air quality impacts due to commercial, industrial, and residential growth from the initial phase of the Project will be small, and are not expected to impact air quality.

Land Use Planning/Socioeconomic Impacts of Construction and Operation

93. The proposed site is an appropriate location for the Polk County Site project. The Polk County Site has adequate access to highway and rail networks, including CR 555, a major collector road, and the CSX railroad. The Polk County Site is located away from major residential areas in a location already heavily disturbed by mining activity. The site is located in reasonable proximity to major metropolitan areas that can supply an adequate work force for construction. Development of the

Polk County Site in a mined-out phosphate area is a beneficial use of land and will provide an economic benefit for Polk County. The Polk County Site also is close to existing facilities, such as existing transmission line corridors and reclaimed water facilities, which will benefit the operation of the site while minimizing the impact of the project.

94. The linear facilities associated with the Polk County Site are sited in appropriate locations. The 230-kV transmission line upgrade, reclaimed water pipeline and backup natural gas pipeline corridors: (i) are located adjacent to other linear facilities, such as existing roads and transmission lines, (ii) avoid major residential areas, and (iii) minimally disrupt existing land uses.

95. The Polk County Site is compatible with the State Comprehensive Plan, the CFRPC Regional Policy Plan, and will meet the requirements of the Polk County Conditional Use Permit. The portion of the backup natural gas pipeline located in Hillsborough County is consistent with the Hillsborough County Comprehensive Plan and the policies of the TBRPC Regional Policy Plan.

96. Construction of the Polk County Site will occur over an approximately 25-year period beginning in 1994. If the Polk County Site is developed only for NGCC capacity, construction employment will average 153 jobs per year with a peak employment of 350. The average annual payroll for construction of the Polk County Site on all NGCC is expected to be $7.1 million per year. If 1,000 MW of NGCC and 2,000 MW of CGCC units are built at the

Polk County Site, peak construction employment will be 1,000 with an average annual construction employment of 315 over the approximate 25-year period. Average annual payroll under this scenario would be $14.6 million per year. Indirect jobs created as a result of buildout of the Polk County Site will average 231 jobs for all NGCC and 477 jobs if 2,000 MW of CGCC is added to the Polk County Site.

97. After completion of the construction of the Polk County Site at ultimate capacity, 110 permanent direct jobs will be created if the site uses all NGCC and 410 jobs will be created if coal gasification is added to the Polk County Site. The operation of the Polk County Site will have a multiplier effect on the Polk County economy. The all NGCC scenario will create 272 indirect jobs and the Case A' scenario with CGCC will create 1,013 indirect jobs. After buildout, property taxes generated by the Polk County Site are estimated to be $24.3 million per year for the all NGCC scenario and $37.4 million per year if CGCC capacity is constructed at the site.

Noise Impacts

98. The ambient noise, or baseline noise condition at the Polk County Site was measured in five locations. These measurements show that the baseline noise condition for the site ranges between 30 dBA and 65 dBA at the nearest residential location. The higher noise levels are caused by truck traffic associated with the phosphate mining industry.

99. Noise impacts from construction will be loudest during initial site preparation and steel erection stages.

Earth moving equipment will produce noise levels of 45 to 50 dBA at the nearest residence in Homeland. During final phases of construction, steam blowout activity to clean steam lines will produce short duration noise levels of 69 dBA at the nearest residence. This activity will take place only during daylight hours.

100. Noise levels from the operation of the Polk County Site were calculated using a computer program specifically designed for assessing noise impacts associated with power plant operation. The highest predicted continuous noise level will be 41 dBA at several houses 2.9 miles south of the site and 47 dBA at the nearest church. Noise impacts from fuel delivery trucks and coal trains will not significantly increase the noise levels over existing conditions. The continuous noise level from the operation of the Polk County Site at the nearest residence or church will be below the 55 dBA level recommended by the U.S. Environmental Protection Agency.

Traffic

101. Traffic analyses were made for impacts to highway traffic which will result from the construction and operation of the Polk County Site. These analyses included impacts at rail crossings caused by the delivery of coal to the Polk County Site under the Case A' scenario.

102. A highway traffic analysis was made to determine if the existing roadway network in the vicinity of the Polk County Site would operate at acceptable levels of service based upon increased volumes of traffic associated with the construction

and operation employment at the Polk County Site. Methodologies for evaluating traffic impact complied with Polk County, FDOT and CFRPC criteria. County roads were evaluated using Polk County criteria and state roads were evaluated using both Polk County and FDOT criteria. Traffic volumes were evaluated for peak construction traffic in 2010 and full plant operations, estimated in 2018. The traffic evaluation included analysis of existing traffic conditions, increased traffic volume associated with growth in the area not associated with the Polk County Site, and increased traffic associated with construction and operation employment at the Polk County Site.

103. During peak construction employment under the Case A' scenario, 1,000 employees are expected at the Polk County Site. Under this scenario, the expected trip generation of the Polk County Site is expected to be 1,792 trips per day, with a morning peak of 717 trips and an afternoon peak of 717 trips. Based on this analysis, all roadways are expected to operate at acceptable levels of service with currently planned improvements to the roadways. Intersection levels of service were found acceptable for 7 out of 11 intersections. FPC has recommended improvements to four intersections at U.S. 98 and SR 60A, SR 60 and CR 555, SR 37 and CR 640, and CR 555 and CR 640 at specified traffic levels.

104. Peak operation employment under the Case A' scenario is expected to be 410 employees in 2018. Based upon this employment figure, the expected trip generation of the Polk County Site is 964 trips per day with a morning peak of 195

trips and an afternoon peak of 154 trips. At peak operation employment, all roadways evaluated were found to operate at acceptable levels of service. All intersections, except the intersection at SR 60 and CR 555, were found to operate at acceptable levels. FPC has recommended a protected/permissive westbound left turn lane at this intersection.

105. With FPC's recommended improvements, which have been incorporated as conditions of certification, and those improvements currently planned by FDOT, the existing roadway network will meet Polk County and FDOT approved levels of service at peak employment during the construction and operation of the Polk County Site to its ultimate capacity.

106. In addition to the highway traffic impact analysis, FPC evaluated the impact on rail/highway crossings from the transportation of coal by rail under the Case A' scenario. It was assumed that all coal for the Polk County Site will be delivered by rail over existing CSX transportation lines. It is expected that at full operation two 90-car trains per day will be required for the delivery of coal, resulting in four train trips per day. It was also assumed that trains will travel at speeds averaging 35 to 45 miles per hour.

107. Evaluation of the impacts at rail crossings found an increase of .5 second per vehicle per day at urban rail crossings and .3 second per vehicle per day at rural rail crossings. Based on the 1985 Highway Capacity Manual, the total delay at rail crossing intersections caused by the increased train traffic to and from the Polk County Site will not cause a

significant delay and the rail crossing intersections will maintain level of service A.

Archaeological and Historic Sites

108. The Florida Department of State, Division of Historical Resources, has stated that because of the location of the Polk County Site, it is unlikely that any significant archaeological or historical sites will be affected.

Mandatory Reclamation of Mining Parcels

109. The Polk County Site is comprised of phosphate mining parcels, portions of which are subject to mandatory reclamation under the jurisdiction of DEP/BOMR. The mandatory mining parcels are currently owned by Estech, IMC, and USAC. FPC has entered into stipulations with each mining company agreeing to reclamation of the mandatory mining parcels in accordance with the conditions of certification proposed by DEP/BOMR. In those conditions, DEP has proposed to incorporate the reclamation conceptual plan modifications included in Appendix 10.9 of the SCA into the certification proceeding for the Polk County Site and has redesignated those conceptual plan modifications as EST-SC-CPH and IMC-NP-FPC. The portions of the site which will be developed by FPC will be released from mandatory reclamation requirements when FPC purchases the Polk County Site.

Variances

110. FPC has requested variances from certain reclamation standards set forth in Rule 16C-16.0051, Florida Administrative Code, which will be necessary until the affected mining parcels

on the Polk County Site are released from reclamation. FPC has requested a variance from Rule 16C-16.0051(5)(a), which requires artificial water bodies to have an annual zone of fluctuation, and Rule 16C-16.0051(5)(b), which requires submerged vegetation and fish bedding in artificially-created water bodies. The criteria in these rules are inappropriate for a cooling pond, because it is an industrial wastewater treatment facility which cannot be efficiently or safely operated with fluctuating water levels and aquatic vegetation zones. With regard to the construction of dams for the cooling pond, brine pond and solid waste disposal areas, FPC will need a variance from Rule 16C-16.0051(2)(a), which requires a 4:1 slope for dam embankments and Rule 16C-16.0051(9)(b) and (c), which requires vegetation of upland areas, which may include dam embankments. Dams for the cooling pond, brine pond and solid waste disposal areas will have steeper slopes and the interiors of the dams will be concrete blanket revetments, synthetic liners or solid waste consistent with the industrial purposes for which these facilities have been constructed. Access to these areas will be controlled to prevent any potential safety hazard. Finally, FPC will need a variance from Rule 16C-16.0051(11)(b)(4), which requires reclamation to be completed within two years after mining operations are completed. Construction of the Polk County Site requires extensive dewatering and earthwork which cannot be completed within this timeframe.

111. Applications for variances from mining reclamation criteria were included in Appendix 10.9 of the SCA and have been

incorporated into the certification proceeding for the Polk County Site. DEP has redesignated these variance applications as EST-SC-FPC-V and IMC-NP-FPC-V. These variances are appropriate and should be granted.

Agency Positions and Stipulations

112. The Department of Environmental Protection, Southwest Florida Water Management District, and Polk County have recommended certification for the construction and operation of the initial 470 MW of natural gas combined cycle generating capacity and have recommended the determination that the Polk County Site has the ultimate capacity for 3,000 MW of natural gas and coal gas combined cycle generating capacity, subject to appropriate conditions of certification. No other state, regional or local agency that is a party to the certification proceeding has recommended denial of the certification for the construction of the initial 470 MW of generating capacity or determination of ultimate site capacity. Several agencies which expressed initial concern regarding certification of the Polk County Site have resolved those concerns with FPC and have entered into stipulations with FPC as discussed below.

113. The Florida Department of Transportation, the Game and Fresh Water Fish Commission, and the Department of Community Affairs have entered into stipulations with FPC recommending certification of the Polk County Site and a determination that the Polk County Site has the ultimate site capacity to support 3,000 MW of NGCC and CGCC generating capacity subject to

proposed conditions of certification. Hillsborough County, the Environmental Protection Commission of Hillsborough County, and the Tampa Port Authority have entered into a stipulation and agreement with FPC recommending certification of the backup natural gas pipeline corridor subject to proposed conditions of certification.

114. FPC and the agency parties have agreed on a set of conditions of certification for the Polk County Site. Those conditions are attached as Appendix A to this Recommended Order.

CONCLUSIONS OF LAW

115. The Division of Administrative Hearings has jurisdiction over the parties and subject matter of this proceeding. Section 403.508 (3), Florida Statutes (1991).

116. This proceeding was held pursuant to the Florida Electrical Power Plant Siting Act, Chapter 403, Part II, Florida Statutes.

117. In accordance with Chapter 403 and 120, Florida Statutes, and Chapter 17-17, Florida Administrative Code, proper notice was given to all persons and parties entitled thereto as well as to the general public. All necessary and required governmental agencies were parties to this proceeding, and required reports and studies were completed and presented.

118. The State of Florida Department of Environment Protection and other participating agencies either have recommended, or do not object to, certification of the construction and operation for the first 470 MW of generating capacity and certification of the FPC Polk County Site as having

the capacity to accommodate 3,000 MW of natural gas and coal gas-fired combined cycle generating capacity, subject to this Order and the attached Conditions of Certification.

119. The Applicant (FPC) has met its burden of proving that the Polk County Site project is entitled to certification, subject to the Conditions of Certification attached as Appendix A. The construction and operational safeguards for the Polk County Site are technically sufficient for the welfare and protection of the citizens of Florida, and are reasonable and available methods to achieve that protection. The proposed Polk County Site, if constructed, maintained, and operated in accordance with this Order and the attached Conditions of Certification, will produce minimal adverse affects on human health, the environment, the ecology of the land and its wildlife, and the ecology of State waters and their aquatic wildlife. Certification for the construction and operation of the first 470 MW of generating capacity is consistent with the goal of abundant, low cost electrical energy and will effect a reasonable balance between those minimal environmental impacts which will occur and the PSC-determined need for the first 470 MW of generating capacity at the Polk County Site.

120. The FPC Polk County Site, if constructed and operated in accordance with this Order and the attached Conditions of Certification, is compatible with the State Comprehensive Plan, Chapter 187, Florida Statutes, the Central Florida Regional Planning Council Comprehensive Regional Policy Plan, the Tampa Bay Regional Planning Council Regional Policy

Plan, the Hillsborough County Comprehensive Plan and the Polk County Comprehensive Plan.

121. The FPC Polk County Site, if constructed and operated in accordance with this Order and the attached Conditions of Certification, will comply with the applicable nonprocedural requirements of all agencies with jurisdiction over the Polk County Site.

122. A zone of discharge for discharges into groundwater is necessary for the operation of the Polk County Site and should be granted in accordance with the recommended Conditions of Certification.

123. The conceptual plan modifications for the mandatory phosphate mining reclamation plans and the variances from phosphate mining reclamation standards are necessary and appropriate based on the construction plans for the Polk County Site and should be granted subject to the attached Conditions of Certification.

RECOMMENDATION

Based on the foregoing Findings of Facts and Conclusions of Law, it is RECOMMENDED that:

1. Florida Power Corporation be granted certification pursuant to Chapter 403, Part II, Florida Statutes, for the location, construction and operation of 470 MW of combined cycle generating capacity as proposed in the Site Certification Application and in accordance with the attached Conditions of Certification.

2. Florida Power Corporation's Polk County Site be certified for an ultimate site capacity of 3,000 MW fueled by

coal gas, natural gas, and fuel oil subject to supplemental application review pursuant to 403.517, Florida Statutes, and Rule 17-17.231, Florida Administrative Code, and the attached Conditions of Certification.

3. A zone of discharge be granted in accordance with the attached Conditions of Certification.

4. The conceptual plan modifications (EST-SC-CPH and IMC-NP-FPC) for the mandatory phosphate mining reclamation plans be granted subject to the attached Conditions of Certification.

5. The variances from reclamation standards (EST-SC-FPC-V and IMC-NP-FPC-V) as described herein be granted subject to the attached Conditions of Certification.

DONE AND ENTERED this 3rd day of December, 1993, in Tallahassee, Florida.

DIANE K. KIESLING, Hearing Officer
Division of Administrative Hearings
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Filed with the Clerk of the Division of Administrative Hearings this 3rd day of December, 1993.

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NOTICE OF RIGHT TO SUBMIT EXCEPTIONS

All parties have the right to submit written exceptions to this Recommended Order. All agencies allow each party at least 10 days in which to submit written exceptions. Some agencies allow a larger period within which to submit written exceptions. You should contact the agency that will issue the final order in this case concerning agency rules on the deadline for filing exceptions to this Recommended Order. Any exceptions to this Recommended Order should be filed with the agency that will issue the final order in this case.

Case No. 92-5308EPP

APPENDIX A TO THE RECOMMENDED ORDER
IN CASE NO. 92-5308EPP

RECOMMENDED CONDITIONS OF CERTIFICATION

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
FLORIDA POWER CORPORATION
POLK COUNTY SITE
CASE NO. PA 92-33

11/29/93

CONDITIONS OF CERTIFICATION

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11/29/93

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
FLORIDA POWER CORPORATION
POLK COUNTY SITE
PA 92-33

CONDITIONS OF CERTIFICATION

I. GENERAL

A. Definitions

The meaning of the terms used herein shall be governed by the definitions contained in Chapters 403, 378, 373, 372, and 253, Florida Statutes (F.S.), and any regulation adopted pursuant thereto and the statutes and regulations of any agency. In the event of any dispute over the meaning of a term used in these conditions which is not defined in such statutes or regulations, such dispute shall be resolved by reference to the most relevant definitions contained in any other state or federal statute or regulation or, in the alternative, by the use of the commonly accepted meaning as determined by the Department. As used herein:

1. "Application" shall mean the Site Certification Application (SCA) for the Polk County Site Project, as supplemented.

2. "DEP" shall mean the Florida Department of Environmental Protection.

3. "DHR" shall mean the Florida Department of State, Division of Historical Resources.

4. "Emergency conditions" shall mean urgent circumstances involving potential adverse consequences to human life or property as a result of weather conditions or other calamity, and necessitating new or replacement power plant, fuel facilities, gas pipeline, reclaimed water pipeline, transmission lines, or access facilities.

5. "Feasible" or "practicable" shall mean reasonably achievable considering a balance of land use impacts, environmental impacts, engineering constraints, and costs.

6. "GFWFC" shall mean the Florida Game and Fresh Water Fish Commission.

7. "FPC" shall mean Florida Power Corporation (FPC).

8. "Power plant" shall mean the electric power generating equipment and appurtenances to be constructed on the Polk County Site in Polk County, as generally depicted in the Application.

9. "Project" shall mean the FPC Polk County Site (PCS) and all associated facilities, including: the power plant, gas pipeline, transmission lines and related facilities; and the cooling reservoir and related facilities.

10. "SWFWMD" shall mean the Southwest Florida Water Management District.

11. "ISO" shall mean International Organization for Standardization, ISO 3977-1978(E) standard conditions for gas turbines = 14.7 psia, 15°C, relative humidity 60 percent.

B. Applicable Rules

The construction and operation of the PCS shall be in accordance with all applicable provisions of at least the following regulations of DEP: Chapters 17-2, 17-4,17-814, 17-256, 17-296, 17-297, 17-301, 17-302, 17-531, 17-532, 17,520, 17-522, 17-550, 17-555, 17-560, 17-610, 17-650, 17-660, 17-701, 17-730, and 17-814, Florida Administrative Code (F.A.C.), or their successors as they are renumbered.

II. CHANGE IN DISCHARGE

All discharges or emissions authorized herein shall be consistent with the terms and conditions of this certification. The discharge of any regulated pollutant not identified in the application, or more frequent than, or at a level in excess of that authorized herein, shall constitute a violation of the certification. Any anticipated facility expansions beyond the certified initial nameplate capacity of 470 MW, production increases, or process modifications which may result in new, different, or increased discharges of pollutants, change in type of fuel as described in XIII.A., or expansion in electric generation capacity shall be reported by submission of a supplemental application pursuant to Chapter 403, F.S.

III. GENERAL CONDITIONS

A. Facilities Operation

1. FPC shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by FPC to achieve compliance with the terms and conditions of this certification. In the event of a malfunction of an electric generating unit's pollution control system, that unit's load shall be shifted to any or all of the remaining units having a properly functioning pollution control system, and the malfunctioning unit shall be promptly shut down.

2. In the event of a prolonged [thirty (30) days or more] equipment malfunction or shutdown of air pollution control equipment during plant operations, operation may be allowed to resume and continue to take place under an appropriate Department order, provided that FPC demonstrates that such operation will be in compliance with all applicable ambient air quality standards and PSD increments, solid waste rules, domestic waste rules and industrial waste rules. During such malfunction or shutdown, the operation of the Polk County Site (PCS) shall comply with all other requirements of this certification and all applicable state and federal emission standards not affected by the malfunction or shutdown which is the subject of the Department's order. Operational stoppages exceeding two hours for air pollution control systems or four hours for other systems or operational malfunctions as defined in the operational contingency plans as specified in Conditions XIII.B.6 and XXI.B.10 are to be reported as specified in Condition III.B. Identified operational malfunctions which do not stop operation but do compromise the integrity of the operation shall be reported to the Southwest District office as specified in Condition III.B.

3. FPC shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by FPC to achieve compliance with the conditions of this Certification, and are required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the approval and when required by Department rules.

B. Noncompliance Notification

If, for any reason, FPC (defined as the Applicant or its successors and/or assigns) does not comply with or will be unable to comply with any limitation specified in this certification, FPC shall notify the Southwest District office of the Department of Environmental Protection by telephone within a working day that said noncompliance occurs and shall confirm this in writing at 3804 Coconut Palm Drive, Tampa, Florida 33619-8318 within seventy-two (72) hours of becoming aware of such conditions, and shall supply the following information:

1. A description of any discharge and cause of noncompliance; and,

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

C. Safety

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

D. Enforcement

1. The Department may take any and all lawful actions as it deems appropriate to enforce any condition of this certification.

2. Any participating agency party (federal, state, local) may take any and all lawful actions to enforce any condition of this certification that is based on the rules of that agency. Prior to initiating such action the agency head shall notify the Secretary of that agency's proposed action.

E. Design and Performance Criteria

The power plant may be operated at up to 120 percent of the maximum electrical output at ISO conditions projected from design information without the need for modifying these conditions. Treatment or control facilities or systems installed or used to achieve compliance with the terms and conditions of this certification are not to be bypassed without prior DEP approval.

F. Certification

1. The terms, conditions, requirements, limitations and restrictions set forth in these conditions of certification are binding and enforceable pursuant to Sections 403.141, 403.161, 403.514, 403.727, or 403.859 through 403.861, F.S. FPC is placed on notice that the Department will review this approval periodically and may initiate enforcement action for any violation of these conditions.

2. This approval is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this approval may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6), 403.511, and 403.722(5), F.S., the issuance of this approval does not convey

any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This approval is not a waiver of or approval of any other Department approval that may be required for other aspects of the total project under federally delegated programs which are not addressed in this certification.

4. This certification does not relieve FPC from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this approved source, or from penalties therefore; nor does it allow FPC to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

5. In accepting this certification, FPC understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this approved source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the approved source arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

6. FPC agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, FPC does not waive any other rights granted by Florida Statutes or Department rules.

7. This certification is transferable only upon Department approval in accordance with Section 403.516, F.S., Rules 17-4.120 and 17-730.300, F.A.C., as applicable. FPC shall be liable for any noncompliance of the approved activity until the transfer is approved by the Department.

8. These conditions of certification, or a copy thereof, shall be kept at the work site of the approved activity.

9. FPC shall comply with the following:

a. Upon request, FPC shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b. FPC shall hold at the facility, corporate headquarters, or other location designated by this approval records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the approval, copies of all reports required by this approval, and records of all data used to complete the application for this approval. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

1) the date, exact place, and time of sampling or measurements;

2) the person responsible for performing the sampling or measurements;

3) the dates analyses were performed;

4) the person responsible for performing the analyses;

5) the analytical techniques or methods used; and,

6) the results of such analyses.

10. When requested by the Department, FPC shall within a reasonable time furnish any information required by law which is needed to determine compliance with the certification. If FPC becomes aware that the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

G. Laboratories and Quality Assurance

1. FPC shall ensure that all laboratory analytical data submitted to the Department, as required by this permit, must be from a laboratory which has a currently valid and Department approved comprehensive Quality Assurance Plan (QAP) [or a QAP pending approval] for all parameters being reported, as required by Chapter 17-160, F.A.C.

2. When a contract laboratory is used to analyze samples required pursuant to this permit, FPC is required to have the samples taken by qualified personnel following U.S. Environmental Protection Agency (EPA) and Department approved sampling procedures and chain-of-custody requirements. All chain-of-custody records must be retained by the contract laboratory for at least three (3) years and made available to the Department immediately upon request.

3. When an in-house laboratory is used to analyze samples required pursuant to this permit, FPC is required to have the samples taken by a qualified technician following EPA and Department approved sampling procedures and chain-of-custody requirements. All chain-of-custody records must be retained on-site for at least three (3) years and made available to the Department immediately upon request.

H. Post-Certification Submittals

1. Purpose of Submittals

Conditions of certification which provide for the post-certification submittal of information to DEP by FPC are for the purpose of facilitating DEP's monitoring of the effects arising from the location of the pipeline ROWs, transmission line ROW and the construction and maintenance of the transmission line and plant site. This monitoring is for DEP to assure, in consultation with other agencies with applicable regulatory jurisdiction, continued compliance with the conditions of certification, without any further agency action.

2. Filings

All post-certification submittals of information by FPC are to be filed with DEP. Copies of each submittal shall be simultaneously submitted to any other agency indicated in the Specific Condition requiring the post-certification submittal.

3. Completeness

The Department of Environmental Protection shall promptly review each post-certification submittal for completeness. This review shall include consultation with the other agencies receiving the post-certification submittal. For the purposes of this condition, completeness shall mean that the information submitted is both complete and sufficient. If found to be incomplete, FPC shall be so notified. Failure to issue such a notice within 45 days after filing of the submittal shall constitute a finding of completeness.

4. Interagency Meetings

Within 60 days of the filing of a complete post-certification submittal, DEP may conduct an interagency meeting with other agencies which received copies of the submittal. The purpose of such an interagency meeting shall be for the agencies with regulatory jurisdiction over the matters addressed in the post-certification submittal to discuss whether reasonable assurance of compliance with the conditions of certification has been provided. Failure of any agency to attend an interagency meeting shall not be grounds for DEP to withhold a determination of compliance with these conditions nor to delay the time frames for review established by these conditions.

5. Reasonable Assurance of Compliance

Within 90 days of the filing of a complete post-certification submittal, DEP shall give written notification to FPC and the agencies to which the post-certification information was submitted of its determination whether there is reasonable assurance of compliance with the conditions of certification. If it is determined that reasonable assurance has not been provided, FPC shall be notified with particularity and possible corrective measures suggested. Failure to notify FPC in writing within 90 days of receipt of a complete post-certification submittal shall constitute a compliance determination.

6. Commencement of Construction

If DEP does not object within the time period specified in paragraph 5. above, FPC may begin construction pursuant to the terms of the conditions of certification and the subsequently submitted construction details.

IV. ADVERSE IMPACT

FPC shall take all reasonable steps to minimize any adverse impact resulting from noncompliance with any limitation specified in this certification, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

V. RIGHT OF ENTRY

FPC shall allow during operational or business hours authorized representatives of the Florida Department of Environmental Protection and representatives of the SWFWMD and Polk County upon the presentation of credentials:

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

2. To have access during normal business hours (Monday - Friday, 9:00 a.m. to 5:00 p.m.) to any records required to be kept under the conditions of this certification for examination and copying;

3. To inspect and test any monitoring equipment or monitoring method required in this certification and to sample any discharge or pollutants, or monitor any substances or parameters at any location reasonably necessary to assure compliance with this certification or Department rules;

4. To assess any damage to the environment or violation of ambient standards; and,

5. Reasonable time may depend on the nature of the concern being investigated.

VI. REVOCATION OR SUSPENSION

This certification may be suspended or revoked for violations of any of its conditions pursuant to Section 403.512, F.S.

VII. CIVIL AND CRIMINAL LIABILITY

This certification does not relieve FPC from civil or criminal penalties for noncompliance with any conditions of this certification, applicable rules or regulations of the Department or Chapter 403, F.S., or regulations thereunder.

Subject to Section 403.511, F.S., this certification shall not preclude the institution of any legal action or relieve FPC from any responsibilities or penalties established pursuant to any other applicable state statutes, or regulations.

VIII. PROPERTY RIGHTS

The issuance of this certification does not convey any property rights in either real or personal property, nor any exclusive privileges, nor does it authorize any injury to public or private property or any invasion of personal rights nor any infringement of federal, state or local laws or regulations.

This certification conveys no title to land or water, does not constitute state recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

IX. SEVERABILITY

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

X. REVIEW OF SITE CERTIFICATION

The certification shall be final unless revised, revoked, or suspended pursuant to law. At least every five years from the date of issuance of certification the Department may review these conditions of certification and propose any required changes.

XI. MODIFICATION OF CONDITIONS

Pursuant to Subsection 403.516(1), F.S., the Board hereby delegates the authority to the Department to modify any condition of this certification.

All other modifications to these conditions shall be made in accordance with Section 403.516, F.S.

XII. CONSTRUCTION

A. Standards and Review of Plans

1. The facility shall be constructed pursuant to the design standards presented in the application and the standards or plans and drawings submitted and signed by an engineer registered in the state of Florida. The Applicant shall present specific facility plans, as developed, for review by the Southwest District office at least 120 days prior to construction of those portions of the facility for which the plans are then being submitted, unless other time limits are specified in the following conditions herein. Specific Southwest District office acceptance of plans will be required based upon a determination of consistency with approved design concepts, regulations and these Conditions prior to initiation of construction of any: industrial waste treatment facilities; domestic waste treatment facilities; potable water treatment and supply systems; ground water monitoring systems, off-site water and wastewater pipelines; transmission lines; stormwater control systems; solid waste disposal areas; and hazardous, or toxic material handling facilities or areas. Review and action by the Southwest District office on said plans shall be accomplished pursuant to the post-certification procedure in Condition III. in a timely fashion in accordance with Chapter 120, F.S., from the date of a complete submittal of such plans and any action may be subject to review pursuant to Chapter 120, F.S.

2. Ninety (90) days prior to the anticipated date of first commercial operation, FPC shall provide the Department with an itemized list of any changes made to the facility design and operation plans since the time of the approval of these conditions. This pre-operational review of the final design and operation shall demonstrate continued compliance with Department rules and standards.

B. Control Measures

1. Stormwater Run-off

To control run-off during construction which may reach and thereby pollute waters of the state, necessary measures shall be utilized to settle, filter, treat or absorb silt-containing or pollutant-laden stormwater to ensure against

spillage or discharge of excavated material that may cause turbidity in excess of 29 Nephelometric Turbidity Units above background in waters of the state. Control measures may consist of sediment traps, barriers, berms, and vegetation plantings. Exposed or disturbed soil shall be protected and stabilized as soon as possible to minimize silt and sediment laden run-off. The pH of the run-off shall be kept within the range of 6.0 to 8.5. FPC shall comply with Florida Administrative Code Chapters 17-25, and 40D-4. FPC shall complete the forms required by 40D-4 and submit those forms and the required information to the SWFWMD for any modifications that might occur.

2. Open Burning

Open burning in connection with initial land clearing may be conducted in accordance with Chapter 17-256, F.A.C., Chapter 5I-2, F.A.C., Uniform Fire Code Section 33.101 Addendum, and any other applicable county regulation.

Any burning of construction generated material, after initial land clearing that is allowed to be burned in accordance with Chapter 17-256, F.A.C., shall be approved by the Southwest District office in conjunction with the Division of Forestry and any other county regulations that may apply. Burning shall not occur unless approved by the appropriate agency or if the Department or the Division of Forestry has issued a ban on burning due to fire safety conditions or due to air pollution conditions.

3. Sanitary Wastes

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

4. Solid Wastes

Solid wastes resulting from construction shall be disposed of in accordance with the applicable regulations of Chapter 17-701, F.A.C.

5. Noise

Construction noise shall not exceed either local noise ordinance specifications, or those noise standards imposed by zoning.

6. Dust and Odors

FPC shall employ proper odor and dust-control techniques to minimize odor and fugitive dust emissions. The applicant shall employ control techniques sufficient to prevent nuisance conditions on adjoining property.

7. Dewatering Operations

The dewatering operations during construction shall be carried out according to final dewatering and surface water management plans approved by SWFWMD.

8. Historical or Archaeological Finds

If historical or archaeological artifacts, such as Indian canoes, are discovered at any time within the project site, FPC shall notify the DEP Southwest District office and the Bureau of Historic Preservation, Division of Archives, History and Records Management, R.A. Gray Building, Tallahassee, Florida 32399, telephone number (904) 487-2073.

C. Environmental Control Program

An environmental control program shall be established under the supervision of a Florida registered professional engineer to assure that all construction activities conform to applicable environmental regulations and the applicable Conditions of Certification. If a violation of standards, harmful effects or irreversible environmental damage not anticipated by the application or the evidence presented at the certification hearing are detected during construction, FPC shall notify the Southwest District office as required by Condition III.B.

D. Reporting

1. Notice of commencement of construction shall be submitted to the Southwest District office within 15 days after initiation. Starting three (3) months after construction commences, a quarterly construction status report shall be submitted to the Southwest District office. The report shall be a short narrative describing the progress of construction.

2. Upon or immediately prior to completion of construction of the facility or a certified phase thereof and upon or immediately prior to completion of all necessary preparation for the operation of the onsite potable water supply, domestic or industrial waste treatment facility, ground water monitoring system, brine pond, or solid waste disposal areas, the Southwest District office will be notified of certification of construction completion and a date on which a site or facility inspection can be performed in accordance with Condition V.

XIII. AIR

The construction and operation of Polk County Site (Project) shall be in accordance with all applicable provisions of Chapters 17-210 to 297, F.A.C. The following emission limitations and conditions reflect BACT determinations for the Phase IA - 470 MW (two combined cycle combustion turbines and auxiliary equipment) of generating capacity for which the need has been determined. BACT determinations for the remaining phases will be made upon review of supplemental applications. In addition to the foregoing, the Project shall comply with the following conditions of certification as indicated.

A. General Requirements

1. The maximum heat input to each combustion turbine (CT) at an ambient temperature of 59° F shall neither exceed 1,510 MMBtu/hr while firing natural gas, nor 1,730 MMBtu/hr while firing fuel oil. Heat input may vary depending on ambient conditions and the CT characteristics. Manufacturer's curves or equations for correction to other temperatures shall be provided to DEP for review 90 days after selection of the CT. Subject to approval by the Department for technical validity applying sound engineering principles, the manufacturer's curves shall be used to establish heat input rates over a range of temperatures for the purpose of compliance determination.

2. Each of the two CTs in Phase IA may operate continuously, i.e., 8,760 hrs/year.

3. Only natural gas (NG) or low sulfur fuel oil shall be fired in each combustion turbine and the auxiliary boiler. Only low sulfur fuel oil shall be fired in the diesel generator. The maximum sulfur content of the low sulfur fuel oil shall not exceed 0.05 percent, by weight.

4. The maximum heat input to the auxiliary boiler shall not exceed 99 MM Btu/hr when firing NG or No. 2 fuel oil with 0.05 percent maximum sulfur content (by weight). All fuel consumption must be continuously measured and recorded for the auxiliary boiler.

5. The maximum allowable fuel oil consumption for the two turbines is 13,762,806 gallons per year, which is equivalent to an aggregate of 1,000 hours per year of operation at full load.

6. FPC shall have the option of installing duct module(s) suitable for possible future installation of an oxidation catalyst and/or SCR equipment on each combined cycle generating unit. In the event that the module(s) are not installed in the Heat Recovery Steam Generator (HRSG), the retrofit costs associated with not making provisions for such technology (initially) shall not be considered in any future

economic evaluation to justify not installing SCR or an oxidation catalyst.

7. Fugitive dust emissions during the construction period shall be minimized by covering or watering dust generation areas.

8. If site construction does not commence on Phase IA (470 MW) within 18 months of issuance of this certification, then FPC may request an extension of the 18-month period, provided that such request is received by the Department's Bureau of Air Regulation at least 90 days prior to the expiration date. Such a request shall identify the progress made toward commencement of the construction of the site and the expected time required to start and complete construction of the initial phase. The Department may grant the extension upon a satisfactory showing that the extension is justified.

Units to be constructed or modified in later phases of the project will be reviewed under the supplementary review process of the Power Plant Siting Act. If site construction has not commenced within 18 months of issuance of this certification, then FPC shall obtain from DEP a review and, if necessary, a modification of the BACT determination and allowable emissions for the unit(s) on which construction has not commenced [40 CFR 52.21(r)(2)].

B. Emission Limits

1. The maximum allowable emissions from two CTs, when firing natural gas or low sulfur fuel oil, in accordance with the BACT determination, shall not exceed the following, at 59° F (except during periods of start up, shutdown, malfunction and load change):

		EMISSIONS LIMITATIONS		
POLLUTANT	FUEL	BASIS(g)	LB/HR/CT(a)	TPY(b)
NO_x	Gas	12 ppmvd(h)	73	639
	Oil	42 ppmvd(c)	305	153
VOC (d)	Gas	7 ppmvw	10.4	91
	Oil	7 ppmvw	11.2	5.6
CO	Gas	25 ppmvd	77	675
	Oil	30 ppmvd	93	47
PM/PM_{10}	Gas		9	79
	Oil(e)		17	8.5
SO_2	Gas		0.99	8.7
	Oil (f)		94	47
Visible Emissions	Gas	10 percent opacity		
	Oil	20 percent opacity		

a. Emission limitations in LB/HR/CT are blocked 24-hour averages (midnight to midnight). Pollutant emission rates may vary depending on ambient conditions and the CT characteristics. Manufacturer's curves for the emission rate correction to other temperatures at different loads shall be provided to DEP for review 90 days after selection of the CT. Subject to approval by the Department for technical validity applying sound engineering principles, the manufacturer's curves shall be used to establish pollutant emission rates over a range of temperatures for the purpose of compliance determination.

b. Annual emission limits (TPY) for natural gas are based on a total of two CTs operating at full load 8,760 hours per year (i.e., NO_X - 73 lbs/hr X 2 CTs X 8,760 hrs/yr X 1 ton/2,000 lbs = 639 TPY). Annual emission limits (TPY) for fuel oil are based on full load operation for a total of 1,000 hours per year for the two CTs (i.e., NO_X - 305 lbs/hr X 1,000 hrs/yr X 1 ton/2,000 lbs = 153 TPY).

c. Fuel oil NO_X emissions are based on full load operation at ISO conditions and 15 percent oxygen. For fuel oil firing, NO_X levels of 42 ppmvd at 15 percent O_2 are based on a fuel bound nitrogen content of 0.015 percent or less. The emission limit for NO_X is adjusted as follows for higher fuel nitrogen contents up to a maximum of 0.030 percent by weight:

FUEL BOUND NITROGEN (% BY WEIGHT)	NOX LEVELS (PPMVD @ 15%O_2)	NOX EMISSIONS LB/HR/CT	NOX EMISSIONS TPY
0.015 or less	42	305	153
0.020	44	320	160
0.025	46	334	167
0.030	48	349	175

using the formula STD = 0.0042 + F where:

STD = allowable NO_X emissions (percent by volume at 15 percent O_2 and on a dry basis).

F = NO_X emission allowance for fuel-bound nitrogen defined by the following table:

FUEL-BOUND NITROGEN (% BY WEIGHT)	F (NOX % BY VOLUME)
0 < N < 0.015	0
0.015< N < 0.03	0.04(N-0.015)

where: N = the nitrogen content of the fuel (% by weight).

NO_x emissions limits are preliminary for the fuel oil specified in Specific Condition No. A.3. FPC shall submit fuel bound nitrogen content data for the low sulfur fuel oil prior to commercial operation.

d. Exclusive of background concentrations.

e. PM/PM_{10} emission limitations are exclusive of sulfuric acid mist.

f. SO_2 emissions are based on a maximum of 0.05 percent sulfur in the fuel oil.

g. The values are the computational basis for the lb/hr numbers, which are the actual emission limitations. Once a combustion turbine manufacturer has been selected, it may be necessary to modify this basis. If this basis is to be modified, a professional engineer-certified equivalency analysis by the manufacturer must be submitted to the Department. The equivalency analysis will recommend an emissions normalizing basis (i.e., lb/hr, lb/MMBtu, lb/MWh, or ppmvd) and associated emissions appropriate for the specific manufacturer's equipment. If the equivalency analysis demonstrates an impact equal to or less than the current lb/hr limit, the Department shall amend the conditions to reflect the alternate basis. The characteristics and parameters of the CT selected will be reflected in other permit conditions, where appropriate.

h. 12 ppmvd at 15 percent O_2, not ISO corrected. The ISO corrected value is 15 ppmvd at 15 percent O_2. Compliance will be determined through the initial and annual compliance tests required in Condition XIII.C.1.

2. The following CT emissions, determined by BACT, are tabulated for PSD:

ESTIMATED EMISSIONS

POLLUTANT	METHOD OF CONTROL	Basis(b)
Benzene	Natural Gas	BACT

Inorganic Arsenic	No. 2 Fuel Oil(a)	BACT
Beryllium	No. 2 Fuel Oil(a)	BACT
Mercury	No. 2 Fuel Oil(a)	(c)
Pb	No. 2 Fuel Oil(a)	(c)

a. The No. 2 fuel oil shall have a maximum sulfur content of 0.05 percent.

b. Since these pollutants are inherent constituents in the fuel, the basis for control will be by specifying that only natural gas and No. 2 fuel oil can be fired at the facility.

c. Below PSD significant emission levels.

3. FPC will install a dry low NOx combustion turbine (CT). FPC shall make every practicable effort to achieve with that CT the lowest possible NO_x emission rate but must not exceed 73 lbs/hr (based on 12 ppmvd at 15 percent O_2 and 59° F) per CT (24-hour average, not including down time) on a continuous basis when firing natural gas.

4. After the initial compliance tests on the CTs (estimated to be in January, 1999), FPC shall operate a certified continuous emissions monitor for NO_x emissions, and collect 12 months of monitoring data. The monitor will at a minimum meet the requirements of 40 CFR 60 Appendix F quality assurance procedures. Within 17 months after the initial compliance test FPC shall prepare and submit for the Department's review an engineering report regarding the collection and the analysis of the data gathered from the monitor. In addition, this report shall include a conclusion regarding the lowest NO_x emission rate which can be consistently achieved with a reasonable operating margin taking into account long-term performance expectations and assuming good operating and maintenance practices. The report shall also include results of the testing requirements of Appendix F procedures and the actual CEM data for the period of the study in an acceptable format.

5. One month after submittal of the engineering report (estimated to be by June 2000), the Department will make a determination based on the engineering report submitted by FPC on the revised NO_x emission limits. If the data demonstrate that a NO_x emission rate of less than 73 lb/hr (based on 12 ppmvd at 15 percent O_2 and 59°F) is consistently achievable, the NO_x emission limits may be adjusted accordingly, but not lower than 55 lb/hr (based on 9 ppm at 15 percent O_2 and 59°F).

6. Excess emissions from a turbine resulting from start up, shutdown, malfunction, or load change shall be acceptable providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for a longer duration. FPC shall provide a general description of the procedures to be followed during periods of start up, shutdown, malfunction, or load change to ensure that the best operational practices to minimize emissions will be adhered to and the duration of any excess emissions will be minimized. The description should be submitted to the Department along with the initial compliance test data. The description may be updated as needed by submitting such update to the Department within thirty (30) days of implementation.

7. Operation of the auxiliary steam boiler shall be limited to a maximum of 100 hours per year and only during periods of cold CT startup, when no other source of steam is available or during periodic testing. The following emission limitations shall apply:

a. NO_x emissions shall not exceed 0.1 lb/MMBtu for natural gas firing or 0.2 lb/MMBtu for oil firing.

b. Sulfur dioxide emissions shall be limited by firing natural gas or low sulfur fuel oil with a maximum sulfur content of 0.05 percent by weight.

c. Visible emissions shall not exceed 10 percent opacity while burning natural gas, or 20 percent opacity (except for one six-minute period per hour during which opacity shall not exceed 27 percent), while burning low sulfur fuel oil.

8. Operation of the emergency diesel generator shall be limited to a maximum of 100 hours per year and only during periods of on site emergency power needs (when no other power source is available) or during periodic testing. The following emission limitations shall apply:

a. NO_x emissions shall not exceed 9.82 grams/hp-hr.

b. Sulfur dioxide emissions shall be limited by firing only low sulfur fuel oil with maximum sulfur content of 0.05 percent by weight.

c. Visible emissions shall not exceed 20 percent opacity.

C. Performance Testing

1. Initial (I) compliance tests shall be performed on each CT using both fuels. Testing of emissions shall be conducted with the source operating at capacity (maximum heat

input rate for the tested operating temperature). Capacity is defined as 90 - 100 percent of rated capacity. If it is impracticable to test at capacity, then sources may be tested at less than capacity; in this case subsequent source operation is limited to 110 percent of the test load until a new test is conducted. Once the unit is so limited, then operation at higher capacities is allowed for no more than fifteen days for purposes of additional compliance testing to regain the rated capacity in the permit, with prior notification to the Department. Annual (A) compliance tests shall be performed on each CT with the fuel(s) used for more than 400 hours in the preceding 12-month period. Tests shall be conducted using EPA reference methods in accordance with 40 CFR 60, Appendix A, as adopted by reference in Rule 17-297, F.A.C.:

a. Reference Method 5B for PM (I, A, for oil only).

b. Reference Method 9 for VE (I, A).

c. Reference Method 10 for CO (I, A).

d. Reference Method 20 for NOx (I, A).

e. Reference Method 18 for VOC (I, A).

f. Trace elements of Beryllium (Be) and Arsenic (As) shall be tested (I, for oil only) using EMTIC Interim Test Methods. As an alternative, Method 104 for Beryllium (Be) may be used; or Be and As may be determined from fuel analysis using either Method 7090 or 7091, and sample extraction using Method 3040 as described in the EPA solid waste regulations SW 846.

g. ASTM D 4294 (or equivalent) for sulfur content of distillate oil (I,A), which can be used for determining SO_2 emissions annually.

h. ASTM D 1072-80, D 3031-81, D 4084-82, or D 3246-81 (or equivalent) for sulfur content of natural gas (I, and A if deemed necessary by DEP).

Other DEP approved methods may be used for compliance testing after prior departmental approval.

2. The maximum sulfur content of the low sulfur fuel oil shall not exceed 0.05 percent by weight. Compliance shall be demonstrated in accordance with the requirements of 40 CFR 60.334 testing for sulfur content of the fuel oil in the storage tanks on each occasion that fuel is transferred to the storage tanks from any other source. Testing for fuel bound nitrogen content and for fuel oil lower heating value, shall also be conducted on the same schedule.

D. Monitoring Requirements

For each combined cycle unit, FPC shall install, operate, and maintain a continuous emission monitoring system (CEMS) (in accordance with 40 CFR 60, Appendix F) or use other approved alternate methods to monitor nitrogen oxides and, if necessary, a diluent gas (CO_2 or O_2). The Federal Acid Rain Program requirements of 40 CFR 75 shall apply when those requirements become effective within the state.

1. Each CEMS shall meet performance specifications of 40 CFR 60, Appendix B.

2. CEMS data shall be recorded and reported in accordance with Chapter 17-297.500, F.A.C., 40 CFR 60 and 40 CFR 75. The record shall include periods of start up, shutdown, and malfunction. Continuous compliance with condition XIII B.1. for NO_x shall be determined on a mass emission rate basis (LB/HR).

3. A malfunction means any sudden and unavoidable failure of air pollution control equipment or process equipment to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions.

4. The procedures under 40 CFR 60.13 and 40 CFR 75 shall be followed for installation, evaluation, and operation of all CEMS.

5. For purposes of the reports required under this permit, excess emissions are defined as any calculated average emission rate, as determined pursuant to Condition XIII.B.6. herein, which exceeds the applicable emission limits in Condition XIII.B.1.

E. Notification, Reporting and Recordkeeping

1. To determine compliance with the natural gas and fuel oil firing heat input limitation, FPC shall maintain daily records of natural gas and fuel oil consumption for each turbine and the heating value for each fuel. All records shall be maintained for a minimum of two years after the date of each record and shall be made available to representatives of the Department upon request.

2. The project shall comply with all the applicable requirements of Chapter 17, F.A.C., and 40 CFR 60 Subparts A and GG. The requirements shall include:

a. 40 CFR 60.7(a)(1) - By postmarking or delivering notification of the start of construction no more than 30 days after such date.

b. 40 CFR 60.7(a)(2) - By postmarking or delivering notification of the anticipated date of the initial start up of each CT and the auxiliary steam boiler not less than 30 days prior to such date.

c. 40 CFR 60.7(a)(3) - By postmarking or delivering notification of the actual start up of each turbine and the auxiliary steam boiler within 15 days after such date.

d. 40 CFR 60.7(a)(5) - By postmarking or delivering notification of the date for demonstrating the CEMS performance, no less than 30 days prior to such date.

e. 40 CFR 60.7(a)(6) - By postmarking or delivering notification of the anticipated date for conducting the opacity observations no less than 30 days prior to such date.

f. 40 CFR 60.7(b) - By initiating a recordkeeping system to record the occurrence and duration of any start up, shutdown or malfunction of a turbine and the auxiliary steam boiler, of any malfunction of the air pollution control equipment, and the periods when the CEMS is inoperable.

g. 40 CFR 60.7(c) - By postmarking or delivering a quarterly excess emissions and monitoring system performance report within 30 days after the end of each calendar quarter. This report shall contain the information specified in 40 CFR 60.7(c) and (d).

h. 40 CFR 60.8(a) - By conducting all performance tests within 60 days after achieving the maximum turbine and boiler firing rates, but not more than 180 days after the initial start up of each CT and the auxiliary boiler.

i. 40 CFR 60.8(d) - By postmarking or delivering notification of the date of each performance test required by this permit at least 30 days prior to the test date; and,

j. 17-297.345 - By providing stack sampling facilities for each turbine and the auxiliary steam boiler.

All notifications and reports required by this specific condition shall be submitted to the Department's Air Program, within the Southwest District office. Performance test results shall be submitted within 45 days of completion of such test.

3. The following information shall be submitted to the Department's Bureau of Air Regulation within 90 days after selection of each, respectively:

a. Description of the final selection of the turbines, the auxiliary steam boiler and diesel generator for installation at the facility. Descriptions shall include the specific make and model numbers, any changes in the proposed method of operation, fuels, emissions or equipment.

b. Description of the CEMS selected. Description shall include the type of sensors, the manufacturer and model number of the equipment.

4. The following protocols shall be submitted to the Department's Air Program, within the Southwest District office for approval;

a. CEMS Protocol - Within 60 days after selection of the CEMS, but prior to the initial startup, a CEMS protocol describing the system, its installation, operating and maintenance characteristics and requirements. The protocol shall meet the requirements of 40 CFR 60.13, Appendix B and Appendix F. The Federal Acid Rain Program requirements of 40 CFR 75 shall apply when those requirements become effective within the state.

b. Performance Test Protocol - At least 90 days prior to conducting the initial performance tests required by this permit, FPC shall submit to the Department's Air Program, within the Southwest District office, a protocol outlining the procedures to be followed, the test methods and any differences between the reference methods and the test methods proposed to be used to verify compliance with the conditions of this permit. The Department shall approve the testing protocol provided that it meets the requirements of this permit.

F. Modifications

FPC shall give written notification to the Department when there is any modification to this facility. This notice shall be submitted sufficiently in advance of any critical date involved to allow sufficient time for review, discussion, and revision of plans, if necessary. Such notice shall include, but not be limited to, information describing the precise nature of the change; modifications to any emission control system; production capacity of the facility before and after the change; and the anticipated completion date of the change.

XIV. SURFACE WATER DISCHARGES

A. Plant Effluents

FPC shall not discharge any cooling system, demineralizer regeneration, floor drainage, treated sewage, or other process wastewaters resulting from the operation of the FPC facility into any surface waters of the state.

B. Reporting of Critical Spills

FPC shall report all critical (having potential to significantly pollute surface or ground waters) spills of regulated liquid or regulated liquid-solid materials, not confined to a building, curbed impervious surface, or similar containment structure, to the Department by phone immediately after the discovery and submit a written report within 48 hours, excluding weekends, from the original notification. The written report shall include, but not be limited to, a detailed description of how the spill occurred, the name and chemical make-up (include any MSDS sheets) of the substance, the amount spilled, the time and date of the spill, the name and title of the person who first reported the spill, the areal size of the spill and surface types (impervious, ground, waterbodies, etc.) it impacted, the cleanup procedures taken and status of completion, and include a map or aerial photograph showing the extent and paths of the material flow. Any deviation from this requirement must receive prior approval from the Department.

XV. DOMESTIC WASTEWATER

1. No portion of the domestic wastewater collection and transmission system, treatment plant or reuse/disposal system, excluding the cooling pond, may be constructed without prior written approval from the Department. Construction of any portion of the domestic wastewater facility without the prior written approval of the Department will be considered a violation of the Conditions of Certification.

2. In order to obtain approval to construct a domestic wastewater treatment plant and reuse/disposal system, excluding the cooling pond, the following forms, reports, plans and data as applicable, properly executed and appropriately signed and sealed by an engineer registered in the state of Florida must be submitted to the Department at least one hundred eighty (180) days prior to proposed date for commencement of construction:

a. The preliminary design report in accordance with Rule 17-600.715, F.A.C., and the Engineering Report required by Rule 17-610.310, F.A.C. (Minimum Class III Reliability features must be indicated. A Reduced Pressure Zone Backflow Preventer must be designated for potable water isolation.);

b. DER Form 17-604.900(1), Application to Construct a Domestic Wastewater Collection System, with supporting documents;

c. DER Form 17-600.910(1), Application to Construct a Domestic Wastewater Facility, with documentation;

d. DER Form 17-610.910(1), Application to Construct a Reuse/Land Application System, with documentation;

e. DER Form 17-640(1), Agricultural Use Plan, or DER Form 17-640(2), Dedicated Disposal Site Plan, with documentation;

f. 8-1/2" x 11" copies of:

1) WWTP and effluent site locations;

2) sludge disposal site, indicating all public or private drinking water wells within 0.5 miles;

3) roadmap, or drawing of roads leading to the WWTP; and,

4) flow process diagram, showing all piping, and planar and volumetric data.

g. Ground water monitoring plan proposal, i.e., to proposed reuse/disposal plan.

3. Department approval for construction of this domestic wastewater facility must be requested no earlier than 24 months nor later than six months prior to construction of that facility.

4. This approval is subject to the non-procedural provisions of Chapter 403, F.S., and F.A.C. Rules 17-3, 17-4, 17-300, 17-500 and 17-600 Series. FPC will be approved to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents, attached thereto or on file with the Department and made a part thereof and specifically described in the application.

5. The zone of discharge boundary and water quality compliance requirements are as specified in Condition of Certification XVIII.

6. Operation staffing will be in accordance with Chapter 17-699, F.A.C.

7. The discharge from the chlorine contact chamber shall be sampled in accordance with Chapter 17-601, F.A.C. and shall meet the limitations designated by the Department. They will include the following parameters: pH, CBOD5, TSS, Nitrate (N), total chlorine residual, FC and Flow.

8. The sludge shall be sampled after final treatment in accordance with Rule 17-640.700(1)(b), F.A.C., but prior to land application for the parameters listed below every twelve (12) months. A copy of the analyses shall be submitted with the monthly operation report for the following parameters:

Total Nitrogen	-	% dry weight
Total Phosphorus	-	% dry weight
Total Potassium	-	% dry weight
Cadmium	-	mg/kg dry weight
Copper	-	mg/kg dry weight
Lead	-	mg/kg dry weight
Nickel	-	mg/kg dry weight
Zinc	-	mg/kg dry weight
pH	-	standard units
Total Solids	-	%

9. Direct discharge from the reuse-disposal system to area surface waters of the state is not allowed. Surface discharge to such waters shall be considered a violation of this approval and FPC shall immediately report any such discharge to the Southwest District office of the Department of Environmental Protection.

10. FPC shall comply with all provisions of Chapter 17-640, F.A.C. and shall report any noncompliance or changes from the approved site plan to the Department.

11. Upon completion of construction FPC shall submit two (2) copies of the Certificate of Completion of Construction [DER Form 17-1.205(3)] signed and sealed by a registered engineer, to the DEP Southwest District office. Upon completion of construction and prior to placing the treatment plant or effluent disposal system into operation for any purpose other than testing for leaks and equipment operation, FPC shall submit a Notification That a Domestic Wastewater Facility Will Be Placed Into Operation [DER Form 17-600.910(3)] and, if applicable, submit an Application to Place a Public Access Reuse System in Operation [DER Form 17-610.910(3)], signed and sealed by a Registered Engineer, to the DEP Southwest District office.

12. FPC shall provide an approved flow measurement device on the sewage treatment plant to monitor the influent (ahead of any return flows) and/or effluent flow, as appropriate. For plants with design flow equal to or greater than 0.100 MGD, flow measurement shall be with a flow meter equipped with a recorder and an integrator or totalizer. The flow measurement device shall be calibrated at least annually, with evidence of calibration kept at the site of flow measurement, and submitted to the Department upon request.

13. FPC shall provide a weatherproof location for an on-site log book to monitor the daily activities of the certified operator. This log book shall record sign in/out times of the certified operator, list any maintenance performed and contain the signature and certification number of the operator.

14. FPC shall maintain all audible and visual alarm systems on the lift station(s) in operating condition at all times.

15. A reduced pressure zone backflow preventer shall be installed on any potable water supply to the treatment facility. No potable water outlet intended for human contact shall be located down-line of the backflow preventer.

16. The disinfection system shall be operated to maintain a minimum chlorine residual of 1.0 mg/L at the outfall from the chlorine contact chamber. A metering device for dosing chlorine to the effluent shall be utilized and the chlorine supply tank shall be inspected regularly to ensure proper operation.

17. Daily checks of the plant shall be performed by FPC or supplier, or its representative or agent five (5) days per week for all Class C and D plants pursuant to Rule 17-699.311(1), F.A.C.

18. FPC shall ensure that the construction and operation of this facility shall be as described in the application and supporting documents. Any change to this approval shall be submitted in writing to the Domestic Wastewater Program Manager for review and clearance prior to implementation. Changes of negligible impact to the environment and staff time will be reviewed by the Program Manager, cleared when appropriate and incorporated into this approval. Changes or modifications other than those described above and those addressed in a supplemental application or modification of site certification will require submission of a completed application and appropriate processing fee as per Section 17-4.050, F.A.C.

XVI. DRINKING WATER FACILITIES

A. Prior Approval

1. No portion of the potable water supply system or any portion of a water supply system that will be or is intended to be converted to potable water use at a later date may be constructed without prior written approval from the Department. Construction of any portion of the potable water supply system without the prior written approval of the Department will be considered a violation of the Conditions of Certification. Reference: F.A.C. Rules 15-555.350, .520(1), and (2).

2. In order to obtain approval to construct a potable water supply system which includes an on-site water treatment facility, the following information must be submitted to the Department no earlier than one year prior to the date that the water supply system is proposed for construction:

a. A completed and fully executed "Application to Construct a Public Drinking Water System" form which complies with the requirements of the nonprocedural rules and regulations of the Department in effect as of the date that the request for approval to commence construction of the system is made to the Department. Reference: F.A.C. Rules 17-4.050 and 17-555.500 and .520.

b. Copy of the well driller's well completion report for each well to be used as a potable water supply well. Reference: F.A.C. Rules 17-4.050 and 17-555.315, .520, and .530.

c. Complete water quality analysis of the raw water from each individual well to be used as a potable water supply well. Analysis of composite samples will not be accepted. The analysis must include all water quality parameters required for the classification of the water supply system being proposed pursuant to the rules and regulations of the Department in effect as of the date that the request for approval to construct the system is made to the Department. Each individual analysis must have been performed by a laboratory certified by the state to perform that particular potable water quality analysis and must have an analysis date within one (1) year of the date that the request for approval to construct the water supply system is made to the Department. Reference: F.A.C. Rules 17-4.050, 17-555.520 and .530 and 17-550.200(43), .300, .330, .400, .521(3), .550(3)(e), and .730(1) and (2).

d. Complete specifications for the material and workmanship for the entire potable water supply system for which the request for approval to construct is being made. The specifications must be signed and sealed by an engineer registered in the state of Florida and must provide

documentation that the material and workmanship will comply with all applicable rules and regulations of the Department in effect as of the date that the request for approval to construct is made to the Department. Reference: F.A.C. Rules 17-4.050, 17-555.520 and .530, and 21H-23.

e. Complete engineering drawings of the entire proposed potable water supply system for which approval to construct is being requested. The drawings must demonstrate full compliance with all applicable nonprocedural rules and regulations of the Department in effect as of the date that the request is made to the Department for approval to construct the system. The drawings must be signed and sealed by an engineer registered in the state of Florida. Reference: F.A.C. Rules 17-4.050, 17-555.520, 17-555.530, and 21H-23.

f. Site plan showing the location of each potable water supply well. The site plan must include all proposed and existing above and below grade facilities, natural formations (e.g., streams, creeks, etc.), structures, etc. within a minimum of a complete five hundred (500) foot radius of each well head; however, if any facility, natural formation, structure, etc. is located outside of the five hundred (500) foot radius and that facility, natural formation, structure, etc. has a setback distance from the well head greater than five hundred (500) feet established in applicable rules of the Department in effect as of the date that the request for approval to construct is made, then that facility, natural formation, structure, etc. must also be shown on the site plan requested here. The site plan must be certified for accuracy by the professional engineer registered in the state of Florida responsible for design of the potable water supply system. F.A.C. Rules 17-4.050, 17-555.312, .520, and .530, and 21H-23.

g. Signed and sealed comprehensive engineering report on the proposed potable water supply system which fully describes the project and basis of design. The report must include design data and such pertinent data to give an accurate understanding of the work to be undertaken and must provide supporting documentation that the potable water system as proposed will comply with all applicable nonprocedural rules and regulations of the Department in effect as of the date that the request for approval to construct the water supply system is made to the Department. Reference: F.A.C. Rules 17-4.050, 17-555.520 and .530, and 21H-23.

3. In order to obtain approval to construct an onsite water supply system where the potable water is to be supplied by an off-site public water supply system, the following information must be submitted to the Department no earlier than eighteen (18) months prior to nor later than six months prior to the date that the water supply system is proposed for construction:

a. A completed and fully executed application form which complies with the nonprocedural requirements of the rules and regulations of the Department in effect as of the date that the request for approval to construct the system is made to the Department; however, the Department will not accept "An Intent to Use a General Permit" for this project. Reference: F.A.C. Rules 17-4.050, 17-555.500, .520, and .530.

b. Complete specifications for the material and workmanship covering the entire potable water supply system for which the request for approval to construct is being made. The specifications must be signed and sealed by an engineer registered in the state of Florida and must provide documentation that the material and workmanship will comply with all applicable nonprocedural rules of the Department in effect as of the date that the request for approval to construct is made to the Department. Reference: F.A.C. Rules 17-4.050, 17-555.520, 17-555.530, and 21H-23.

c. Complete engineering drawings of the entire proposed potable water supply system for which approval to construct is being made. The drawings must demonstrate full compliance with all applicable nonprocedural rules and regulations of the Department in effect as of the date that the request for approval to construct is made to the Department. The drawings must be signed and sealed by an engineer registered in the state of Florida. Reference: F.A.C. Rules 17-4.050, 17-555.520, 17-555.530, and 21H-23.

d. Signed and sealed comprehensive engineering report on the potable water supply system which fully describes that project and basis of design. The report must include design data and such pertinent data to give an accurate understanding of the work to be undertaken and must provide supporting documentation that the potable water system as proposed will comply with all applicable nonprocedural rules and regulations of the Department in effect as of the date that the request for approval to construct the water supply system is made to the Department. Reference: F.A.C. Rules 17-4.050, 17-555.520, 17-555.530, and 21H-23.

e. Documentation that the public water supply system supplying the water has the capacity in its water treatment system to serve the project and that the existing water transmission line from that system's water treatment plant to the point of connection with water supply system FPC is proposing to construct has been designed and sized to provide sufficient water to meet the demand of the FPC project. Reference: F.A.C. Rules 17-4.050, 17-555.350, 17-555.520, and 17-555.530.

4. Prior to submitting any information to the Department for review of the proposed potable water supply system, all wells that are proposed for use as potable water supply wells and that will be included in the request for approval to construct the water supply system must have been constructed and fully developed with a temporary pump. All water samples for analysis of the water quality parameters that must be submitted with the request for approval to construct the water supply system must be collected using the temporary well pump. The temporary pump must be removed from each well once the well has been fully developed and the water samples collected. The well must be properly capped upon removal of the temporary pump until written approval to construct the potable water supply system has been issued by the Department. Reference: F.A.C. Rules 17-555.500, 17-555.520, and 17-555.530.

5. The information submitted in support of the request to construct the water supply system will be reviewed for completeness by the Department within thirty (30) days of receipt. If the submittal is determined to be incomplete, the Department will provide written notice to FPC of the deficiencies in their request. F.A.C. Rule 17-4.055 and § 120.60, F.S.

6. FPC must submit all information necessary to complete the request for approval to construct the potable water system within thirty (30) days of receipt of the Department's written notification that their submittal was incomplete. Reference: § 120.60, F.S.

7. The Department will be unable to approve for construction any water supply system that does not meet both the submittal and the reasonable assurance requirements of the nonprocedural rules and regulations of the Department in effect as of the date that the request for approval to construct was made. Reference: F.A.C. Rules 17-4.070 and 17-555.530.

8. The Department will be unable to approve for construction any water supply system which is to be served by an off-site public water supply system if that off-site system does not have the capacity in the water treatment system and/or in the water transmission system to serve the project or if there is no existing off-site system. Reference: F.A.C. Rules 17-4.070 and 17-555.530.

9. The Department will, within ninety (90) days from the date that the request for approval to construct the potable water supply system was deemed complete, either issue written approval for the construction of that system or notify FPC that their request did not meet the standards for approval pursuant to the nonprocedural rules and regulations of the Department in effect as of the date that the request for approval was submitted. Should the Department be unable to approve the

construction of the water supply system, the reason(s) for that determination will be included in the written notice to FPC. Within ninety (90) days of the receipt of the Department's notice that the proposed water supply system did not meet the standards for approval, FPC must submit all information necessary to provide the reasonable assurance necessary for approval of the original water supply system. If FPC finds that they cannot provide the reasonable assurance required pursuant to the rules and regulations of the Department for the potable water supply system as originally designed, FPC will have to submit to the Department a new request for approval to construct a system for which they are able to meet the nonprocedural submittal and reasonable assurance requirements. The new request will be subject to the nonprocedural submittal and reasonable assurance requirements established in the rules and regulations of the Department in effect as of the date that the new request is made to the Department and will be subject to the same review schedule as that for FPC's original request for approval. Reference: F.A.C. Rules 17-4.070, 17-555.530, and § 120.60, F.S.

B. Construction

1. FPC must retain the services of a project engineer registered in the state of Florida to observe that the construction of the water supply system is in accordance with the plans and specifications approved by the Department. The project engineer will be responsible for certifying to the Department that he/she observed the construction and that the construction conformed to the plans and specifications approved by the Department. Reference: F.A.C. Rule 17-555.520.

2. The Department must be notified in writing and prior written approval obtained for any changes, modification, or revision to be made to the project during construction. If there are any changes, modification, or revision made to a project approved by the Department without this prior written approval, the project will be considered to have been constructed without departmental approval, the construction will not be cleared for service, and the construction will be considered a violation of the Conditions of Certification. Reference: F.A.C. Rule 17-555.530.

3. The approval to construct the potable water supply system will be in effect for one (1) year from the date of issuance. All construction of the potable water supply system must be completed within this one (1) year period unless a written request for an extension of this date is made to the Department at least sixty (60) days prior to the expiration of the construction approval and written approval for an extension of the expiration date is issued by the Department. The expiration date of the construction approval may be extended on

a year-by-year basis; however, under no circumstances will the approval to construct the water supply system be extended beyond three (3) years from the date of the earliest water quality analysis unless the request for an extension of the expiration date is accompanied by an analysis of the raw water from each well for each water quality parameter required pursuant to the requirements of the rules and regulations of the Department in effect as of the date that the request for the extension is made. Such an analysis shall be made for each new well added to the potable water system after the initial system is constructed and approved. The water quality analysis report submitted with this request must have an analysis date no earlier than one year from the date that the request for an extension of the expiration date is made, must have been performed by a laboratory certified by the state to perform the analysis, and contain no water quality violations other than those which the water supply system was originally designed to address. The maximum length of time that the approval for the construction of the potable water system may be in effect is five (5) years from the date of the original approval. Should the construction of the water supply system not be completed within that five (5) year period, should FPC have failed to request a timely extension of the approval expiration date, or should any water quality analysis submitted with the request for an extension of the expiration date demonstrate a presence of a contaminant which the water treatment plant was not originally designed to handle, FPC will have to make a new request to the Department for approval to construct the potable water system. That request must meet the nonprocedural submittal and approval requirements of the rules of the Department in effect as of the date that the request for approval is submitted and will be subject to the same review schedule as the original request. Reference: F.A.C. Rules 17-4.050 and 17-555.530.

C. Operation

1. No portion of the potable water supply system constructed pursuant to this certification may be placed into service without the prior written approval of the Department. Placing any portion of the potable water supply system into service prior to receipt of this written approval will be considered as a violation of the Conditions of Certification. Reference: F.A.C. Rules 17-555.315, .340, and .345.

2. The Department will not issue approval to place the potable water supply system or any portion of that system into service unless the construction of the system or portion thereof had been approved for construction by the Department prior to the commencement of that construction. Reference: F.A.C. Rule 17-555.520.

3. In order to obtain approval to place the potable water supply system into service, FPC must make a written request for clearance to the Department. The request must be in

the form and/or manner stipulated in the letter authorizing construction of the potable water supply system and must include all information stipulated in that letter as being required to be submitted with the request for clearance, as well as, any information required for clearance of a potable water supply system contained in applicable rules and regulations of the Department in effect as of the date that the request for clearance is made. Reference: F.A.C. Rule 17-555.345 and .910.

4. The Department will issue a letter of clearance to place the water supply system into service within thirty (30) days of receipt of a written request for clearance provided that the request is accompanied by all necessary supporting documentation and meets the criteria for clearance contained in the applicable nonprocedural rules and regulations of the Department in effect as of the date that the request for clearance was made. Reference: § 120.60, F.S.

5. All construction or activity taking place in the vicinity of the potable water supply wells must conform with the setback distances from a potable water supply well established in the rules of the Department at the time that the construction or activity is proposed and must be coordinated with the Department. Reference: F.A.C. Rules 17-555.310 and 17-555.312.

6. FPC must provide, in accordance with applicable state rules, a certified water treatment plant operator who meets the staffing requirements for the type and capacity of the water treatment system cleared for service. Reference: F.A.C. Rules 17-555.350, 17-602.400, and 17-699.

7. The water meter at the potable water treatment plant(s) must be read at approximately the same time each day, seven days per week or continuously recorded, and both the meter reading and the gallons of water pumped to distribution recorded in the plant log. Reference: F.A.C. Rules 17-555.350, 17-555.910 and 17-602.360.

8. The certified water treatment plant operator must submit a report on the operation of the water treatment plant(s) to the Department monthly in the manner required by the rules and regulations of the Department. Reference: F.A.C. Rules 17-555.910 and 17-603.360.

9. The drinking water must be analyzed for all applicable water quality parameters to the degree and frequency required by the rules and regulations of the Department. The analysis must be performed in accordance with these rules and regulations and submitted to the Department in the format required by these rules and regulations. Reference: F.A.C. Rules 17-550 and 17-555.355.

10. The one day maximum day demand for the period of time covering the most recent twelve (12) months of operation of the water treatment plant may not exceed the capacity of the water treatment plant approved for construction and cleared for use by the Department. Should the demand on any one day during this twelve (12) month period exceed the capacity of the water treatment plant, this will be considered as a violation of both the Conditions of Certification and Chapter 403, F.S. Reference: F.A.C. Rule 17-555.350.

11. FPC must plan, design, obtain approval for, and construct all necessary modifications to their water supply system in a timely manner in order to provide sufficient capacity to meet the potable water demands of their system. Reference: F.A.C. Rule 17-555.350.

12. FPC must operate the water supply system in such a manner as to comply with the provisions of Chapter 403, F.S., and all the rules of the Department. Reference: F.A.C. Rules 17-555.320 and 17-555.350.

XVII. INDUSTRIAL WASTEWATER

A. Leachate Standards

FPC shall assure that the solid waste generated from the lime/soda ash softening system will meet the leachate standards established by the Toxicity Characteristic Leaching Procedure prior to disposal.

B. Brine Solids

The solids generated at the brine concentrator, lime/soda ash pretreatment, and neutralized demineralizer regeneration system must be concentrated to contain a volume of solids greater than 50 percent prior to disposal offsite.

C. Stormwater Control

FPC is responsible for the stormwater control in the solid waste retention areas. Stormwater or other surface water which comes into contact with the disposed solid waste or mixes with leachate shall be considered leachate and is subject to the requirements of Condition XXI.B.10.

D. IWT Design Review

No earlier than 24 months nor later than six months prior to construction of any unit or device for the treatment of industrial wastewater generated by this facility, appropriate design information plans and specifications for such unit or device shall be submitted to the Department for approval; provided, however, that this information for dam repair that is scheduled within nine months after site certification may be submitted no later than two months prior to construction. All information shall be submitted as specified in DER Form 17-1.204(2). No industrial wastewater treatment unit shall be constructed or operated without prior Department approval.

E. Cooling Pond Design

FPC shall ensure that the design and construction of the pond's dams be in accordance with best engineering practices and at least of similar stability as those required under the provisions of Chapter 17-672, F.A.C.

F. Vegetative Cover

FPC shall ensure that a vegetative or nonvegetative cover adequate to inhibit wind and water erosion shall be established and maintained on all exposed dam surfaces. Vegetative covering shall be maintained by FPC sufficiently low to permit visual inspection of the soil surfaces in critical areas outlined in Section 17-672.400(1), F.A.C.

G. Brine Pond

To ensure that the brine pond will not be a source of pollution to ground and surface water, the following site-specific standards shall apply:

1. General

The brine pond shall be designed, constructed, operated, maintained, closed and monitored in accordance with the Application and these Conditions of Certification.

2. Site-Specific Standards

a. There shall be no discharge of wastewater from the brine pond to surface waters of the state.

b. A 60-mil synthetic liner will be placed along the inside dam embankment and perimeter of the brine pond up to an area where the consolidated clay is at least 10 feet thick. The thickness of the consolidated clay liner will be determined using clay probings. The synthetic liner will be keyed into the consolidated clay liner to prevent seepage of brine beneath the synthetic liner. At least ninety days prior to construction of the synthetic liner, FPC shall submit to DEP a construction quality assurance plan for the installation of the synthetic liner.

c. A program to test and evaluate the impact of the brine on the permeability of the clay liner shall be implemented. The testing shall include pre-operation and operation phase programs. The pre-operation phase program shall consist of such tests as material classification, clay mineralogy, cation exchange capacity, and selected laboratory or field permeability test. Tests will be performed to assess impacts of the movement of brine through the clay on permeability.

FPC shall submit detailed testing programs and protocols to DEP for review at least three months prior to the commencement of the testing. FPC shall submit the pre-operation test report to DEP, including all test data, analysis, and conclusions at least six months prior to the start of brine pond operations.

The operation phase program shall consist of performing laboratory and/or field tests of the clays in the brine pond for confirmation testing and comparison to the pre-operation phase program. Tests shall be taken annually for the first five years

after initiation of brine production. Testing beyond this time frame will continue only if unfavorable impact is observed. Continued testing shall be at a frequency proposed by FPC and approved by DEP.

d. No RCRA hazardous waste as defined by 40 C.F.R. § 261.3 shall be deposited in the brine pond.

e. Ground water monitoring for the brine pond will be performed in accordance with the Ground Water Monitoring Plan set forth in Conditions of Certification XVIII.

f. At least ninety days prior to construction of the brine pond liner system, a quality control plan for liner construction and testing shall be submitted to DEP for review and approval. Upon approval the quality control plan shall be implemented.

g. FPC shall prepare a comprehensive operation plan that provides written instructions for the daily operation and weekly inspection of the brine evaporation pond. The plan shall be submitted to DEP for review and approval. Upon approval, the plan shall be kept at the facility and shall be accessible to the operators. The plan shall be revised and submitted to DEP for review and approval if operational procedures change.

H. Inspection of Dams

1. Inspection of the dams shall be conducted annually by an engineer registered in Florida experienced in the field of construction and maintenance of dams. A copy of the inspection report shall be furnished, upon receipt by FPC, to the Department for review (Section 17-672.500(5), F.A.C.)

2. One Hundred Twenty (120) days prior to utilization of the cooling ponds, FPC shall submit a detailed dam inspection program plan to the Department for approval. Upon approval, the inspection plan will be implemented.

3. FPC shall ensure that the cooling pond will be designed, constructed and operated to maintain a surge capacity equal to the runoff from 100-year, 24-hour rainfall event, in addition to all process water diverted from the power plant operation.

I. Management of Waste Oil

FPC shall manage, use and dispose of all waste oil collected from the oil/water separator in accordance with all applicable state and federal rules.

J. Non-Hazardous Low Volume Wastes

Non-Hazardous low volume liquid wastes that have high solids content (demineralizer regeneration and lab drains) will be directed to the brine pond for the initial natural gas fired units and to the coal gasification plants in later phases. Relatively clean low volume wastes (boiler blowdown and floor drains after oil separation) will be sent directly to the cooling pond.

K. Characterization of Cooling Pond Water

This subject is covered in the ground water monitoring conditions.

L. Chemical Cleaning Wastes

Chemical cleaning wastes resulting from the acid cleaning wash and the first rinse will be collected and analyzed to determine if they are hazardous wastes. Based on the analytical results, the wastes will be handled in accordance with applicable state or federal rules.

XVIII. GROUND WATER

A. Ground Water Monitoring Plan

1. This Ground Water Monitoring Plan is designed for the monitoring of the following sites (as defined in Rule 17-520.200(15), F.A.C.): the Solid Waste Disposal Area (SA-8), the Cooling Pond (N-15, N-11B and N-16), and the Brine Pond (SA-9) where the toe of the outward facing portion of the site berms define the site boundary. The boundaries of the disposal sites shall be consolidated for the purpose of defining the Zone of Discharge. Monitor wells IMW-7 and IMW-8 shall be compliance wells for the Solid Waste Disposal Area and intermediate wells for the remaining disposal sites. The Zone of Discharge (as defined in Rule 17-520.200(19), F.A.C.), for the consolidated site boundary, shall be horizontally located 100 feet from the consolidated boundary, pursuant to Rule 17-522.410(2)(a), F.A.C., and vertically extend to the top of the Tampa Member of the Hawthorn Group as defined in FGS Bulletin No. 59.

2. In accordance with Rule 17-522.600(3), F.A.C., the Ground Water Monitoring System shall be constructed by FPC at least 30 days prior to the completion of construction of the disposal systems referenced in XVIII.A.1., above.

3. The Ground Water Monitoring System shall be designed and constructed by FPC in accordance with the plans and supporting documentation submitted and on file in the Southwest District office. Each monitor well shall be constructed within an individual bore hole.

4. The Ground Water Monitoring System shall consist of 9 wells and shall be tentatively located as listed below. All wells are to be clearly labeled and easily visible at all times.

WELL NUMBER	AQUIFER	LOCATION
IMW-1*	Intermediate	Per FPC Figure 1 Rev. 10/93 (attached)
IMW-2+	Intermediate	Per FPC Figure 1 Rev. 10/93 (attached)
IMW-3+	Intermediate	Per FPC Figure 1 Rev. 10/93 (attached)
IMW-4+	Intermediate	Per FPC Figure 1 Rev. 10/93 (attached)
IMW-5+	Intermediate	Per FPC Figure 1 Rev. 10/93 (attached)

IMW-6+	Intermediate	Per FPC Figure 1 Rev. 10/93 (attached)
IMW-7**	Intermediate	Per FPC Figure 1 Rev. 10/93 (attached)
IMW-8**	Intermediate	Per FPC Figure 1 Rev. 10/93 (attached)
FMW-1+	Upper Floridan	Per FPC Figure 1 Rev. 10/93 (attached)

* background well
** compliance well for the Solid Waste Disposal Area (SA-8)
\+ compliance well

5. Within 90 days of completion of construction of the ground water monitor wells a surveyed drawing shall be submitted showing the location of all monitoring wells (active and abandoned) which will be horizontally located by metes and bounds or equivalent surveying techniques. The surveyed drawing shall include the monitor well identification number as well as location and elevation of all permanent benchmark(s) and/or corner monument marker(s) at the site. The survey shall be conducted by a Florida Registered Surveyor. Two copies of the certified drawing shall be sent to the Technical Support Section, Southwest District Office, Department of Environmental Protection, 3804 Coconut Palm Drive, Tampa, Florida 33619-8218.

6. Within 90 days of completion of construction of each monitor well, FPC or the authorized representative shall submit the following information for each monitor well:

a. A complete DEP Monitor Well Completion Report;

b. A copy of the SWFWMD Well Completion Report, SWFWMD Form 25-18-3/90.

The information shall be sent to the DEP's Technical Support Section, Southwest District Office.

7. Within 60 days of completion of construction of the Ground Water Monitoring System and every 5 years thereafter, FPC shall sample IMW-1, IMW-5 and FMW-1 ground water monitor wells for the Primary and Secondary Drinking Water parameters included in Chapter 17-550, F.A.C., Public Drinking Water Systems, Fecal Coliform and EPA Methods 601 and 602 (for parameters not otherwise included in the Primary and Secondary

Drinking Water parameters). The results from the initial sampling shall be used to determine the ambient concentrations of the parameters tested and shall be sent to the DEP's Technical Support Section, Southwest District Office.

8. Within six months of startup for new facilities FPC shall provide a wastestream characterization for: reverse osmosis reject water, the plant sanitary effluent, boiler blowdown effluent, floor drain effluent, plant island stormwater effluent and a copy of the water quality results of the City of Bartow reclaimed water as received by the FPC. Thereafter, a wastestreams characterization shall be performed from a surface water sample collected from the Cooling Pond condenser intake structure within six months of the completion of coal gasification units but in no event with less frequency than every 5 years. The samples for characterization shall be analyzed for the Primary and Secondary Drinking Water Standards (Chapter 17-550, F.A.C), Fecal Coliform and the EPA Priority Pollutants. The components identified in the wastestream characterizations, and the leachate characterization pursuant to Section XXI as well as ground water indicator parameters may be used to modify the Ground Water Monitoring Plan. The results shall be sent to the Technical Support Section, Southwest District office.

9. The wells shall be sampled QUARTERLY for the parameters listed below. Additional samples, wells and parameters may be required based upon subsequent analyses.

PRIMARY STANDARDS

PARAMETERS	UNITS
Nitrate (as N)	mg/L
Nitrite (as N)	mg/L
Sodium	mg/L
Turbidity	NTU
Cyanide (as CN)	mg/L
Antimony	mg/L
Arsenic	mg/L
Barium	mg/L
Beryllium	mg/L
Cadmium	mg/L
Chromium	mg/L
Lead	mg/L
Mercury	mg/L
Nickel	mg/L
Selenium	mg/L
Thallium	mg/L
Benzene	mg/L
Fecal Coliform	cts/100 ml
Carbon tetrachloride	mg/L
1,2-Dichloroethane	mg/L

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

Trichloroethylene	mg/L
para-Dichlorobenzene	mg/L
1,1-Dichloroethylene	mg/L
cis-1,2-Dichloroethylene	mg/L
1,2-Dichlorpropane	mg/L
Ethylbenzene	mg/L
Monochlorobenzene	mg/L
o-Dichlorobenzene	mg/L
Styrene	mg/L
Toluene	mg/l
trans-1,2-Dichloroethylene	mg/L
Xylenes (total)	mg/L
Dichloromethane	mg/L
1,2,4-Trichlorobenzene	mg/L
1,1,2-Trichlorethane	mg/L
Polychlorinated biphenyl (PCB)	mg/L
Tetrachloroethylene	mg/L
1,1,1-Trichloroethane	mg/L
Vinyl chloride	mg/L

SECONDARY STANDARDS

Foaming Agents	mg/L
Chloride	mg/L
Total Dissolved Solids (TDS)	mg/L
pH*	std. units
Color*	color units
Fluoride (as F)	mg/L
Aluminum	mg/L
Copper	mg/L
Iron	mg/L
Manganese	mg/L
Silver	mg/L
Zinc	mg/L
Sulfate	mg/L

OTHERS

Temperature*	°C
Total Organic Carbon (TOC)	mg/L
Specific Conductance*	µmhos/cm
Water Level (NGVD)*	feet
Dissolved Oxygen (minimum)	mg/L
Ammonia (as N)	mg/L
Ammonia (as NH4)	mg/L
Vanadium (as valence of +5)	mg/L
Calcium	mg/L
Magnesium	mg/L
Potassium	mg/L
Bicarbonate	mg/L
EPA 601/602 analytes	mg/L

ACID EXTRACTABLES

Phenols	mg/L

BASE EXTRACTABLES

Butyl benzyl phthalate	mg/L
Di-n-butylphthalate	mg/L
Diethylphthalate	mg/L
Dimethylphthalate	mg/L
Dioctylphthalate	mg/L

* field measurement

The results shall be sent to the DEP's Technical Support Section, Southwest District office.

10. After four consecutive quarters of data following start of commercial operation, FPC may request a reduction in sampling frequency or specific parameters of the ground water monitoring program. The request shall be considered reasonable when a trend analysis of the parameter indicates no significant or substantial change in the parameter. Specific parameters that are key indicators of the domestic or industrial processes or field measured parameters may not be reduced or eliminated from the ground water monitoring plan. The ground water indicator parameters shall be reviewed during the supplemental certification for the first coal gasification units at the proposed site.

11. Following the initial analysis of the ground water monitor wells, all monitor wells shall be sampled, analyzed and results reported in accordance with the following schedule:

SAMPLE PERIOD	REPORT DUE DATE
1st Quarter (January-March)	April 28
2nd Quarter (April-June)	July 28
3rd Quarter (July-September)	October 28
4th Quarter (October-December)	January 28

FPC shall submit to the Department the results of the water quality analyses no later than the 28th day of the month immediately following the end of the sampling period. The results shall be sent to the Technical Support Section, Southwest District office.

12. Ground water sampling shall be reported on the Monitoring Report Forms [DER Form 17-1.216(2)]. In order to facilitate entry of this data into the state computer system, these forms or an exact replica must be used and must not be altered as to content. The original copies should be retained so that the necessary information is available to properly complete future reports. The report forms received from the

laboratory must be submitted within 30 days of receipt of written request from the Department. FPC may submit the ground water sampling report in an electronic format (e.g., by telephone modem, removable disk, removable tape or removable drive) upon written authorization from the Department.

13. If, at any time, background ground water standards are exceeded at the edge of the zone of discharge, FPC has 15 days from receipt of the laboratory analyses in which to resample the monitor well(s) to verify the original analyses. The monitoring test results must be submitted to the Department within 15 days of receipt of the reanalyses from the laboratory. Should FPC choose not to resample, the Department and FPC will consider the water quality analysis as representative of current ground water conditions at the facility.

14. The field testing, sample collection, preservation and laboratory testing, including quality control procedures, shall be in accordance with methods approved by the Department in accordance with F.A.C. Chapter 17-160

15. If any monitor well becomes damaged or inoperable, FPC shall notify the Department immediately and a detailed written report shall follow within 7 days. The written report shall detail what problem has occurred and remedial measures that have been taken to prevent the recurrence. All monitoring well design and replacement shall be approved by the Department prior to installation of the replacement well.

16. Within 180 days of issuance of this permit, all piezometers and wells not a part of the approved Facility Ground Water Monitoring Plan, Department approved piezometers, or monitoring wells required by SWFWMD are to be plugged and abandoned in accordance with Rule 17-532.500(4), F.A.C. and the SWFWMD. FPC shall submit a written report to the Department providing verification of the plugging program. A written request for exemption to the plugging of a well must be submitted to the Department's Technical Support Section for prior approval.

17. FPC shall ensure that the water quality standards for Class G-II ground waters will not be exceeded at the boundary of the zone of discharge in accordance with Rules 17-520.400 and 17-520.420, F.A.C.

18. FPC shall ensure that the minimum criteria for ground water specified in Rule 17-520.400, F.A.C., shall not be violated within the permitted zone of discharge.

B. Underground Injection

1. Deep well injection is not addressed nor authorized in this certification and prior to implementation shall be subject to further departmental approval.

XIX. SCREENING

FPC shall provide screening of the plant island as viewed from CR 555 to the extent feasible and as required by Polk County through the use of aesthetically acceptable structures, vegetated earthen walls and/or existing or planted vegetation.

XX. TOXIC OR HAZARDOUS MATERIALS

A. Spills

The spill of any toxic or hazardous materials shall be reported in the manner specified by Condition III.B. Noncompliance Notification.

B. Handling and Testing of Potentially Hazardous Material

At least 120 days before bringing a hazardous catalyst onsite, FPC shall provide a plan for handling and disposing of hazardous catalysts to the DEP Southwest District office.

XXI. SOLID WASTE STORAGE AND DISPOSAL

A. General

The solid waste disposal areas (SWDAs) shall be designed, constructed, operated, maintained, closed and monitored in accordance with acceptable waste disposal practices providing environmental protection equivalent to those described in F.A.C. Chapter 17-701 and these conditions of certification. The prohibitions of F.A.C. Chapter 17-701 shall not be violated.

B. Site Specific Standards

1. The solid waste disposal area clay liner system shall provide protection equivalent to a composite or double liner system in accordance with these conditions of certification.

2. The Solid Waste Disposal Area shall have a leachate collection system. Leachate collection system piping shall be established in perimeter areas near the impoundment dams such that a minimum 10-foot clay thickness exists between the collector ditch and the impoundment dam contiguous with the waste clay underlying the collector ditch. If insufficient clay thickness exists, a synthetic 60 mil HDPE liner shall be installed in localized areas of insufficient clay thickness to prevent seepage outside of the liner system.

3. At least two years prior to disposal in SWDA, FPC shall commence consolidation of the clays in such area in the manner described in the SCA and sufficiency responses.

4. At least six months prior to disposal in SWDA, FPC shall conduct test probings in the SWDA to determine the thickness of the consolidated clay. The clay probings shall be conducted as follows:

a. Clay probings will be performed on approximately 50-foot centers where the consolidated clay covers overburden piles and approximately 150-foot centers between overburden piles. Locations of overburden piles will be determined initially from post-mining aerial photography and visual observation and confirmed by probing.

b. Based on the results of the clay probings, a contour map will be developed which shows the thickness of the consolidated clay over the surface of each proposed SWDA.

5. If the clay thickness is less than a minimum of ten (10) feet in any interior area away from the perimeter dams, restoration of the clay liner shall be made. Restoration shall consist of placing additional clay in the deficient area to

achieve a ten-foot clay thickness or placing a 60 mil synthetic HDPE liner patch over the deficient area where the clay is less than 10 feet thick. The patch shall be keyed into the clay around the perimeter of the deficient area to prevent seepage beneath the synthetic liner.

6. The liner systems shall have a quality assurance plan equivalent to that for a composite or double liner system approved by the Department's Solid Waste Section of the SWSSWD prior to construction. Soil and/or synthetic liner construction quality assurance shall include a quality control plan specifying performance criteria for the liner, testing procedures and sampling frequencies.

7. All engineering plans, reports, and related information shall be provided by the engineer of record with professional certification and shall be approved by the Department's SWSSWD prior to construction. A construction certification report signed and sealed by a professional engineer, and record drawings showing all modifications to construction plans, shall be submitted for approval to the SWSSWD of the DEP prior to operation of each solid waste disposal area.

8. Water treatment plant sludge shall be segregated from the gasifier slag in a separate solid waste disposal area. The sludge disposal area shall be provided with a minimum two-foot sand or equivalent drainage blanket which drains to the perimeter leachate collection system piping.

9. The facility shall have a comprehensive operation plan that provides written, detailed instructions for the daily operation of the solid waste disposal areas. The plan shall be kept at the facility and shall be accessible to the operators. The plan shall be revised if operational procedures change. A schedule for routine maintenance of the leachate collection and removal system shall be established to ensure operation of the system. The maintenance schedule shall be a part of the operational procedures for the plan. The initial operation plan shall include the SA-8 solid waste disposal area and shall be submitted for approval to the SWSSWD of the DEP prior to operation of the solid waste disposal area.

10. FPC is responsible for leachate level monitoring, sampling, analysis of the landfill leachate, and for providing copies of the leachate analysis to the Department's SWSSWD. FPC shall have a prepared contingency plan to handle leachate collection, removal, and treatment problems such as interruptions of discharges to a treatment plant. Quantities of leachate collected by the leachate collection and removal system shall be recorded in gallons per day before on-site treatment or transport off-site. A rain gauge shall be installed, operated,

and maintained to record precipitation at the facility. Precipitation records shall be maintained and used to compare with leachate generation rates.

11. Hazardous waste or any hazardous substance shall not be accepted for disposal at this site. Hazardous waste is a solid waste identified by the Department as a hazardous waste in Chapter 17-730, F.A.C. Hazardous substances are those defined in Section 403.703, F.S., or in any other applicable state or federal law or administrative rule.

12. FPC shall maintain a program which prohibits the disposal of bulk industrial wastes which operation personnel reasonably believe to either be or contain hazardous waste, without first obtaining a chemical analysis of the material showing the waste to be non-hazardous. The chemical analysis of any such material, along with the date of disposal, shall be kept on file at the facility.

13. A trained supervisor shall be responsible for maintaining the solid waste disposal areas in an orderly, safe, and sanitary manner. Sufficient personnel shall be employed for adequate operation. In the event of damage to any portion of the solid waste disposal area or failure of any portion of the related systems, the Department's SWSSWD shall receive notification in accordance with Condition III.B.

14. FPC shall sample leachate from each SWDA for Primary and Secondary Drinking Water Standards as listed in Chapter 17-550, F.A.C., and for the parameters listed in 40 CFR 261.24 on an annual basis. Parameters detected in the leachate at levels of concern may be included in future groundwater sampling analyses. The results of the leachate analyses shall be submitted to the SWSSWD of the DEP within 30 days of FPC's receipt of the analytical results.

15. If groundwater concentrations significantly above background concentrations due to leachate are detected, FPC shall submit a contamination assessment plan to the Department's SWSSWD within 150 days of knowledge of exceedance. The contamination assessment plan shall provide a detailed plan for evaluating the vertical and horizontal extent of affected soils [illegible]dwater.

16. The groundwater monitoring for the solid waste disposal areas is incorporated into the Facility Groundwater Monitoring Plan as described in Section XVIII of these certification conditions. As new solid waste disposal areas are put into use, a modification of the Facility Groundwater Monitoring Plan shall be submitted by FPC to the SWSSWD of the DEP to monitor the new disposal areas.

17. Closure shall be equivalent to lined landfill closures, and shall include a barrier layer. Installation of a barrier layer shall include pumping down of the leachate head above the clay liner using a system of well points installed in depressed areas of the disposal area. Well points shall be installed to the top of the clay liner and pumped to lower leachate head levels to less than 4 feet. The well point system shall remain as a dedicated installation upon closure of the areas and shall remain accessible for future pumping if leachate heads exceeding 4 feet redevelop after closure, or if leachate quality exceeds ground water standards.

18. In the event FPC proposes to change the method of closing the solid waste disposal areas required by Condition XXI.B.17 above, the Department may require financial assurance in a manner equivalent to the requirements of Rule 17-701.630.

C. Additional Information Requirements

1. All engineering plans, reports, and related information shall be provided by the engineer of record with professional certification and shall be approved by the Department's SWSSWD prior to construction. A construction certification report signed and sealed by a professional engineer, and record drawings showing all modifications to construction plans, shall be submitted for approval to the SWSSWD of the DEP prior to operation of each solid waste disposal area.

D. Processing Additional Information

1. FPC shall send all appropriate submittals to the SWSSWD of the DEP to the following address:

Florida Department of Environmental Protection
Solid Waste Section
3804 Coconut Palm Drive
Tampa, Florida 33619

XXII. FEDERAL ANNUAL OPERATING PERMITS AND FEES

A. Department of Environmental Protection Responsibilities

The Department of Environmental Protection shall implement the provisions of Title V of the 1990 Clean Air Act for the PCS developing Conditions of Certification requiring submission of annual operating permit information and annual pollutant emission fees in accordance with federal law and federal regulations.

B. Florida Power Corporation Responsibilities

FPC shall submit the appropriate annual operating permit application information as well as the appropriate annual pollutant emission fees as required by federal law to the Department as specified in Condition C. below.

C. Annual Operating Permit Application and Fee (Reserved)

XXIII. CONSTRUCTION OF LINEAR FACILITIES

A. Right of Way Selection Procedures

Prior to finalization of the ROW location, three copies of blue-line reproductions of the aerial photographs taken within the last year prior to submittal shall be submitted to DEP. The photographic reproductions shall delineate and show the corridor at a scale of 1"= 400' with wetland locations generally identified, and shall show the certified corridor, designated ROWs, structure locations and access road locations. In addition, FPC shall note on the aerial photographs new development in the corridors. FPC shall notify all parties of such filing. This information may be submitted in segments. The agencies receiving copies of the aerial photographs from FPC shall have 30 days from receipt of the photographs to review the photographs and to notify DEP of any apparent conflicts with the requirements of the conditions of certification. However, this paragraph shall not operate to avoid the need for post-certification submittals and compliance reviews otherwise required by the conditions of certification.

After review of the aerial photographs and comments from the other reviewing agencies, if DEP has reason to believe that the proposed construction within FPC's designated ROW cannot be accomplished in compliance with the conditions of certification, FPC shall be so notified in writing within 45 days from receipt of the aerial photographs. Such notice shall specify with particularity the basis for DEP's conclusion, and possible corrective measures shall be suggested. If such notice is provided, FPC may relocate the ROW within the certified corridor to address the specified concern, or FPC may proceed with design of the natural gas pipeline, reclaimed water pipeline, or transmission line on the noticed ROW at its own risk that construction can be accomplished in compliance with the conditions of certification.

B. Pipeline and Transmission Line Construction Activities

Prior to construction, FPC shall submit to DEP for review 8-1/2" x 11" plan view and cross-section drawings showing all dredge and fill, structure placement and wetland clearing necessary to construct the natural gas pipeline, reclaimed water pipeline and transmission lines. The drawings shall include the dimensions and elevations of all the structures and show the areas to be cleared to the ground and restrictively cleared.

C. Natural Gas Pipeline Location

To minimize the impacts of the natural gas pipeline to the South Prong of the Alafia River, the pipeline shall cross the river immediately adjacent to the south side of Jameson Road.

D. Off-Site Impacts

It is the responsibility of FPC to ensure that adverse off-site water resource related impacts do not occur during construction. All wetland areas or waterbodies that are outside of the specific limits of construction authorized by this certification shall be protected from erosion, siltation, scouring or excess turbidity, and dewatering. FPC shall prevent adverse off-site water resource related impacts during construction through the compaction of fill, the use of hay bales or turbidity screens, or by any other method acceptable to DEP. In determining the acceptability of other methods of control, DEP shall consult with SWFWMD. Off-site discharges during construction and development shall not violate state water quality standards.

E. Erosion/Runoff Control

FPC shall compact or otherwise stabilize any fill material placed around newly installed structures, to reduce erosion, turbidity, nutrient loading and sedimentation in the receiving waters.

Grass seed and mulch or sod must be installed and maintained on exposed slopes within 48 hours of completing final grade, and at any other time as necessary, to prevent erosion, sedimentation or turbid discharges into waters of the state.

FPC shall take additional measures when necessary to prevent turbid discharges in violation of state water quality standards and to minimize off-site damage associated with erosion or turbidity. These measures may include but are not limited to the installation of turbidity barriers at all locations where the possibility of transferring suspended solids into the receiving waterbody exists due to the proposed construction. Turbidity barriers must be maintained in effective condition at all locations until construction is completed and disturbed soil areas are stabilized. FPC shall be responsible for implementing measures to address any sedimentation, turbidity, erosion, or shoaling problems that result from the construction, operation or maintenance of the works authorized under this certification. After fill material has been stabilized, FPC will be responsible for the removal of the barriers.

F. Transmission Line Wetlands Clearing

FPC shall use only restrictive clearing practices during construction and maintenance of the Barcola-Fort Meade 230 kV transmission line where it crosses wetlands. Restrictive clearing, as used in this condition, is the cutting and removal

of vegetation from the wetland by hand, usually with chain saws, or with low-ground-pressure shear or rotary machines to reduce soil compaction and damage to ground cover. These methods may be used alone or in combination, as may be appropriate for specific sites. Restrictive clearing includes the removal of vegetation from areas extending from the transmission line centerline to 20 feet on each side of the outer conductors and in work areas approximately 100 feet by 150 feet around structure sites. Also, in areas where FPC may need to create access to particular structure sites via finger roads rather than a continuous access road, a path approximately 20 to 25 feet wide may be cleared to reach the site from an existing access road. If necessary, the work area around the structure and the access areas may be destumped. Removable construction matting may be used in these areas to support equipment. The stumps shall not be removed in the portion of the ROW outside of the work area and the access areas. The remainder of the ROW in wetland areas, beyond 20 feet on either side of the outer conductors, shall not be cleared to the ground; however, these areas may be restrictively cleared in that vegetation that has an expected mature height greater than 14 feet may be removed. All cut vegetation shall be removed from the restrictively cleared areas by hand if practicable. All invasive exotic species listed in Attachment A shall be removed from the ROW. Herbicides shall not be applied to the cut stumps of native tree species during the initial clearing.

G. Herbicides

Herbicides used in the natural gas pipeline, reclaimed water pipeline or transmission line ROWs or on the certified site shall include only those registered by the U.S. Environmental Protection Agency and which have state approval. Herbicide application rates and concentrations will be in accordance with label directions and will be carried out by a licensed applicator, meeting all federal, state, and local regulations. Herbicide shall be selectively applied to targeted vegetation. Broadcast or aerial application of a non-selective herbicide shall not be used in the ROW or on the certified site unless approved in writing by DEP.

H. Mitigation for Wetland Impacts

Construction of the transmission line in the corridor shown in the application using the construction methods described in the application will not have wetland impacts that would require mitigation. However, if the corridor is modified or construction techniques other than the ones described in the application are proposed, a re-evaluation of the need for mitigation for any additional wetland impacts will be necessary.

FPC shall provide mitigation as necessary to offset the wetland loss and habitat degradation resulting from the construction of the pipelines associated with this project.

Prior to construction, FPC shall propose a mitigation plan, if necessary, and shall provide the following information to the Bureau of Wetland Resource Management to allow DEP to review the proposed mitigation plan:

1. detailed description of each wetland impact area;

2. acreage of the type and quality of wetland being impacted at each site;

3. narrative, drawings and aerial photographs showing and explaining the proposed mitigation;

4. detailed description of the existing conditions at the mitigation area;

5. acreage of the total proposed mitigation area, broken down by acreage of each mitigation type and wetland type; and,

6. documentation providing reasonable assurance that the proposed mitigation will be successful.

If the mitigation submittal is deemed by DEP to provide insufficient information for review, additional information requested by DEP shall be submitted.

If DEP, upon review of the proposed mitigation, determines that the proposed mitigation is inadequate to offset the wetland loss and habitat degradation from this project, FPC shall propose additional mitigation.

If the proposed mitigation plan is deemed acceptable by DEP, DEP shall establish construction conditions, success criteria and a monitoring plan to be carried out for the approved mitigation. These conditions, criteria and monitoring plan shall be incorporated into the certification conditions as a minor modification.

No construction within wetland areas in the pipeline ROWs shall commence until DEP approves a mitigation plan, and mitigation construction conditions, success criteria and a monitoring plan. As approved, such plans and conditions shall be implemented.

XXIV. WETLAND RECLAMATION REQUIREMENTS FOR MINING PARCELS N-9B AND N-13

A. Within six months after the purchase of the Polk County Site, FPC shall submit to DEP construction drawings showing the proposed design for the reclaimed wetlands on mining parcels N-9B and N-13. The drawings shall include plan views and cross sections showing all of the proposed structures and predicted elevations after dewatering and initial clay consolidation referenced to NGVD for the proposed wetlands.

B. At least 90 days prior to planting of vegetation in mining parcels N-9B and N-13, FPC shall submit to DEP final planting plans for all areas to be reclaimed as wetlands. The plans shall include plan views and cross sections showing the species to be planted at the various elevations. The plans shall specify the size of the plants to be planted and the source of the plants.

C. Together with the final planting plans, FPC shall submit a detailed management plan for the reclaimed wetlands to DEP for review. The approved plan shall be made part of this certification. Upon approval, the plan shall be fully implemented. The management plan shall include, but not be limited to, frequent assessment and regular removal, if present, of nuisance and invasive exotic species listed in Attachment A and supplemental plantings of wetlands species (including groundcover, shrubs and trees) to simulate a natural floristic composition in the shrub and groundcover strata in the forested wetlands. Specific details for all aspects of the plans shall be included, such as specific time intervals for nuisance species assessments and planting densities. The management and maintenance actions shall be fully described in the required annual monitoring reports.

D. In order to ensure that the wetland reclamation is correctly implemented, a qualified biological consultant shall oversee the earthmoving, mucking, grading, planting, and monitoring required for the wetland reclamation plan. Prior to the commencement of any wetland reclamation activities, FPC shall submit to DEP for review and approval the name of the biological consultant and supporting documentation that the biological consultant is qualified to oversee the work. The biological consultant must have documented experience in successful wetland reclamation. Any proposed change in biological consultant prior to the wetland areas being determined to be successful shall be submitted to DEP for review and approval.

E. The areas to be reclaimed as forested wetlands shall be planted with a mixture of woody species noted in Attachment B. This includes the initial list of candidate species. Some may be deleted and others added, depending upon

soil conditions resulting from the clay consolidation process. The woody species and the herbaceous species shall be planted at elevations within the reclaimed wetlands that will provide hydroperiods appropriate for the species. Additional or alternate species or densities may be used if approved in writing by the Department during post-certification review. The areas to be reclaimed as herbaceous wetlands shall be planted with a mixture of the herbaceous species listed in Attachment B. These herbaceous species shall be planted at elevations within the reclaimed wetlands that will provide hydroperiods appropriate for the species. Additional or alternate species or densities may be used if approved in writing by the Department during post-certification review.

F. Within ninety days of completion of dewatering, placement of any soil subsidy and grading, the wetland reclamation areas shall be surveyed and a topographic map shall be prepared and submitted to DEP. The topographic map shall meet the following criteria:

1. It shall clearly depict the wetland topography in such a way as to unambiguously show how the site will retain, detain, shed, or otherwise influence the wet season flow and detention of water at the site.

2. It shall show one foot contour intervals based on a 50 foot, or finer, resolution grid;

3. It shall be certified by a registered land surveyor;

4. It shall show any hydrologic connections between the reclaimed and adjacent, existing wetlands; and,

5. It shall show the variations of topographic relief within the graded areas, which may require showing topographic intervals or spot elevations finer than one foot, in some portions of the site.

G. To provide for a more hospitable root zone environment and to foster better water quality in the short term, DEP encourages FPC to place organic soils, mulch or muck to a minimum depth of four inches on as much of the reclaimed wetlands on the site as possible. An alternative that would be acceptable to DEP would be to cap the wetland area with sand mixed with organic material, rather than overburden. The sand and organic mix, for purposes of the condition, is defined as a fine sand with six percent or greater organic content, if tested by the Walkley-Black method or dry weight loss ignition method.

Any fresh (not stockpiled) muck or mulch to be used for the wetlands shall be from a donor site with no or only minor presence by nuisance or exotic species. Any stockpiled muck

or mulch must have all nuisance or exotic plants removed before application to the reclaimed areas. FPC shall submit maps showing the location of specific donor site relative to the project site and a brief description of the proposed site, including the vegetation and soil type. The donor locations must be approved in writing by DEP.

H. The plants used to plant the mitigation areas shall be nursery stock. The plants shall originate from within a 50 mile radius of the site or within the same SCS hardiness zone as the mitigation site, whichever is greater. The stock of vegetation to be planted will be consistent with normal reclamation practices.

I. Freshwater herbaceous wetland reclamation shall be considered successful when the following conditions are meet:

1. Percent cover by non-nuisance, non-exotic wetland species shall be 80 percent or more. Percent covers for the aggregate of those wetland species, non-wetland species, bare ground and water shall be reported relative to the total area. A list of the wetland species included in the aggregate shall be included. Wetland species shall be those listed in Florida Administrative Code Rule 17-301.400;

2. Nuisance species and exotic species listed in Attachment A are limited to 10 percent or less of the total cover with no one species being more than 5 percent of the total cover. If these species exceed 10 percent of the total cover their density must be declining over several years, which would be considered a positive indication that they are under control;

3. The reclaimed wetlands are constructed in accordance with the conditions of certification.

J. Forested wetland reclamation shall be considered successful when the following conditions are met:

1. An average of at least 400 wetland trees per acre shall be growing above the herbaceous stratum;

2. The wetland species tree cover shall exceed 33 percent of the total area and in no area of an acre in size shall the tree cover be less than 20 percent total cover. Cover measurement shall be restricted to (1) those trees exceeding the herbaceous stratum in height and (2) those indigenous species that contribute to the overstory of the mature forest of the South Prong of the Alafia River and the Peace River and its tributaries and that are wetland vegetation listed in Florida Administrative Code Rule 17-301.400;

3. At least 80 percent of obligate groundcover (herbaceous) and obligate shrub (non-canopy woody species) vegetation shall be among those species listed in Florida; Administrative Code Rule 17-301.400, and shall be reproducing naturally, either normal, healthy, vegetative spread (in ways that would be normal for each wetland species) or through seedling establishment, growth and survival. Nuisance species and exotic species listed in Attachment A shall be limited to 10 percent or less of the total cover, with no one species being more than 5 percent of the total cover. If these species exceed 10 percent of the total cover their density must be declining over several years, which would be considered a positive indication that they are under control;

4. The reclaimed wetlands are constructed in accordance with the conditions of certification.

K. FPC shall furnish to DEP annual statistical reports of vegetational sampling of the reclaimed wetlands done by any mutually agreed-upon method. Acceptable methods may be found in Daubenmire (1968), Green (1979), Grieg-Smith (1983), Mueller-Dombois and Ellenberg (1974), Oosting (1956), Poole (1974), and Southwood (1978). It is the responsibility of FPC to ensure that the monitoring report provides a qualitative and quantitative depiction of the site that is representative of the conditions at the entire site.

This report shall include on the cover page, just below the title, the certification of the following statement by the individual who supervised preparation of the report: "This report represents a true, accurate, and representative description of the site conditions present at the time of monitoring."

1. A monitoring plan describing sampling methods report format, and a map of sampling locations and photographic stations shall be submitted to the Department for review and approval at least 90 days prior to the initial planting.

2. Annual statistical reports shall describe as appropriate for each reclamation area: (1) the density and percent cover of listed trees, (2) percent cover of listed and non-listed herbaceous species, bare ground and water. For forested wetlands, tree canopy cover shall be submitted for not less than the third, fifth, and any subsequent years after planting until a determination of a successful reclamation has been made. Data for listed nuisance or invasive exotic species shall be tabulated separately. A listed species is one listed in Florida Administrative Code Rule 17-301.400. Reports shall also include an assessment of the jurisdictional status of each reclamation area. Data shall be taken during the summer growing

season. Reports shall be submitted annually within 60 days of data acquisition until a determination of a successful wetland reclamation has been made. The first annual statistical report data gathering shall occur not later than one year after planting.

3. Following implementation of the reclamation plan, monitoring shall be performed, following the methods established in the monitoring section, until a determination of a successful reclamation is obtained. At the end of the first three years of monitoring, FPC may request in writing that the monitoring program be reviewed by the DEP to determine whether or not the frequency or parameters of the monitoring program should be changed.

4. If it is determined by DEP staff, based on visual inspection and review of the monitoring reports that the reclamation is not trending toward success, FPC shall present methods and proposals to be reviewed and approved by the DEP within 30 days of DEP's notification to ensure success of the effort. The plan of corrective actions shall be implemented within 90 days of written approval by DEP.

XXV. MINE RECLAMATION CONDITIONS

A. Conceptual Plan Limitations

Conceptual plan modifications (EST-SC-CPH and IMC-NP-FPC), and variance applications, (EST-SC-FPC-V and IMC-NP-FPC-V), are deemed incorporated into FPC/PCS Certification Application. Final agency action on these applications by the Governor and Cabinet, sitting as the Siting Board, is being taken under the provisions of the Florida Electric Power Plant Siting Act (FEPPSA), pursuant to sections 403.501-403.517, Florida Statutes (F.S.). Approval of Conceptual Plan Modification Applications, EST-SC-CPH and IMC-NP-CPF, and Variance Applications, EST-SC-FPC-V and IMC-NP-FPC-V, as part of the certification of the FPC/PCS, does not constitute a statement, admission, or waiver by the state of Florida concerning ownership of any interest in the subject lands within the FPC/PCS or the conceptual plan area. Approval of the conceptual plan modifications does not relieve IMC-Company and Estech, Incorporated of the obligation to comply with the standards and criteria set forth in Chapter 16C-16, Florida Administrative Code (F.A.C.). Upon the purchase of the Polk County Site by FPC, obligation to comply with Chapter 16C-16, F.A.C., and the approved variances, shall be assumed by FPC and IMC-Company with respect to the IMC mining parcels which make up the Polk County site, by FPC and Estech, Incorporated with respect to the Estech mining parcels which make up the Polk County Site, and FPC and USAC with respect to the USAC mine parcel within the Polk County Site.

B. Variance Applications

Approval of the variance applications EST-SC-FPC-V and IMC-NP-FPC-V, affecting conceptual plans EST-SC-CPH and IMC-NP-CPF, is hereby granted for a life-of-facility variance from the waterbody and wetland standards as required by Paragraphs 16C-16.0051(5)(a)-(c), F.A.C., and the drainage restoration, revegetation and reclamation time schedules standards as required by Paragraphs 16C-16.0051(2),(7),(9), and (11), F.A.C.

C. Changes in Ownership

All changes in land ownership or operators of a mine shall be reported to the Bureau of Mine Reclamation no later than thirty (30) days after the effective date of such changes pursuant to Subsection 16C-16.006(6), F.A.C. Pursuant to approval of FPC's Site Certification Application, each applicable operator (IMC, USAC, and Estech, Incorporated) shall notify the Department within thirty days of the sale or legal transfer of the land within the FPC/PCS to FPC or any other entity(ies) claiming a fee interest in the land subject to the

mandatory reclamation obligation, as defined in Section 211.32, F.S. This notification shall be in the form of a legal contract of sale or transfer agreement between each applicable operator and the entity(ies) claiming a fee interest in the affected lands. The contract/agreement shall appropriately identify the rights, duties, and responsibilities that shall be assumed and delegated by the transferee and each applicable operator, and shall be signed by the transferee and the applicable operators.

D. Complete Reclamation Work Responsibility

1. Until FPC purchases the mining parcels listed as follows, each respective mining company shall be solely responsible for completing the reclamation work in accordance with the approved reclamation program (parcel) plan currently on file with the Department of Environmental Protection.

ESTECH SILVER CITY MINE (ESTECH, INC.)

SA-8	EST-SC(2)
SA-9	EST-SC(6)
SA-10	EST-SC-SP(5)
SA-11	EST-SC-SP(4)
SA-12	EST-SC-MC(1)
SA-13	EST-SC-SP(7) and (8)

IMC NORALYN/PHOSPHORIA MINE (IMC CO.)

N-16	IMC-NP-SP(9)
P-2	IMC-P-2
P-3	IMC-NP-SMC(2)
Phosphoria	IMC-NP-SMC(5)

USAC ROCKLAND MINE

N-9	USS-R-SP(1A)

2. After purchase by FPC, the reclamation of programs EST-SC-SP(5), IMC-NP-SMC(2), IMC-NP-SMC(5), USS-R-SP(1A) and the southern-most 225 acres of program EST-SC-MC(1) shall be conducted in accordance with the reclamation requirements, criteria, and standards as set forth in Chapter 16C-16, F.A.C.

3. After approval of the FPC-Polk County Site Certification Application, subsequent purchase by FPC, and transfer of ownership and responsibilities pursuant to these conditions, the mandatory reclamation requirements for Estech programs EST-SC(2), EST-SC(6), EST-SC-SP(4), the northern 376 acres of EST-SC-MC(1), EST-SC-SP(7), EST-SC-SP(8) and IMC program IMC-NP-SP(9) shall no longer apply. It shall be the responsibility of FPC to develop the program areas identified in

this paragraph according to the approved conceptual plan, and variances to Chapter 16C-16, F.A.C., which are incorporated in the site certification approval. These areas are intended to be developed for the following uses upon the following schedule:

PARCEL	PARCEL	USE (PHASE)
SA-8	EST-SC(2)	Water Storage (I), Solid Waste Disposal (III through VI), Water Crop (VII)
SA-9	EST-SC(6)	Water Storage (I), Brine Pond (III-VII)
SA-11	EST-SC-SP(4)	Generating Units & Fill Storage (III and & IV), Generating Units and Gasifiers (V-VII)
SA-12 (North)	EST-SC-MC(1)	Water Storage (I), Fill Storage, Storm Water Retention and Water Crop (III-IV), Coal Pile and Coal Handling/Rail Loop (V-VII)
SA-13	EST-SC-SP(7) and (8)	Roads/Infrastructure (III-VII)
N-16	IMC-NP-SP(9)	West - Cooling Pond (III-VII) East - Effluent Storage, Fill Storage and Water Crop (III), and Cooling Pond (IV-VII)

Phases - I Initial Earthwork Construction
II Initial Vertical Plant Construction
III 235 to 1,500 MW
IV 1,500 to 2,000 MW
V 2,000 MW to 2,250 MW and add Coal
VI 3,000 MW
VII P-2 as Solid Waste Disposal Area

E. Water Cropping Data

FPC shall provide water cropping data to BOMR to assist in the determination of possible enhancements to hydrology models.

F. Reclamation Compensation and Habitat Development

To compensate for the potential habitat displaced in the mining parcels released from mandatory reclamation, pursuant to Condition XXV.D.3., the following conditions shall apply:

1. Off-Site Wildlife Corridor

a. As part of mitigation, FPC shall contribute to the completion of the Integrated Habitat Network connecting the Peace River floodplain with Hookers Prairie in the following manner: Estech shall sell and convey and FPC shall arrange and fund the acquisition of good, marketable fee simple title to or, with the consent of DEP, the imposition of a permanent conservation easement on Estech mining parcels EGC-SC-A (79 acres more or less), EST-SC-SP(3) (90 acres more or less) and EGC-SC-05 (256 acres more or less) by or for the benefit of an entity other than FPC satisfactory to DEP, to be used as part of the Integrated Habitat Network connecting the Peace River Floodplain to Hooker's Prairie. Closing of this transaction shall occur within one year following FPC's purchase of the Polk County Site or within a later timeframe established by DEP. FPC shall bear no expense in connection with or otherwise be responsible for the reclamation or management of these parcels.

b. Costs to be funded by FPC for the purchase of these parcels shall not exceed $900.00 per acre plus normal purchaser's closing costs. Costs in excess of $ 900.00 per acre shall result in an offsetting reduction of the number of acres to be acquired.

2. Mining Parcel SA-10

a. Estech Mining Parcel SA-10 [EST-SE-SP(5)] shall be utilized as a water storage area during the initial phase of construction for the first 470 MW of electrical generation at the Polk County Site.

b. Upon the completion of construction of the initial phase of the Polk County Site, Mining Parcel SA-10 shall be reclaimed as a palmetto prairie and will be contoured to drain to a system sending runoff water ultimately to McCullough Creek.

c. The palmetto prairie habitat portion of SA-10 shall encompass 268 acres of the total 294 acre mine area. The plantings will consist of native grasses with clumps of saw palmetto (Serenoa repens) and shrubs established throughout the mine area in a density of 50 plants per acre. The remaining 26 acres of SA-10 will be planted in native grasses or shrubs.

3. Mining Parcel SA-12

FPC will leave the southern portion (approximately 225 acres) of Estech program EST-SC-MC(1) as already reclaimed except for the addition of a hydraulic connection to the headwaters of McCullough Creek to contribute to the McCullough Creek drainage basin.

4. Exotic and Nuisance Species

Exotic species listed in Attachment A shall not be considered an acceptable form of vegetative cover within N-9B, N-13, and SA-10. Nuisance species listed in Attachment A shall be controlled, and not permitted to exceed twenty-five (25) percent of the total upland vegetative cover at any given time within N-9B, N-13, and SA-10. FPC and DEP shall work together to determine appropriate measures to be implemented, such that these species listed in Attachment A will be controlled and/or eradicated.

5. IMC Parcels P-2, P-3 and Phosphoria

a. IMC parcels P-2 (IMC-P-2), P-3 (IMC-MP-SMC-2) and Phosphoria [IMC-MP-SMC(5)] shall be contoured to provide onsite water cropping for the operation of the Polk County Site cooling pond and shall otherwise be reclaimed as currently approved.

b. FPC may develop IMC parcel P-2 as a solid waste disposal area in the event that Estech mining parcel SA-8 is not capable of holding all of the solid waste generated by the coal gasification operation at the Polk County Site.

c. IMC mining parcels P-3 and Phosphoria shall be available for mitigation for any jurisdictional wetlands impacted in the event IMC mining parcel P-2 is used for solid waste disposal.

d. Mitigation plans for P-3 and Phosphoria will be developed in a supplemental certification proceeding if and when P-2 is determined by FPC to be needed as a solid waste disposal area.

6. IMC Parcel N-11C

After construction of the final phases of the Polk County Site (3,000 MW) parcel N-11C will be revegetated. Final land use and revegetation of N-11C shall be developed during the supplemental certification for the final phase of electric generation (3,000 MW) in consultation with DEP.

7. Wildlife Habitat Management Plan

FPC shall consult with DEP, FGFWFC, and the U.S. Fish and Wildlife Service in establishing the Wildlife Habitat Management Plan required by Polk County.

8. Six Mile Creek Drainage

a. FPC shall evaluate the feasibility of establishing drainage flow from the Polk County Site to Six Mile Creek if:

i. adjacent offsite parcels are developed to provide a surface hydrological connection to the Six Mile Creek system from the Polk County Site;

ii. water use data indicate an excess amount of water is available for the operation of the Polk County Site; and,

iii. no additional permit would be required in connection with such an offsite flow.

b. FPC shall provide historical and projected water use data to DEP in each supplemental application for certification to assist in the determination of possible drainage flow from the Polk County Site to the Six Mile Creek system.

9. Offsite Estech Drainage

Estech shall take all necessary action, including, but not limited to, modifying conceptual plans and amending reclamation programs, required to ensure that the reclamation of the Estech Silver City Mine Plant site (Estech Plant Site), as depicted on the map in Attachment C, will allow drainage from the Estech Parcel SA-10 and Estech Plant Site to flow to the McCullough Creek drainage basin.

XXVI. SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

A. Water Use Permitting Conditions

1. If any of the statements in the application and in the supporting data are found to be untrue and/or inaccurate, or if FPC fails to comply with all of the provisions of Chapter 373, Florida Statutes (F.S.), Chapter 40D, Florida Administrative Code (F.A.C.), or the conditions set forth herein, the Southwest Florida Water Management District (SWFWMD) shall initiate action for suspension or revocation of Certification.

2. This certificate is issued based on information provided by FPC demonstrating that the use of water is reasonable and beneficial, consistent with the public interest, and will not interfere with any existing legal use of water. If it is determined by the SWFWMD that the use is not reasonable and beneficial, in the public interest, or does impact an existing legal use of water, the SWFWMD shall initiate action for suspension or revocation of Certification.

3. FPC shall not deviate from any of the water use related terms or conditions of the Site Certificate without written approval by the SWFWMD.

4. In the event the SWFWMD declares that a Water Shortage exists pursuant to Chapter 40D-21, F.A.C., the SWFWMD shall initiate any required action to alter, modify, or declare inactive all or parts of this Certification as necessary to address the water shortage.

5. The SWFWMD shall collect water samples from any withdrawal point listed in the Certificate or shall require FPC to submit water samples when the SWFWMD determines there is a potential for adverse impacts to water quality.

6. The SWFWMD shall initiate any necessary action to require FPC to cease or reduce withdrawal if water levels in aquifers fall below the minimum levels established by the Governing Board.

7. FPC shall practice water conservation to increase the efficiency of transport, application, and use, as well as to decrease waste and to minimize runoff from the property. At such time as the Governing Board adopts specific conservation requirements for FPC's water use classification, the SWFWMD shall initiate any required action to make this certification subject to those requirements upon notice and after a reasonable period for compliance.

8. The SWFWMD may establish special regulations for permits within the regions designated a Water Use Caution Area (WUCA). If the SWFWMD has established, or establishes in the future, a WUCA for the region that encompasses this certificate, at such time as the Governing Board adopts such special regulations, the SWFWMD shall initiate any required action to make FPC subject to them upon notice and after a reasonable period for compliance.

9. FPC shall mitigate, to the satisfaction of the SWFWMD, any adverse impact to existing legal uses caused by withdrawals. When adverse impacts occur or are imminent, the SWFWMD shall require FPC to mitigate the impacts. Adverse impacts include, but are not limited to:

a. A reduction in water levels which impairs the ability of a well to produce water;

b. Significant reduction in levels or flows in waterbodies such as lakes, impoundments, wetlands, springs, streams or other watercourses; or,

c. Significant inducement of natural or manmade contaminants into a water supply or into a usable portion of any aquifer or waterbody.

10. FPC shall mitigate to the satisfaction of the SWFWMD any adverse impact to environmental features or off-site land uses as a result of withdrawals. When adverse impacts occur or are imminent, the SWFWMD shall require FPC to mitigate the impacts. Adverse impacts include the following:

a. Significant reduction in levels or flows in waterbodies such as lakes, impoundments, wetlands, springs, streams, or other watercourses;

b. Sinkholes or subsidence caused by reduction in water levels;

c. Damage to crops and other vegetation causing financial harm to the owner; and,

d. Damage to the habitat of endangered or threatened species.

11. A SWFWMD identification tag shall be prominently displayed at each withdrawal point by permanently affixing the tag to the withdrawal facility.

12. FPC must notify the SWFWMD within 30 days of the sale or transfer of permitted water withdrawal facilities or the land on which the facilities are located.

13. All reports required by the certificate shall be submitted to the SWFWMD on or before the tenth day of the second month following data collection and shall be addressed to:

Southwest Florida Water Management District
Permits Data Section, Resource Regulation
2379 Broad Street
Brooksville, Florida 34609-6899

Unless otherwise indicated, three copies of each plan or report, with the exception of pumpage, rainfall, evapotranspiration, water level or water quality data which require one copy, are required by the permit.

14. The water balance for ultimate site capacity (approximately 3,000 MW of generating capacity) at FPC's Polk County Site demonstrates a requirement of 23.6 MGD from offsite and Upper Floridan aquifer sources for process, cooling, domestic and sanitary purposes.

a. FPC shall obtain 6.1 MGD of this amount from a combination of treated wastewater effluent from the City of Bartow sewage plant and other offsite non-potable sources of water. To the extent that FPC obtains more than 6.1 MGD through reuse of treated wastewater effluent from offsite sources, the excess amount shall serve to reduce the use of 17.5 MGD of water from the Upper Floridan aquifer which is authorized by Condition XXVI.A.14.b. below.

b. FPC is authorized to withdraw from the Upper Floridan aquifer and use for process, cooling, domestic and sanitary purposes, in support of ultimate site capacity at its Polk County Site, an amount of water not to exceed 17.5 MGD, subject to the following conditions:

i. Except as approved by SWFWMD under circumstances constituting an emergency, no process or cooling water shall be withdrawn from the Upper Floridan aquifer in support of the first 940 MW of generating capacity. FPC is authorized to withdraw up to 19,000 gpd Annual Average Daily and 35,000 Peak Month Daily from the Upper Floridan aquifer for domestic and sanitary purposes for the life of the facility. The authorized sources of process and cooling water in support of such generating capacity shall consist of existing water on site, on-site rainwater and stormwater capture, reuse of internal wastewater streams, and reuse of treated wastewater from the City of Bartow sewage treatment plant.

ii. The total quantity of water which FPC is authorized to withdraw from the Upper Floridan aquifer shall be limited to 17.5 MGD Annual Average Daily, which amount is determined by the SWFWMD not to have an adverse effect on other legal

existing users; provided, however, that withdrawal for process or cooling purposes of any water form the Upper Floridan aquifer shall be subject to the following additional conditions, which shall be applied during review pursuant to Section 403.517, Florida Statutes, of any supplemental application for the construction and operation of a further increment of generating capacity at the Polk County Site:

1) FPC shall demonstrate that any incremental quantity of process or cooling water which it proposes to withdraw from the Upper Floridan aquifer in support of that increment of generating capacity will be minimized to the greatest extent practicable by prudent technologically and economically feasible water conservation practices consistent with those generally required within the Southern Water Use Caution Area (SWUCA) of SWFWMD, including but not limited to the following:

a) minimization of loss of water from the site during construction;

b) use of water-conserving electric generation and pollution control technologies;

c) on-site rainwater and stormwater capture and management;

d) reuse of internal wastewater streams of technologically suitable quality;

e) reuse of treated wastewater of technologically suitable quality available from other sources, such as publicly-owned sewage treatment facilities which FPC shall diligently pursue; and,

f) use of other available sources of non-potable water of technologically suitable quality.

2) To the extent that maximum total groundwater use in the SWUCA is fixed in a manner which limits the withdrawal of Upper Floridan aquifer water for FPC's Polk County Site, withdrawal by FPC from that source of any quantity greater than 5 MGD, which amount is determined not to have an adverse effect on regional water resources, must be either:

a) offset by mandatory retirement of permitted quantities which are actively used within the SWUCA, to the extent such quantities are eligible to provide offset, pursuant to agreements between FPC and other permittees which are subject to review by SWFWMD for conformity with generally applicable standards; or,

b) approved as a "competing application" under the applicable standards of Section 373.233, F.S.

3) To the extent that maximum total groundwater use in the SWUCA is not fixed in a manner which limits the withdrawal of Upper Floridan aquifer water for FPC's Polk County Site, FPC may withdraw from that source up to 17.5 MGD subject to the requirements of Condition XXVI.A.14.a., 14.b.i, and 14.b.ii. 1) but not subject to those of Condition XXVI.A.14.b.ii.2).

iii. FPC's current development schedule for ultimate site capacity at the Polk County Site estimates incremental additions of generating capacity at an approximate average rate of 275 MW (range of 200 to 350 MW) every two years for the period 1998 through 2018, both inclusive, for a total of approximately 3,000 MW. The following additional requirements shall apply in order to ensure that FPC does not unnecessarily deprive other users of groundwater:

1) In each supplemental application for the construction and operation of a further increment of generating capacity at the Polk County Site, FPC shall indicate (i) whether it has determined not to install any prior or subsequent increment of generating capacity, (ii) the basis for delay in the installation of any increment of generating capacity for more than 5 years beyond the estimated schedule, and (iii) the quantity of groundwater from the Upper Floridan aquifer which any such increment of capacity that has been eliminated or delayed would have required.

2) If FPC has determined not to install any increment of generating capacity or in the absence of a reasonable basis for a delay greater than 5 years, the quantity of groundwater which FPC is authorized to withdraw from the Upper Floridan aquifer in support of ultimate site capacity may be reduced accordingly.

c. On-site rainwater and stormwater capture and use, reuse of internal wastewater streams, reuse of available treated wastewater sources, and use of other sources (excluding the Upper Floridan aquifer and intermediate aquifers) of non-potable water shall constitute reasonable and beneficial uses of water, as such uses are set forth in the SCA and approved in the site certification process, and are hereby authorized as required in support of ultimate capacity at FPC's Polk County Site; provided, however, that use or reuse of non-potable water shall be deemed unreasonable if it will result in degradation of cooling pond water quality below the levels proposed by FPC in support of the ultimate site capacity certification or any water quality standard made applicable by federal or state law.

15. FPC shall continue to investigate the feasibility of using reclaimed water as a water source and submit a report describing the feasibility in connection with each subsequent application submitted pursuant to Condition XXVI.A.14. The report shall contain an analysis of reclaimed water sources for the area, including the relative location of these sources to FPC's property, the quantity of reclaimed water available, the projected date(s) of availability, costs associated with obtaining the reclaimed water, and an implementation schedule for reuse, if feasible. Infeasibility shall be supported with a detailed explanation.

16. Within 90 days of completion of construction of the withdrawal facility or prior to activation of a standby source, SWFWMD ID Nos. 1, 2, 3, 4, 5, & 6, (ID Nos. FPC-1, FPC-2, FPC-3, FPC-4, FPC-5, and FPCPW-1) shall be equipped with non-resettable, totalizing flow meters, or other measuring devices as approved in writing by the Permitting Department Director, Resource Regulation, unless an extension is granted by the Director. Such devices shall have and maintain an accuracy within five percent of the actual flow as installed. Total withdrawal and meter readings from each metered withdrawal shall be recorded on a monthly basis and reported to the Permits Data Section (using SWFWMD forms) on or before the tenth day of the second month following data collection. If a metered withdrawal is not utilized during a given month, a report shall be submitted to the Permits Data Section indicating zero gallons. Prior to meter installation, non-use shall be documented with monthly pumpage reports indicating zero gallons withdrawn.

17. Water quality samples shall be collected and analyzed, for parameter(s) and frequency(ies) specified below. Water quality samples from production wells shall be collected whether or not the well is being used, unless infeasible. If sampling is infeasible FPC shall indicate the reason for not sampling on the water quality data form. Water quality samples shall be analyzed by a Department of Environmental Protection certified laboratory in accordance with Chapter 17-160, F.A.C. At a minimum, water quality samples shall be collected after pumping the well at its normal rate for a pumping time specified in the table below, or to a constant temperature, pH, and conductivity. In addition, FPC's sampling procedure shall follow the handling and chain of custody procedures designated by the certified laboratory which will undertake the analysis. Any variance in sampling and/or analytical methods shall have prior approval of the Permitting Department Director, Resource Regulation. Reports of the analyses shall be submitted to the Permits Data Section (using SWFWMD) on or before the tenth day of the second month following data collection, and shall include the signature of an authorized representative and

certification number of the certified laboratory which undertook the analysis. The parameters and frequency of sampling and analysis may be modified by the Permitting Department Director, Resource Regulation, as necessary to ensure the protection of the resource.

SWFWMD ID NO.	FPC ID NO.	MINIMUM PUMPING TIME (MINUTES)	PARAMETER	SAMPLING FREQUENCY
1	FPC-1	30 minutes	Chlorides, Sulfates, Total Dissolved Solids (TDS)	Feb., May, Aug.,& Nov.

Water quality samples shall be collected based on the following time table:

Quarterly **Same week of months specified**

Analyses shall be performed according to procedures outlined in Chapter 17-160, F.A.C.

18. During drilling of SWFWMD ID Nos. 1 and 5, (FPC ID Nos. FPC-1 and FPC-5) water quality samples shall be collected at intervals of 50 feet or less, from 300 feet to a maximum depth of five feet above the bottom of the well. Regardless of the specified sample collection interval, a sample shall be collected from the depth which corresponds to five feet above the bottom of the well. Samples shall be collected during reverse air drilling, or other appropriate method with prior approval by the Permitting Department Director, Resource Regulation, which will allow representative samples for each depth to be collected.

Samples shall be analyzed by a certified laboratory for chlorides, sulfates, and TDS. FPC's sampling procedure shall follow the handling and chain of custody procedures designated by the certified laboratory which will undertake the analysis. Reports of the analyses shall be submitted to the Permits Data Section (using SWFWMD forms) within thirty days of sampling, and shall include the signature of an authorized representative and the certification number of the DEP certified laboratory.

Analyses shall be performed according to procedures outlined in Chapter 17-160, F.A.C.

19. Within 90 days of completion of construction of the first phase power generation facility, FPC shall install and maintain a continuous recording rain gauge in the area around SWFWMD ID No. 1. Total daily rainfall shall be recorded at this station and submitted to the Permits Data Section, on

SWFWMD forms on or before the tenth day of the second month following data collection. The reporting period for these data shall begin on the first day of each month and end on the last day of each month. Final location shall be submitted plotted on an original blue-line aerial map or United States Geological Survey quadrangle map, or by providing latitude - longitude location.

20. Any wells not in use, and in which pumping equipment is not installed shall be capped or valved in a water tight manner in accordance with Chapter 17-532.500(3)(a)(4), F.A.C.

21. FPC shall construct the proposed wells according to the surface diameter and casing depth specifications below. The casing depth specified is to prevent the unauthorized interchange of water between different water bearing zones. If a total depth is listed below, this value is an estimate, based on best available information, of the depth at which high producing zones are encountered. However, it is FPC's responsibility to have the water in the well sampled during well construction, before reaching the estimated total depth. Such sampling is necessary to ensure that the well does not encounter water quality that cannot be utilized by FPC, and to ensure that withdrawals from the well will not cause saltwater intrusion.

SWFWMD ID NO.	FPC ID NO.	SURFACE DIAMETER	MINIMUM CASING DEPTH	ESTIMATED TOTAL DEPTH
1	FPC-1	20 in.	300 ft.	880 ft.
2	FPC-2	20 in.	300 ft.	880 ft.
3	FPC-3	20 in.	300 ft.	880 ft.
4	FPC-4	20 in.	300 ft.	880 ft.
5	FPC-5	20 in.	300 ft.	880 ft.
6	FPCPW-1	8 in.	300 ft.	500 ft.

a. The casing shall be continuous from land surface to the minimum depth stated above;

b. All well casing (including liners and/or pipe) must be sealed with neat cement grout to the depth specified above;

c. The proposed wells(s) shall be constructed of materials that are resistant to degradation of the casing/grout due to interaction with the water of lesser quality. A minimum grout thickness of two (2) inches is required on wells four (4) inches or more in diameter.

d. A minimum of twenty (20) feet overlap and two (2) centralizers is required for Public Supply wells, and all wells six (6) inches or more in diameter.

e. The finished well casing depth shall not vary from these specifications by greater than ten (10) percent unless advance approval is granted by the Permitting Department Director, Resource Regulation, or the Supervisor of the Well Construction Permitting Section in Brooksville.

f. Advance approval from the Permitting Department Director, Resource Regulation is necessary should FPC propose to change the well location or casing diameter.

22. At least one year prior to the planned production from the first of FPC-1 through FPC-5, FPC shall submit a detailed plan for a long-term aquifer performance test (APT) for approval by the Permitting Department Director, Resource Regulation. The test shall be conducted for a sufficient period of time to determine the leakance parameter between the surficial and intermediate aquifers and the leakance parameter between the intermediate and Upper Floridan aquifers. The test shall be conducted for a minimum of seven days, and shall include collection of water quality data (see Condition XXVI.A. 17 for water quality parameters). Attempts will be made to conduct the test during a period of minimal adjacent pumpage and during a period of minimal rainfall to minimize interference with the test. This test shall take place prior to initiation of pumpage from these wells. A report of the results of the test, including all raw data and analyses, shall be provided to the Permits Data Section within 30 days of the completion of the test.

If any of the aquifer characteristics vary significantly from those used in the groundwater flow model submitted with the Certification, FPC shall submit an updated groundwater flow model upon notification by the Permitting Department Director, Resource Regulation. This model shall utilize the actual aquifer characteristics determined during the APT to predict impacts due to groundwater withdrawals at this site. If the new modeling (if required) indicates that there are adverse impacts not indicated in the SCA, FPC may be required to amend the Site Certification.

23. Prior to dewatering within 2,640 feet of a property boundary, FPC shall comply with one of the following two alternatives:

a. Secure written consent from all adjacent property users for lowering the water table below their lands. Three copies of the consent shall be submitted in writing to the Permitting Department Director, Resource Regulation prior to dewatering within the specified distance. This alternative cannot be used if adjacent lands contain wetlands or other waterbodies within 2,640 feet of FPC's dewatering activity.

b. Implement a procedure to mitigate impacts by maintaining the water table at historic levels at the property boundary. Prior to implementation of the proposed dewatering plan submitted June 28, 1993, FPC must obtain approval from the Permitting Department Director, Resource Regulation. The procedure shall include items a, b, c, d, and e under Condition XXVI.A.24.

24. Prior to dewatering within 2,640 feet of an on- or off-site SWFWMD jurisdictional wetland that will not be disturbed in association with this certification, FPC shall implement a procedure to mitigate impacts by maintaining the water table at historic levels beneath such wetlands or at the property boundary for off-site wetlands. Prior to implementation of the proposed dewatering plan submitted June 28, 1993, FPC must obtain approval, in writing, from the Permitting Department Director, Resource Regulation. The procedure shall include:

a. A water table monitoring network, approved by the Permitting Department Director, Resource Regulation, designed to demonstrate that water table drawdown does not exceed one foot under on-site wetlands that will not be disturbed.

b. Collection of water table level data after construction of the approved monitor well network for at least six months prior to the initiation of dewatering in the area, to obtain background data. During this time period, water level data shall be recorded on a weekly basis and submitted monthly.

c. If a rim-ditch system is proposed to recharge the water table near on-site wetlands that will not be disturbed, design and operation details must be submitted to demonstrate that the water table will be maintained at appropriate levels based on the background data collected. Rim-ditch systems must also be accompanied by a monitor well network to verify water table maintenance.

d. At least one month prior to the anticipated date of dewatering an area within the setback distance, water level data shall be recorded and submitted on a weekly basis.

e. Data collection shall continue for six months following completion of dewatering and reclamation or until SWFWMD staff determine that background or steady-state levels are attained. During this time period, water level data shall be recorded on a weekly basis and reported monthly. Water levels shall be reported in feet relative to the National Geodetic Vertical Datum (N.G.V.D.).

B. Surface Water Management

The FPC - Polk County site, excluding the buffer area, the associated linear facilities, and the offsite area (Estech plant Site) proposed for water quantity mitigation purposes will operate as a zero discharge facility. All surface water or stormwater falling within the site boundaries, excluding the buffer areas and associated offsite areas, will be contained within the Polk County site and not discharged offsite. However, the conditions of certification apply to the surface water systems both on site, and for those areas constructed in association with the facility that are located offsite. Final project design information, construction plans, and other information illustrating the surface water management system and stormwater treatment facilities for the project shall be concurrently submitted to the DEP and the SWFWMD for review prior to construction of any such systems or facilities.

1. The meaning of terms used herein shall be governed by the definitions contained in Chapters 403, 373, and 253, Florida Statutes (F.S.), and any regulation adopted pursuant thereto and the statutes and regulations of any agency. In the event of any dispute over the meaning of a term used in these general or agency-specific conditions which is not defined in such statutes or regulation, such dispute shall be resolved by reference to the most relevant definitions contained in any other state or federal statute or regulation or, in the alternative, by the use of the commonly accepted meaning as determined by law. As used herein:

a. "FDEP" shall mean the Florida Department of Environmental Protection.

b. "SWFWMD" shall mean the Southwest Florida Water Management District.

c. "Application" shall mean the Application for Certification of the Polk County Site and associated facilities.

d. "Feasible" or "practicable", as used in these conditions, shall mean reasonably achievable considering a balance of land use impacts, environmental impacts, and engineering and economic constraints.

e. "Linear facility" shall mean any transmission lines, such as natural gas pipelines, liquid fuel pipelines, railroad lines, reclaimed water pipelines or power transmission lines associated with the Polk County Site.

f. "Project" shall mean the FPC Polk County Site and all facilities, including: power plant and related facilities; the cooling reservoir, dam, and related facilities; any off-site mitigation/compensation areas, including the off-site mandatory and non-mandatory reclamation areas to be reclaimed and/or re-routed in conjunction with the Polk County Site development; and all of the linear facilities.

g. "ROW" shall mean the linear facility right-of-way to be selected by the FPC within the certified corridor in accordance with the Conditions of Certification.

2. FPC shall provide post-certification submittals to the SWFWMD to ensure that the construction, operation and maintenance of the surface water management system will be in compliance with the Conditions of Certification and the rules of Chapter 40D-4, F.A.C., in effect at the time of post-certification submittals. FPC shall consult with the SWFWMD surface water permitting staff prior to finalization of construction designs, plans, specifications and locations of project facilities to coordinate and foster mutual understanding of construction designs, techniques and regulatory objectives which are to be reflected on any post-certification review information submittals.

Three (3) sets of the post-certification submittals for the surface water management system shall be sent to the Southwest Florida Water Management District, Tampa Permitting Department, 7601 U.S. Highway 301 North, Tampa, Florida 33637. If SWFWMD staff does not issue a written request within 30 days of receipt of the information, the information will be deemed to be complete and sufficient. Within 90 days of the determination by SWFWMD staff that the additional information is complete and sufficient, the SWFWMD shall determine and notify FPC in writing whether the proposed activities conform to SWFWMD criteria, as required by Chapter 40D-4, F.A.C., and the Conditions of Certification. Construction activities which impact works of the District (Chapter 40D-6, F.A.C.), or have surface water management impacts shall not begin until the SWFWMD has determined that the activities are in compliance with the applicable SWFWMD rule criteria and Conditions of Certification, either in writing or by failure to notify FPC in writing.

The following information shall be provided to the SWFWMD by FPC for further post-certification regulatory review:

a. At least 120 days prior to commencement of construction of the linear facilities, copies of blue-line reproductions of aerial photographs of at least 1:400 scale shall be submitted to the SWFWMD delineating the ROW routes selected, boundaries, preliminary pole and pad locations and

access roads. FPC shall notify all parties of such filing. The SWFWMD and any other party who requests to do so shall have 30 days from receipt of notice to review the photographs and to call any apparent conflicts with the requirements of the Conditions of Certification to the FPC's attention. However, this paragraph shall not operate to avoid the need for post-certification submittals and compliance reviews otherwise required by the Conditions of Certification.

If any substantially affected party has reason to believe that the construction of the linear facilities and access roads within FPC's designated ROW cannot be accomplished in compliance with the Conditions of Certification, FPC shall be so notified in writing. Failure of such a notice to be served on FPC within 30 days from the notice of filing of the aerial photographs with SWFWMD constitutes acknowledgment that construction of the linear facilities and access roads can be accomplished within the designated ROW submitted for review.

FPC shall, where practicable, utilize adjacent existing public roads for access to the linear facility ROW for construction, operation and/or maintenance purposes. Finger roads connecting the existing roads must be constructed in a manner which minimizes alterations to natural drainage flows and adverse water resource impacts.

The acquisition of a particular ROW or the expenditure of funds toward acquisition of a particular ROW prior to post-certification review pursuant to these conditions will be at FPC's risk and no party will be estopped by such acquisition to seek disapproval of the construction of the linear facility or access roads within the ROW in accordance with these Conditions of Certification.

b. At least 120 days prior to the commencement of construction of any portion or phase of the project which may obstruct, divert, control, or impound waters in the state, or 120 days prior to any dewatering activity which may impact SWFWMD jurisdictional wetlands, such construction must be reviewed by the SWFWMD for a determination of compliance with Chapter 40D-4, F.A.C., and the Conditions of Certification, as appropriate. "Construction" activities for which such review is required shall include those defined in Rule 40D-4.021(13), F.A.C.; and includes, but is not limited to, installation of all surface water and stormwater management facilities, the placement of structure pads, dredging and filling, the installation of access/ maintenance roads and culverts and fill materials, wetlands mitigation/compensation and related activities in circumstances where a permit from the SWFWMD would ordinarily be required. FPC shall provide appropriate final site information and construction drawings, engineering design calculations, operating and maintenance procedures (all designed and sealed by an engineer practicing in the state of Florida,

having the appropriate experience in surface water management design and construction, and in compliance with Chapter 471, F.S.), mitigation/compensation measures and other explicit supporting information for various project phases that are applicable to surface water or stormwater management systems. The information provided shall be sufficient in scope, content and detail to demonstrate compliance with the surface water regulation requirements of Chapter 40D-4, F.A.C., and the Conditions of Certification.

For all construction activities related to linear facilities, the following information shall be provided at a minimum:

i. A centerline profile of existing topographic features along the proposed linear facilities corridor(s) sufficient to show contours and drainage patterns;

ii. Construction plans and designs of the proposed access/ maintenance and finger road(s) with elevations, dimensions and wetland limits shown;

iii. Typical cross-sections of the proposed access/ maintenance and finger road(s);

iv. Cross-sections of each wetland, stream or creek at the points to be crossed by the access/maintenance and finger road(s) or other construction;

v. Specifications showing the location of each linear facility structure, finger and maintenance/access road (s), and culverts to be constructed, including all areas to be filled or excavated;

vi. Specifications, including supporting assumptions and calculations, showing the type and size of water control structures (ditch, culvert, equalizer, etc.) to be used, with proposed flowline elevations marked, drainage areas identified and design capacity verified;

vii. A cross-section of all proposed fill/excavation areas, with the exception of fill/excavation directly associated with transmission line support poles, showing the proposed depth.

For all construction activities within or adjacent to wetlands within SWFWMD jurisdiction excluding wetlands (other than those wetlands contained within Tiger Bay, Tiger Bay East, linear facilities rights-of-ways, and site buffer areas once reclaimed and released) contained within previously mined areas or clay settling areas located on the previously mined phosphate land, which shall not be subject to SWFWMD jurisdiction, the following information shall be provided as a minimum:

i. Provide a certified survey or other form of accurate and reproducible means of depicting the field verified wetland limits and clearly indicate these limits on the construction drawings.

ii. Provide a numbering system for all such on-site wetlands in Tiger Bay and Tiger Bay East (excluding those less than 0.5 acre) and for each wetland clearly indicate the index number on the construction drawings. In tabular form, please indicate for each wetland the index number, on-site acreage, impact acreage, and indicate whether the wetland has been claimed by the SWFWMD, the ACOE, and/or the DEP.

iii. Conduct a habitat assessment of each of the proposed wetland impact areas. Describe the type and function and include the dominant floral and faunal species for each distinct vegetative zone and stratum.

iv. Submit a sufficiently comprehensive wetland mitigation/compensation plan to provide reasonable assurance of the successful replacement of the proposed impact wetland's values and functions. Natural wetlands to be impacted by linear facilities or other activities may be mitigated or compensated for on the main Polk County Site with the concurrence of the SWFWMD. Include all design details of the wetland mitigation/ compensation areas on the construction drawings. Details should include plan and cross-sectional views showing limits of each distinct zone in reference to proposed control elevations, proposed plantings (species, relative compensation, sizes, and densities) within each zone, mulching details, proposed water elevations (Seasonal High Water Level and Normal Pool), bottom elevations, side slopes, and schedules for wetlands compensation, grading, mulching, planting of the mitigation areas, etc.

v. Provide a monitoring and maintenance plan for the wetland mitigation/compensation areas. Sampling design and methodology must clearly demonstrate that the sampling methods and intensity are sufficient to accurately characterize each vegetative zone and stratum in a reproducible manner.

3. FPC shall avoid impacting wetlands by construction of the linear facilities wherever practicable. When necessary and feasible, the location of and span between power poles shall be varied to eliminate or reduce wetland impacts.

4. Subsequent modifications to the drawings and supporting calculations submitted to the SWFWMD which may significantly alter the quantity and/or quality of waters discharged off site shall also be submitted to the SWFWMD for determinations as to whether the modifications are in compliance with Chapters 40D-4, F.A.C., and the Conditions of Certification as appropriate, prior to the commencement of construction.

5. Authorized representatives of the SWFWMD shall be allowed reasonable escorted access to the project site and any authorized off site mitigation/compensation or otherwise associated areas such as the Estech Plant Site to inspect and observe any activities associated with the project construction and/or operation and/or maintenance of the surface water management system(s) and stormwater facilities in order to determine compliance with the Conditions of Certification.

6. The operational phase(s) of the surface water management system authorized under this certification shall not become effective until FPC confirms in writing, upon completion of each phase, that these facilities have been constructed consistent with the Conditions of Certification. Such confirmation shall include a certification by a professional engineer licensed in the state of Florida, having the appropriate experience in surface water management design and construction and in compliance with Chapter 471, F.S., unless exempt thereunder, that the facilities have been constructed in accordance with the approved project design. Within 30 days after completion of construction of each phase of the surface water management system, FPC shall submit the confirmation, including "as-built" construction drawings with the engineer's certification and a description of any deviations; and notify the SWFWMD that the facilities are ready for inspection for consistency with the Conditions of Certification and information submitted hereunder.

7. The SWFWMD may initiate action to require additional post-certification monitoring requirements as a result of technical review of construction information, where necessary to demonstrate compliance with SWFWMD rules and the Conditions of Certification.

8. The terms, conditions, requirements, limitations, and restrictions set forth herein are Conditions of Certification for the surface water management system and as such are binding upon FPC and enforceable pursuant to the authority of Chapters 373 and 403, F.S. FPC is hereby placed on notice that the SWFWMD will review this certification periodically and may initiate enforcement action for any violation of the Conditions of Certification for the surface water management system by FPC, its agents, employees, servants or representatives.

9. This certification for the surface water management system is valid only for the specified processes and operations applied for and indicated in the approved drawings and exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or Conditions of Certification may constitute grounds for revocation and enforcement action.

10. The issuance of this certification for the surface water management system does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor infringement of federal, state or local laws or regulations.

11. This certification for the surface water management system conveys no title to land or water, does not constitute state recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

12. This certification for the surface water management system does not relieve FPC from liability for harm or injury to human health and welfare, animal, plant or aquatic life or property and penalties therefore caused by the construction or operation of the certified system, nor does it allow FPC to cause pollution in contravention of Florida Statutes and SWFWMD rules, unless specifically authorized by any order from the SWFWMD.

13. FPC shall at all times properly operate and maintain the systems of treatment and control (and related appurtenances) that are installed or used by FPC to achieve compliance with these Conditions of Certification for the surface water management system, as required by the SWFWMD rules (Chapter 40D-4, F.A.C.). This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the Conditions of Certification and when required by the SWFWMD rules.

14. FPC, by accepting this certification for the surface water management system, specifically agrees to allow SWFWMD personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the certified activity is located or conducted; for the purposes of inspection and testing to determine compliance with this certification for the surface water management system and SWFWMD regulation, such as:

a. having access to and copying any records that must be kept under the conditions of certification for the surface water management system;

b. inspecting the facility, equipment, practices, or operations regulated or required under this certification for the surface water management system;

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this certification for the surface water management system or SWFWMD rules; and,

d. Gathering of data and information.

Reasonable time may depend on the nature of the concern being investigated.

15. If, for any reason, FPC does not comply with or will be unable to comply with any condition or limitation specified in this certification for the surface water management system, FPC shall immediately notify and provide the SWFWMD with the following information:

a. A description of and cause of noncompliance; and,

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

FPC shall be responsible for any and all damages which may result and may be subject to enforcement action for penalties or revocation of this certification.

16. In accepting this certification for the surface water management system, FPC understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this certified source, which are submitted to the SWFWMD, may be used by the SWFWMD as evidence in any enforcement case arising under the Florida Statutes or SWFWMD rules, except where such use is proscribed by Florida Statutes.

17. The SWFWMD may initiate any necessary action to require FPC to comply with any applicable changes in the SWFWMD rules and Florida Statutes after a reasonable time for compliance, provided, however, FPC does not waive any other rights granted by Florida Statutes or SWFWMD rules.

18. FPC shall comply with the following monitoring and record keeping requirements:

a. Upon request, FPC shall furnish all records and plans required under the SWFWMD rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the SWFWMD, during the course of any unresolved enforcement action.

b. FPC shall retain, at the facility or other location designated by this certification, records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentations), copies of all reports required by this certification, and records of all data used to complete the application for this certification. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by the SWFWMD rule.

c. Records of monitoring information shall include:

i. the date, exact place, and time of sampling or measurements;

ii. the person responsible for performing the sampling or measurements;

iii. the date(s) analyses were performed;

iv. the person responsible for performing the analyses; and,

v. the results of such analyses.

19. When requested by the SWFWMD, FPC shall within a reasonable time furnish any information required by law which is needed to determine compliance with the certification for the surface water management system. If FPC becomes aware that relevant facts were not submitted or were incorrect in the certification application or in any report to the SWFWMD, such facts or information shall be submitted or corrected promptly.

20. Drawings, plans, calculations, specifications or other information submitted by FPC, not attached hereto, but retained on file at the SWFWMD office, are made a part of this certification.

21. A copy of this certification and a set of construction drawings depicting the certified system are required to be kept at the work site of the certified activity during the entire period of construction or operation.

22. The discharges from the surface water management system shall meet state water quality standards as set forth in Chapter 17-302 and Rule 17-302.700, F.A.C., for class waters equivalent to the receiving waters.

23. Any surface water discharged from the site during construction of the project shall meet state water quality standards at the property boundary or point of discharge to wetlands or state waters. If the discharge does not meet these

standards, the discharge will be immediately stopped and the SWFWMD shall be notified of corrective action taken to correct the violation. Turbidity shall not exceed 29 N.T.U. above background level. Turbidity shall be monitored at least daily during discharge, or more often as determined by the project engineer or SWFWMD if needed, to ensure compliance.

24. FPC and construction representatives shall assure that erosion and sediment control measures as necessary and as required by the SWFWMD's Rule 40D-4.091, F.A.C., shall be effectively implemented continuously from the beginning of project construction until completion to prevent erosion and transport and discharge of sediment to wetlands or any property other than the project area. Project retention/detention ponds and discharge control structures which are to be constructed as part of the project shall be initially built and maintained continuously during project construction to avoid adverse impact to receiving waters or off-site lands.

25. Except as authorized by this certification for the surface water management system, any further land development, wetlands disturbance or other construction within the total land area of this site will require additional certifications in accordance with the SWFWMD's rules (Chapter 40D-4, F.A.C.).

26. All rights-of-way and easement locations necessary to construct, operate and maintain all facilities, including uplands conservation/buffer areas and wetlands, which constitute the certified surface water management system shall be reserved for water management purposes.

27. Construction of the discharge control and water quality treatment facilities which are part of the certified surface water management system for the power block area shall be completed and operational prior to beneficial occupancy and use of the project development being served.

28. Establishment and survival of littoral areas provided for stormwater quality treatment in wet detention systems shall be assured by proper and continuing maintenance procedures designed to promote viable wetlands plant growth of natural diversity and character. As-built drawings depicting the established wet detention treatment areas shall be submitted to the SWFWMD for inspection and approval upon completion of construction. Following as-built approval, perpetual maintenance shall be provided for the certified system.

29. Any existing wells in the path of construction shall be properly plugged and abandoned by a licensed water well contractor in accordance with Chapter 40D-3, F.A.C., and Rule 17-532.500(4), F.A.C.

30. Any existing septic tanks on this site shall be abandoned at the beginning of the project construction in accordance with Rule 10D-6.53, F.A.C.

31. Any existing fuel storage tanks and fuel pumps on this site shall be removed at the beginning of project construction in accordance with Rule 17-61.05(3)(c), F.A.C.

32. All retention/detention pond (not including the cooling pond or other industrial wastewater ponds) side slopes shall be sodded and staked as necessary, to prevent erosion.

33. By issuance of this certification the SWFWMD, its employees and representatives assume no responsibility and/or liability in regard to either the design, construction or performance of the certified facilities.

34. Any system alteration, including for augmentation into or withdrawal of water from the certified surface water management system, other than as specifically authorized by this certification will require additional SWFWMD certification consideration. The water level of detention ponds (not including the cooling pond, other industrial wastewater ponds or water crop areas) shall not be augmented by pumping or diversion of water into the ponds to artificially control their level above the design normal or beginning storage level.

35. In addition to those reports specifically required to be sent to the Tampa Permitting Department, all information and reports required to be submitted by this certification shall be submitted to:

Southwest Florida Water Management District
Permits Data Section
2379 Broad Street
Brooksville, Florida 34609-6899

36. Construction of all surface water management facilities, excluding wetlands compensation, grading, mulching, planting of the mitigation areas, etc., must be completed prior to operation of the surface water management system.

37. FPC shall notify the SWFWMD within 30 days of the sale or transfer of ownership of land on which a surface water management system will be or is located.

38. FPC shall perform the construction authorized in a manner so as to minimize any adverse impact of the system on fish, wildlife, natural environmental values, and water quality. FPC shall institute necessary measures during the construction period, including full compaction of any fill material placed

around newly installed structures, to reduce erosion, turbidity, nutrient loading and sedimentation in the receiving waters.

39. FPC shall obtain all necessary federal permits prior to the start of any construction or alteration of works authorized by this certification.

40. The operation phase of this certification for the water management system shall not become effective until the owner or his authorized agent certifies that all facilities of the surface water management system have been constructed in accordance with the design approved by the SWFWMD. Within 30 days after completion of construction of the surface water management system, FPC shall submit the as-builts and notify the SWFWMD that the facilities are complete. The SWFWMD may inspect the system and required remedial measures.

41. Off-site discharges of surface water during construction and development shall be made only through the facilities authorized by this certificate. Water discharged from the project shall be through structures having a mechanism suitable for regulating upstream stages. Stages may be subject to operating schedules satisfactory to the SWFWMD.

42. No construction authorized herein shall commence until a responsible entity acceptable to the SWFWMD has been established and has agreed to operate and maintain the system. The entity must be provided with sufficient ownership so that it has control over all water management facilities authorized herein. Upon receipt of written evidence of the satisfaction of this condition, the SWFWMD will issue an authorization to commence construction. FPC shall be deemed an acceptable entity.

43. FPC shall hold and save the SWFWMD harmless from any and all damages, claims, or liabilities which may arise by reason of the construction, operation, maintenance or use of any facility authorized by this certificate.

44. This certification is issued based on FPC's submitted information which reasonably demonstrates that adverse off-site water resource related impacts will not be caused by the completed surface water management system. It is also the responsibility of the FPC to ensure that adverse off-site water resource related impacts do not occur during construction.

45. All surface water management systems shall practice water conservation to maintain environmental quality and resource protection; to increase the efficiency of transport, application and use; to decrease waste; to minimize unnatural runoff from the property and to minimize dewatering of off-site

property. At such time in the future as the SWFWMD Governing Board establishes minimum water levels in aquifers or minimum rates of flow in streams, or otherwise adopts specific conservation criteria, the SWFWMD may initiate any necessary action to require FPC to undergo an alteration of the system to comply with such criteria upon notice by the SWFWMD and after a reasonable period for compliance.

46. In order to ensure that the person who will construct the proposed work is identified as required by 373.413(2)(f), F.S., once the contract is awarded, the name, address, and telephone number of the contractor shall be submitted to the SWFWMD prior to construction.

47. FPC shall immediately provide written notification to the SWFWMD upon beginning any construction authorized by this certificate.

48. FPC shall retain the Design Engineer, or other Professional Engineer registered in the state of Florida, to conduct on-site observations of construction and assist with the as-built certification requirements of this project. The FPC shall inform the SWFWMD in writing and prior to beginning construction of the name, address and phone number of the professional engineer so employed by the FPC for that purpose.

49. Any impacts to wetlands resulting from dewatering activities shall require mitigation/compensation and shall be reviewed by SWFWMD in accordance with the provisions of Condition XXVI.B.2.b.

50. Prior to dewatering activities conducted by FPC, or by the property owners on behalf of FPC for construction of the proposed Polk County site facilities, FPC shall submit a detailed report documenting the results of a baseline survey of off-site vegetation and associated stream flow data for McCullough Creek and Camp Branch that will be conducted at least six months prior to any construction or dewatering activities. Such survey will be completed prior to the initiation of dewatering activities conducted by FPC, or by the property owners on behalf of FPC to initiate construction activities on the site. This survey shall consist of vegetative transects in each floodplain of Camp Branch and McCullough Creek. FPC shall submit sampling methods and locations of the baseline survey to the SWFWMD for approval prior to implementation. This baseline will serve as the basis for determining any changes in vegetative communities which die due to the activities of the project. Percent cover methodology as described in the Site Certification Application on page 2.3.6-46 shall be utilized.

51. Monitoring for the dewatering activities which result in offsite discharge will be conducted in accordance with the approved dewatering plan as previously submitted by FPC in the Site Certification Application and incorporated into the Conditions of Certification. Analyses shall be performed according to procedures outlined in Chapter 17-160, F.A.C. If water quality data are required, FPC shall provide data as required on volumes of water discharged from the surface water management system, including total volume discharged during the days of sampling and total monthly discharges from the property or into surface waters of the state.

52. FPC shall submit quarterly groundwater and surface water level and water quality sampling results to the SWFWMD within 30 days following the end of each quarter from March, 1993, through one full quarter following the conclusion of dewatering, unless the SWFWMD determines at an earlier date that no further monitoring is necessary.

53. Prior to the commencement of construction, FPC shall provide to the SWFWMD documentation to ensure that the surface water management plan can be implemented as proposed at the Estech Plant Site. The mechanism of ownership, control, or other formal agreement with the off-site property owner, must be clearly defined, and the limits of such control or agreements must be fully documented.

54. As with all of the on-site areas, final grading plans for the off-site area associated with this project must be submitted prior to construction for review and approval by SWFWMD staff pursuant to Condition XXVI.B.2. These plans must document conformance with the approved conceptual plan and with the Conditions of Certification.

55. While the conceptual plan for the ultimate site capacity has been reviewed for the Site Certification Application, the scope of construction approved in this report is limited to the construction of those facilities necessary to support the first phase of construction for the 470 MW facility. If in the review of future phases it is determined that some or all of the proposed future phases will not be approved, FPC shall submit to the SWFWMD, within 180 days after such a determination becomes final, a revised surface water management plan and all necessary calculations documenting how the remaining surface water features that would have been associated with the future phases will be reclaimed in accordance with Chapter 40D-4, F.A.C., and Chapters 16C-16 and/or 16C-17, F.A.C., if applicable.

56. FPC shall provide the SWFWMD with an evaluation of the potential for utilizing some of the increased mass flows anticipated in the cooling pond to offset groundwater withdrawal

requirements. However, the amount of water diverted to the cooling pond shall not result in a mass flow discharge to either McCullough Creek or Camp Branch that is below 100 percent of the pre-mining condition mass flows for both the mean annual and the 25 year - 24 hour storm event. This information shall be submitted to the SWFWMD for review and approval prior to commencement of construction.

XXVII. FLORIDA DEPARTMENT OF COMMUNITY AFFAIRS

1. Structures for the associated Barcola-Fort Meade 230 kV transmission line shall be designed to withstand hurricane force winds of 120 miles an hour. The lines shall be designed to de-energize if they come loose from the structures so that any lines that do fall to the ground will not be "live" and pose a hazard to the public.

2. FPC shall make all practicable efforts to market sulfur and slag by-products of coal gasification.

3. The office/administration buildings at the Polk County Site shall be included in the Department of Community Affairs' Florida Radon Research Program (FRRP) and Construction Standards Development activities, specifically the FRRP-Radon Proposed Standards Demonstration Study in Large Buildings. Additionally, FPC shall conduct a pre-construction, site-specific soil gas radon test in accordance with the FRRP protocol to identify the radon potential of the office/administration buildings construction site(s). If the test results indicate that the office/administration buildings construction site(s) have a high radon potential, FPC shall (1) integrate improved slabs and sub-slab depressurization systems construction design criteria developed through the FRRP in the office/administration buildings; (2) conduct post-construction tests in accordance with the FRRP protocols to evaluate the proposed design criteria, and (3) make test results available to the FRRP program.

4. To the extent practicable, FPC shall locate the proposed linear facilities within existing rights-of-way.

5. FPC shall investigate all complaints and provide appropriate mitigation for all impacts to radio and television reception caused by the proposed Barcola-Fort Meade 230 kV transmission line.

6. FPC shall implement the following three conditions during construction of the natural gas pipeline lateral near residences along Jameson Road in Hillsborough County and along Agricola Road near Bradley Junction in Polk County:

a. For residences located within 50 feet of the construction easement, FPC shall avoid removal of mature trees and landscaping between the residence and the edge of the construction easement, wherever practicable, and shall immediately restore all lawn areas and landscaping within the construction easement.

b. For residences located between 25 and 50 feet from the edge of the construction easement, FPC shall temporarily fence the edge of the construction easement adjacent to the residence for a distance of 25 feet on either side of the

residence to ensure that construction equipment and materials, including the spoil pile, remain within the construction easement.

c. For residences located between 0 and 25 feet from the edge of the construction easement, FPC shall temporarily fence the edge of the construction easement and, if practicable, reduce the construction easement as necessary to maintain a minimum distance of 25 feet between the residence and the edge of the construction easement for a distance of 25 feet on either side of the residence. In no case shall the edge of the temporary construction easement be located within 10 feet of a residence unless the landowner agrees in writing. If placement of the pipeline will be within 25 feet of a residence, FPC shall ensure that the trench is not excavated until the pipe is ready for installation and the trench is backfilled immediately after pipe installation.

XXVIII. FLORIDA GAME AND FRESH WATER FISH COMMISSION

1. The Florida Game and Fresh Water Fish Commission (FGFWFC) shall be consulted in the development and implementation of reclamation plans for areas SA-10, N-9B and N-13 in the buffer area. FPC shall submit final planting plans for the buffer area to the FGFWFC.

2. FPC shall allow authorized representatives of the FGFWFC access to the site during operational or business hours upon the presentation of credentials, for the purpose of wildlife monitoring.

3. As part of the annual statistical report of vegetational sampling of the reclaimed wetlands in the buffer areas SA-10, N-9B and N-13, FPC shall report on qualitative monitoring of wildlife usage. A copy of the report shall be provided to the FGFWFC.

4. Prior to the construction of the proposed facility, or the installation or refurbishment of any associated linear facility, wildlife surveys shall be conducted for the presence of listed species (endangered, threatened, or species of special concern). The results of these surveys shall be presented to the FGFWFC and the U.S. Fish and Wildlife Service.

5. If it is determined that any listed species will be affected by the construction of the Polk County Site or the associated linear facilities, FPC shall consult with the FGFWFC and the U.S. Fish and Wildlife Service to determine the appropriate steps to be taken to avoid, minimize, mitigate, or otherwise appropriately address impacts within each agency's respective jurisdiction.

XXIX. FLORIDA DEPARTMENT OF TRANSPORTATION

1. Prior to commencing the hauling of fuel oil to the site, a specific haul route shall be submitted to the FDOT, Polk County and any other affected jurisdiction for review for compliance with generally applicable requirements. FPC may revise the haul route with notice to the affected jurisdiction(s). In the event FDOT or any county road agency approves a work program that includes a structural repair or structural improvement along the haul route, FPC shall provide its proportionate share of the cost of the repair/improvement. Proportionate share shall be defined as the average annual fuel oil truck traffic to and from the FPC Polk County Site divided by the average annual total traffic on the haul route for the most recent five-year period. FPC's proportionate share shall be calculated and paid within six months of the beginning of the fiscal year in which the repair or improvement is commenced. It shall be the responsibility of FDOT or the appropriate county road agency to notify FPC of the inclusion of the repair/improvement of the work program.

2. When the number of construction and operating employees reporting to the site at the same shift exceeds 350, FPC shall begin a traffic monitoring program at the intersection of SR 37 and CR 640 for determining the need to install a traffic signal or to make geometric improvements. Intersection monitoring shall consist of conducting turning movement counts and a signal warrant analysis. The monitoring shall be conducted once per year in January, February, or March, until the number of employees has peaked or a signal and appropriate intersection improvements are installed, whichever comes first. FPC shall provide its proportionate share of the cost of the improvements required. Proportionate share shall be defined as actual project traffic divided by actual total traffic volume at the intersection at the time the improvement is determined to be needed.

3. Prior to the time when the number of construction and operating employees reporting to the site at the same shift exceeds 150, FPC shall add a signal phase for westbound left-turns, which operates as a protected/permissive at the intersection of CR 555 and SR 60. Modifications to the transportation system must conform to the requirements of the FDOT. Geometric improvements required to accommodate this signal phase shall be part of the signal modification. This does not include the re-aligning of CR 555 at the southbound approach.

4. Prior to the time when the number of construction and operating employees reporting to the site at the same shift exceeds 700, FPC shall add a second westbound left-turn lane by restriping the existing pavement at the intersection of US 98

and SR 60A. The restriping process shall include the milling of existing pavement, repaving, and providing new pavement markings within the construction area.

5. All utility work/construction with the state right-of-ways shall conform to the minimum requirements of the Utility Accommodation Manual dated 6/93, or as may be amended. For all work normally requiring a Utility Permit, FDOT shall issue the permit within 90 days, or as may be required by the Utility Accommodation Manual, of the submission of a satisfactorily completed Utility Permit (Form #592-03, or as may be amended).

6. Modifications to existing intersections with state roads shall be in compliance with Chapters 14-96 and 14-97, F.A.C. For all modifications to existing intersections with state roads, FDOT shall issue a Connection Permit within 90 days of the submission of a satisfactorily completed Connection Permit (Form #850-040-10-a (12/89), or as may be amended.

7. Any new public rail/highway at-grade crossings which may be deemed necessary for this site by FPC must adhere to the non-procedural standards of Rule 14-46.003, F.A.C. In the event FPC determines it is necessary to create a new public rail/highway at-grade crossing, FPC shall include the crossing as part of either a modification of certification or supplemental application, which shall include notices for public hearings or stipulations of all parties as required by Chapter 403, Part II, F.S., and Chapter 17-17, F.A.C.

XXX. POLK COUNTY

1. Permits - Copies of all federal permits and the PPSA certification order required for each phase of development of the Polk County Site facility shall be provided to the Polk County Planning Division Director prior to the commencement of building construction code compliance review for that phase.

Citation: CUP 92-06 Condition No. 1.

2. Fuel - The project shall be restricted to the burning of natural gas, coal gas, coal, or oil unless a Conditional Use Permit (CUP) modification providing an analysis of the impact of any proposed change in fuel types is reviewed and approved by the Polk County Board of County Commissioners in accordance with Polk County procedures for conditional use permits.

Citation: CUP 92-06 Condition No. 2.

3. Fire Protection Plan - Following site certification, and prior to completion of building construction code compliance review, FPC shall submit an acceptable fire protection plan to the Polk County Fire Codes Inspector outlining specific measures to be taken to meet all local fire codes and regulations. As part of this plan, FPC shall install on the fuel oil tanks either subsurface foam systems or outside foam systems, and shall maintain foam on-site for operation of these systems.

Citation: CUP 92-06 Condition No. 3.

4. Emergency Management and Response Plans - Following site certification, and prior to completion of building construction code compliance review, FPC shall submit an acceptable Emergency Management and Response Plan (EMR Plan) to the Polk County Office of Public Safety. The EMR Plan will detail emergency management and response procedures for any project-related, on-site incidents, including hurricane, fire, and hazardous materials releases, so as to ensure minimum response time and maximum effectiveness and efficient response in order to protect the public's health, safety, and welfare. The plan shall be consistent with the requirements of 29CFR 1910.38. In the event of a project-related on-site incident which has the potential to result in off-site impacts, FPC shall promptly ascertain the extent of the impact and take appropriate steps to remedy the situation or mitigate such off-site impacts.

Citation: CUP 92-06 Condition No. 4.

5. Emergency Notice - FPC shall immediately contact Polk County's Office of Public Safety when it becomes aware of project related on-site incidents which have the potential for affecting the public's health, safety, and welfare.

Citation: CUP 92-06 Condition No. 5.

6. Landscape Buffer - Landscaping shall be installed in accordance with the landscape plan included in the Site Certification Application. Installation shall be completed prior to commercial operation of the first unit. FPC shall guarantee 80 percent survival of landscape plant materials for a period of one year following the completion of installation.

Citation: CUP 92-06 Condition No. 6.

7. Tall Structure Compliance - FPC shall, at the time it proposes to construct any structure over 500 feet in height at its site, comply with all regulations as imposed by the Polk County Airport Zoning Ordinance, prior to completion of building construction code compliance review for the units requiring such a structure.

Citation: CUP 92-06 Condition No. 7.

8. Transportation

a. Following certification, but prior to the completion of building code compliance review, FPC shall submit to the Polk County Planning Division Director a plan for monitoring the number of employees reporting to the site at the same shift time and reporting this information to the Polk County Planning Division. The data collected through this monitoring program shall be the basis for determining the need for transportation improvements.

Citation: CUP 92-06 Condition No. 8A.

b. Prior to the completion of building construction code compliance review, FPC shall be required to construct a Case III intersection at the main driveway connection to CR 555 in accordance with Polk County subdivision regulations, including left-turn storage and acceleration/deceleration lanes.

Citation: CUP 92-06 Condition No. 8B.

c. Prior to the completion of building construction code compliance review, FPC shall be required to construct a Case II (balanced) intersection at the secondary or northernmost driveway connection to CR 555 in accordance with Polk County's subdivision regulations.

Citation: CUP 92-06 Condition No. 8C.

d. Prior to the time when the number of construction and operating employees reporting to the site at the same shift time exceeds 150, FPC shall add a signal phase for westbound left-turns which operates as protected/permissive at the intersection of CR 555 and SR 60. Modifications to the transportation system must conform to the requirements of the FDOT.

Citation: CUP 92-06 Condition No. 8D.

e. Prior to the time when the number of construction and operating employees reporting to the site at the same shift exceeds 700, FPC shall add a second westbound left-turn lane by restripping the existing pavement at the intersection of US 98 and SR 60A. Modifications to the transportation system must conform to the requirements of the FDOT.

Citation: CUP 92-06 Condition No. 8E.

f. When the number of construction and operating employees reporting to the site at the same shift exceeds 350, FPC shall begin a traffic monitoring program at the intersection of SR 37 and CR 640 for determining the need to install a traffic signal or to make geometric improvements. Intersection monitoring shall consist of conducting turning movement counts and a signal warrant analysis. The monitoring shall be conducted once per year in January, February, or March, until the number of employees has peaked, a signal is installed, or other necessary intersection improvements are made.

Citation: CUP 92-06 Condition No. 8F.

g. When the number of construction and operating employees reporting to the site at the same shift time exceeds 350, FPC shall begin a traffic monitoring program at the intersection of CR 555 and CR 640 for determining the need to install a traffic signal or to make geometric improvements. Intersection monitoring shall consist of conducting turning movement counts and a signal warrant analysis. The monitoring shall be conducted once per year in January, February, or March, until the number of employees has peaked, a signal is installed, or other necessary intersection improvements are made.

Citation: CUP 92-06 Condition No. 8G.

h. Following site certification and prior to the completion of building construction code compliance review, FPC shall submit an acceptable Transportation Demand Management Plan to the Polk County Planning Director outlining specific measures to be taken to minimize the impacts of both construction and operations traffic on the surrounding transportation network.

Citation: CUP 92-06 Condition No. 8H.

i. The site shall be limited to the two access points on CR 555 shown on Figures 3.2.1-1 and 3.2.1-2 in the Site Certification Application. The entrances shall be built for use during the construction phase of this project. All construction traffic shall park inside the site, well away from the road right-of-way.

Citation: CUP 92-06 Condition No. 8I.

9. Solid Waste Disposal

a. FPC shall be responsible for proper disposal of slag and/or ash by-products produced in the power generation process at locations other than at Polk County landfills.

Citation: CUP 92-06 Condition No. 9A.

b. FPC shall monitor groundwater in relation to solid waste disposal areas and make available to the Polk County Water Resources Director all data produced from the groundwater monitoring system. Upon prior notice, FPC shall allow county staff members access to the site for purposes of examining the condition of the groundwater monitoring equipment, observing the sampling procedures and collection of samples as deemed necessary for Polk County.

Citation: CUP 92-06 Condition No. 9B.

10. Hazardous Materials Storage - FPC shall annually report their storage and usage of hazardous material to Polk County as required by SARA Title III and upon prior notice shall allow county staff members access to the site for purposes of determining compliance with reporting requirements. As part of the first report, FPC shall specifically address with narrative descriptions, data and maps, as appropriate, the location of the Polk County Site, as a facility at which hazardous materials may be used, handled or stored, with respect to the following:

a. access from the site to major transportation routes for ease and safety of transporting hazardous materials.

Citation: CUP 92-06 Condition No. 10A.

b. access and reasonable response time to the site for properly-trained and equipped personnel to service potential hazardous materials accidents.

Citation: CUP 92-06 Condition No. 10B.

c. the nearness and degree of sensitivity of surrounding land uses.

Citation: CUP 92-06 Condition No. 10C.

d. the compatibility of the proposed use with respect to the nature of hazardous materials stored or used on adjacent sites.

Citation: CUP 92-06 Condition No. 10D.

e. the existence of surface water features, including drainage patterns and basin characteristics.

Citation: CUP 92-06 Condition No. 10E.

f. the location of potable water supplies, private wells, public well fields, sinkholes, and other conduits for potential migration of contaminants.

Citation: CUP 92-06 Condition No. 10F.

g. atmospheric conditions, including but not limited to prevailing wind patterns.

Citation: CUP 92-06 Condition No. 10G.

11. Spill Prevention Control and Countermeasure Plan - FPC shall be required to submit a preliminary Spill Prevention Control and Countermeasure Plan (SPCC) to the Polk County Public Safety Department and the Polk County Planning Department as part of the building construction code compliance review. The final SPCC Plan shall be submitted to Polk County for compliance review six months prior to the date the first unit begins commercial operation and shall be implemented when the first unit begins commercial operation. The SPCC Plan shall be updated in the event of a change in design, construction, operation, technology, or maintenance, which materially affects the facilities potential for the discharge of oil into or upon the navigable waters of the US or adjoining shore line. This Plan shall be prepared and updated in accordance with requirements of the Clean Water Act, as in 40 CFR Part 112 and submitted to Polk County for review and comment prior to implementation.

Citation: CUP 92-06 Condition No. 11.

12. Flood Study

a. FPC shall submit a flood study to the Federal Emergency Management Agency (FEMA) in support of a Letter of Map Amendment or Revision, whichever is appropriate, in

accordance with National Flood Insurance Program Rules and Regulations, within one year of release of reclamation of the site.

Citation: CUP 92-06 Condition No. 12.

b. FPC shall construct and maintain adequate flood protection berms to assure that the Homeland area will not receive flood waters in the event of a dam failure.

Citation: Polk Ordinance 88-04.

c. FPC shall perform and provide to Polk County a detailed analysis of dam failure flood conditions including alternatives for minimizing obstruction and damage to roadways.

Citation: Polk Ordinance 88-04.

13. Stack Emissions Monitoring - FPC shall make available to the Polk County Environmental Services Director all data produced from the emissions monitoring systems for the exhaust stack(s) when requested and report on a quarterly basis any excess emissions. FPC shall allow designated county staff members access to the site for purposes of examining the condition of this equipment and the monitoring program upon prior notice.

Citation: CUP 92-06 Condition No. 13.

14. Compliance with Applicable Air Quality Regulations - FPC shall comply with applicable air quality regulations in effect at the time of filing of each site certification application or supplemental application for each phase of development of the Polk County site.

Citation: CUP 92-06 Condition No. 14.

15. Transmission Lines - FPC shall apply to Polk County for a modification to CUP 92-06 at the time it submits a supplement to or modification of their site certification application to the state regarding a defined, proposed corridor route for any new, proposed transmission lines associated with the FPC Polk County site.

Citation: CUP 92-06 Condition No. 15.

16. Wildlife Habitat Management Plan - A wildlife habitat management plan for the buffer areas shown on Site Certification Application Figure 2.1.3-1 shall be required and

must be approved by the Florida Game and Fresh Water Fish Commission and Polk County prior to commercial operation of the first unit at the Polk County site. Revegetation and planting in the buffer areas shall be in accordance with applicable approved non-mandatory reclamation plans. If no non-mandatory reclamation plans are approved for the buffer areas, revegetation and planting shall be in accordance with the plan presented in the Site Certification Application (SCA) process and with federal agency input if required. The wildlife habitat management plan shall include a map of the buffer areas and shall describe the type and objectives of habitat management activities to be performed within the buffer areas. Such management activities may include water level management, habitat diversification, and removal of exotic and unwanted vegetation (e.g., Brazilian pepper). - need copy

Citation: CUP 92-06 Condition No. 16.

17. Water Use and Conservation Reporting - Following the start of commercial operation, FPC shall:

a. supply a quarterly report on ground water use quantities, ground water level measurements, and water quality analysis results.

b. supply an annual report on methods of water conservation, and estimates of water conservation (if available).

These reports shall be submitted to the Polk County Planning and Water Resource Division Directors. The quarterly report shall be submitted 45 days after each quarter. The annual report(s) summarizing the years results shall be submitted by March 31, for the preceding calendar year.

Citation: CUP 92-06 Condition No. 17.

18. Ambient Air Quality Testing - To the extent not already provided for through the DER Title V funded statewide air quality monitoring network or other means, FPC shall provide up to two ambient air quality monitoring stations concurrent with the operation of the first unit to the Polk County site. The purpose of this condition is to provide reasonable assurance that sufficient monitoring apparatus will be put in place to determine actual air quality conditions in the area affected by FPC's Polk County site. Monitoring requirements, such as station location, parameters to be monitored, number of monitoring stations and quality assurance procedures shall be determined by the Florida Department of Environmental Regulation in consultation with the Polk County air program manager and FPC.

Citation: CUP 92-06 Condition No. 18.

19. Protection of Wells - FPC shall remediate any potable water well located on lands at the northwest corner of CR 555 and CR 640 owned by Mr. Donald Haag which has been determined by the Polk County Water Resources Director to have been adversely impacted by FPC's operation.

Citation: CUP 92-06 Condition No. 19.

20. Non-Designated Area - The non-designated area on the Generalized Project Site Plan (Site Certification Application Figure 2.1.3-1) shall be designated as undeveloped, with the exception of the existing transmission line and substation.

Citation: CUP 92-06 Condition No. 20.

21. Consumptive Use - FPC shall investigate the possible reuse of available treated municipal and county effluent, and other potential sources of water (such as deeper aquifer water) as cooling pond makeup in order to reduce the use of potable ground water. FPC shall investigate alternative methods to reduce the amount of potable water needed for use as cooling pond makeup water, such as, but not limited to conservation and treatment/use of lower quality water. The investigation shall include all municipal and county sewage treatment facilities within Polk County. As a goal, FPC shall seek to develop and implement a program to maximize the use of alternative water sources. The results of the investigation and compliance shall be included in each supplemental application.

In subsequent applications for this site, if technically and economically feasible, FPC shall incorporate reuse of treated effluent or alternative lower quality water sources into its design. It is the intent that to the extent that it is technically and economically feasible, FPC shall in subsequent applications include in its design that reuse/alternative water sources shall constitute an increasing proportion of the FPC total cooling water makeup requirements.

Citation: CUP 92-06 Condition No. 21.

Polk Comprehensive Plan Policy 2.306-B1, 2.306-B2, and 3.105D-2

22. Sinkhole Response and Clean-Up Plan - FPC shall develop and submit to Polk County for approval six months prior to commencing operation of the first commercial unit, a plan detailing the emergency measures to be implemented if such an event occurs, and a remedial action plan to clean-up the impacted aquifer(s) and surface water(s) if a sinkhole occurs on the FPC site.

Citation: CUP Finding 20-2

23. Inspection and Permit Compliance Fees - Polk County shall be allowed to inspect any and all construction, operating, monitoring, sampling, and remediation activities which FPC conducts on site. Polk County shall provide notice to FPC prior to performing any such inspection. FPC shall be required to pay Polk County all generally applicable Building Code compliance and inspection fees; provided, however, that such fees shall be adjusted to reasonably reflect actual cost to the County.

Citation: Polk County Building Codes

24. Building Construction Code Compliance Review Agreements - Prior to the commencement of construction, Polk County and FPC shall enter into an agreement on the following items:

a. responsibility for inspections.

b. types of inspections:

1) site preparation

2) installation of facilities

3) need for threshold inspection

c. fees to be paid by FPC to Polk County for the Building Code Compliance Review.

Citation: Polk County Building Codes and Power Plant Siting Act.

25. FPC shall submit all reports and submissions to the Director of the Polk County Community Services Department in addition to the other departments as noted in the preceding conditions.

Citation: Florida Electrical Power Plant Siting Act, Chapter 403, Part II, F.S.

XXXI. HILLSBOROUGH ENVIRONMENTAL PROTECTION COMMISSION, HILLSBOROUGH COUNTY AND TAMPA PORT AUTHORITY

1. Alafia River Crossing

The crossing of the Alafia River by the natural gas pipeline lateral shall be accomplished underneath the riverbed so as not to interfere with flow or use of the river for boating, swimming or other recreational activities. No vegetation will be cleared along the banks of the Alafia River at the pipeline river crossing for a distance of 25 feet back from the stream bank.

2. Buffering and Screening

a. Landscape Buffer - A 10 foot landscape buffer, as required for a Group 1 use adjacent to a single family residential use, or such other buffer as may be appropriate based on the surrounding land use, site layout and the height and bulk of the metering station facilities, shall be provided for the metering station site. If deemed appropriate by the County, the 10-foot landscape buffer shall include screening in accordance with Section 2.5.14.2.1 of the Hillsborough County Land Development Code (dated March 4, 1992). In no case shall the buffering and screening requirements exceed those for a Group 2 use adjacent to a single family residential use, as specified in Table 2.5.3, Buffer Matrix, and Section 2.5.14.2.4 of the Hillsborough County Land Development Code. Notwithstanding this condition, provisions of Section 2.5.14.7 and 2.5.14.8 dealing with "Alternative Buffers and Screening" and "Existing Vegetation", respectively, shall also be allowed if existing site conditions are such that the provisions would be applicable. Landscaping within the buffer area shall be provided in accordance with section 3.6.3, Landscaping Standards and Guidelines, of the Hillsborough County Land Development Code.

b. Radio Tower - Any radio or other communications tower located on the metering station site whose purpose is to provide communications for the operation of the natural gas pipeline and metering station shall meet the setback requirements and height limitations of the AR zoning district and shall comply with the standards listed in Sections 2.6.4.95.1 through 2.6.4.95.5.

3. Land Alteration Review

a. General Provisions

1) Exemption - Once the right-of-way for the natural gas pipeline lateral and the specific site for the metering station have been selected, FPC shall determine, in consultation with the County and EPC, whether construction of

the pipeline or the metering station will adversely impact any environmentally sensitive area, as defined in Division 7.3 of the Hillsborough County Land Development Code (including wetlands pursuant to Chapter 1-11, Rules of the EPC). In the event FPC so determines, and the County and EPC concur, that pipeline or metering station construction will not adversely impact an environmentally sensitive area, that facility shall be exempt from land alteration review as provided in Section 3.5.1.3.3.(7) of the Hillsborough County Land Development Code. Pipeline crossings of environmentally sensitive areas accomplished by drilling or boring underneath the surface, such that the land surface or bottom of inundated portions of the environmentally sensitive area is not disturbed, shall not constitute an adverse impact on the environmentally sensitive area. For purposes of verification that environmentally sensitive areas will not be adversely impacted, FPC shall submit aerial photographs (at a scale of 1" = 400' or greater) of the pipeline right-of-way and metering station site showing the locations of proposed uses of drilling or boring construction techniques to the Hillsborough County Administrator and the Executive Director of EPC.

2) Tree Replacement - Even if the pipeline or metering station is determined exempt from land alteration review as provided in Section 3.5.1.3.3.7 of the Hillsborough County Land Development Code, FPC shall be required to comply with Section 3.5.3.3.5, requiring replacement of 50 percent of the total DBH of any tree having a DBH of 24 inches or greater or any clump of trees, as defined in Section 7.3, that is to be removed from the metering station site or the pipeline right-of-way. A tree survey shall be conducted in accordance with Section 3.5.2.2.17.5 of the Hillsborough County Land Development Code, except that it shall only identify those trees requiring replacement under this condition. The survey shall be accomplished in conjunction with the ecological survey provided for in Condition XXXI.3.b and shall be limited to the area where the pipeline right-of-way crosses Sections 5, 8 and 9 of Township 31S, Range 22E. As provided in Section 3.5.3.3.5 of the Hillsborough County Land Development Code, "total DBH removed" shall be the sum of the DBH's of all trees being removed from the metering station site or pipeline right-of-way that require replacement. DBH shall mean Diameter at Breast Height, as defined in Section 7.3 of the Hillsborough County Land Development Code. Replacement of trees in accordance with this condition may occur off-site or outside the pipeline right-of-way and shall be accomplished in accordance with Sections 3.5.3.3.6 through 3.5.3.3.10 dealing with replacing, relocating, planting and transplanting of trees. As provided in Section 3.5.4 of the Hillsborough County Land Development Code, FPC may contribute money, as approved by the County under generally applicable criteria, to the Environmental Restoration Fund in lieu of or as part of the tree replacement requirements of this condition.

3) Information Submittal for Land Alteration Review -

In the event FPC determines, in consultation with the County and EPC, that pipeline and/or metering station construction will adversely impact an environmentally sensitive area, FPC shall submit information necessary to demonstrate compliance with Hillsborough County's land alteration review standards. This information filing shall be on the form provided by the County for an application for a Land Alteration Permit. Submission requirements specified in Section 3.5.2.2 of the Hillsborough County Land Development Code shall be met, except for:

a) Item #2 - Evidence that the applicant is the authorized agent of the owner will be provided for the metering station site but not for the pipeline right-of-way. Prior to the initiation of pipeline construction, FPC shall provide the County with evidence of its legal right to construct the pipeline.

b) Item #5 - The legal description, section, township and range, folio number and street address, if any, will be provided for the metering station; however, only the section, township and range and folio numbers will be provided for the pipeline right-of-way.

c) Item #12 requiring a project compatibility plan for a development project proposed adjacent to a public or private, non-profit natural preserve is not applicable.

d) Item #14 - Soil boring obtained for purposes of detailed engineering required for the pipeline and metering station will be provided to the County.

e) Item #17 (1) through (4) and (6) through (8) shall be provided for the metering station only. Item #17 (9) (typical cross section of the area to be excavated) shall be provided for the pipeline trench and jack and bore construction.

4) Land Alteration Review Standards and Guidelines -

Land alteration standards and guidelines as listed in Section 3.5.3 shall be followed, except it is recognized that:

a) Trees having a DBH of 5 inches or greater within the area between 25 feet and 100 feet of the Alafia River bank may need to be removed for construction of the pipeline lateral and such construction in support of a certified electric power generating facility would constitute a case of overriding public interest for purposes of Section 3.5.3.3.(4).

b) Planting of replacement trees or preservation of significant or essential upland habitat, if required, may not be possible on-site, i.e., within the boundary of metering station site or the pipeline right-of-way. If required, planting of replacement trees and/or preservation of significant or essential upland habitat may be accomplished off-site in accordance with Section 3.5.3.4.2.6. As provided in Section 3.5.4 of the Hillsborough County Land Development Code, FPC may contribute money, as approved by the County under generally applicable criteria, to the Environmental Restoration Fund in lieu of or as part of the tree replacement requirements of this condition.

c) Criteria, exceptions or exemptions in Section 3.5 for utility installation or installation of utility lines, such as Section 3.5.3.4.1.2.4 concerning setbacks, Section 3.5.3.5.2 concerning retention of natural plant community vegetation, and Section 3.5.3.4.2.2.4(c) concerning protection of xeric and mesic habitats shall be applicable to the natural gas pipeline lateral.

d) For purposes of determining compliance with Section 3.5.3.4.2.2.3 concerning preservation of significant wildlife habitat, the clearing for and underground construction of the natural gas pipeline lateral shall be considered a design feature that allows for the safe passage of wildlife and shall not be considered to result in fragmentation of a wildlife corridor.

b. Ecological Survey

No later than 120 days prior to the initiation of clearing activities within the natural gas pipeline lateral right-of-way, an ecological survey shall be conducted to identify the presence of threatened or endangered species (plants and animals), as defined in the Site Certification Application in Tables 2.3.6.9 and 2.3.6.10, in the right-of-way based on range and habitat. This survey shall also identify the location of any wading bird colonies. Results of this survey shall be submitted to the Hillsborough County Administrator and the Hillsborough County EPC at the same time the survey results are submitted to the Florida Department of Environmental Protection (DEP) and the Florida Game and Fresh Water Fish Commission (FGFWFC). If it is determined that any of those species will be adversely affected by the construction of the pipeline lateral, the FPC shall consult with DEP, the County and FGFWFC to determine the appropriate steps to be taken to avoid, minimize, mitigate or otherwise appropriately deal with, any adverse impacts to resources within those agencies' respective jurisdictions. The results of this survey shall be considered sufficient to meet the submission requirements of Hillsborough County's land alteration standards review.

c. Procedure for Review

The County shall complete review of FPC's land alteration submittal, ecological survey and affected environmentally sensitive areas within the same time frame and generally applicable procedures established for such review in the Conditions of Certification for other agencies.

d. Inspections

Per Section 3.5.2.1.2.2.9 of the Hillsborough County Land Development Code, the County Administrator may conduct periodic inspections of the metering station site and pipeline right-of-way to determine compliance with these conditions.

4. Site Plan Review

a. Information Submittal for Site Plan Review

Prior to construction, FPC shall submit information on the natural gas metering station site as appropriate for administrative review of a Limited Use. Submission of such information shall be for the purpose of determining compliance with applicable Hillsborough County review standards and criteria for approval of a Limited Use, as provided in the Hillsborough County Land Development Code, Division 2.6. Applicable Limited Use Permit submission requirements, as listed in Section 2.7.9.7.3 of the Hillsborough County Land Development Code, including completion of the Hillsborough County Limited Use application form attached as Attachment D, shall be met.

b. Procedure for Review of Site Plan

Hillsborough County shall promptly review for completeness the information submitted by FPC for a site plan review. For the purposes of this condition, completeness shall mean that the information submitted is both complete and sufficient. If the information is found to be incomplete, Hillsborough County shall notify FPC within 30 days of the date the submittal is filed. Failure to so notify FPC constitutes a finding of completeness. FPC shall send Hillsborough County a reminder notice 20 days after the submittal is filed.

Within 90 days of FPC's complete information submittal, Hillsborough County shall determine whether there is reasonable assurance of compliance with the County's site plan review standards and criteria for approval of a Limited Use. If it is determined that reasonable assurance has not been provided, FPC shall be notified with particularity and possible corrective measures suggested. Failure to notify FPC in writing within 90

days of receipt of the complete information submittal shall constitute a compliance verification. FPC shall send Hillsborough County a reminder notice 70 days after the submittal is filed.

If Hillsborough County does not object within the time period specified above, FPC may begin construction pursuant to the terms of the Conditions of Certification and the subsequently submitted construction details.

Neither the information specified in this condition, nor referral of a site plan-related issue for dispute resolution pursuant to Condition 8 shall affect other conditions or operate as a stay on the construction or other activities of FPC which are not in dispute.

5. Hillsborough County Right-of-Way Use

Hillsborough County shall authorize each natural gas pipeline road right-of-way crossing or use within 30 days of the submission of a complete use permit application for such natural gas pipeline. In construction of the natural gas pipeline lateral, FPC shall follow the standards of Hillsborough County for a right-of-way use permit unless FPC and Hillsborough County subsequently agree to the contrary.

6. Environmental Protection Commission Review

a. Pipeline crossings of jurisdictional wetlands or openwater habitat accomplished by drilling or boring underneath the surface, such that the land surface of the wetland or the bottom of the openwater habitat is not disturbed, shall not constitute destruction or degradation of the wetland or openwater habitat under EPC's regulations. EPC shall review any such crossings as identified by FPC, along with their related construction plans, and if EPC agrees and also determines that the proposed construction methods will avoid adverse impact to waters of the County, no further EPC review will be required for those crossings. Temporary clearing with restoration of natural contours and opportunity for natural revegetation shall not constitute destruction or degradation of the wetland or openwater habitat, provided the vegetation does re-establish, and shall not be subject to EPC review except to verify that the vegetation has re-established. FPC shall provide a letter of commitment to EPC to ensure re-establishment of the natural vegetation. If pipeline construction is accomplished in a different manner such that wetlands or openwater habitat may be degraded or destroyed, such pipeline construction shall be subject to full EPC review in accordance with this condition and the County's land alteration review in accordance with Condition XXXI.3. above.

b. EPC and FPC agree to abide by the approval of the corridor through the State Site Certification process and the right-of-way through the Post-Certification Process, both of which may weigh other public issues than wetlands protection. FPC may, at its own discretion, propose a right-of-way or a narrowing of the corridor prior to completion of the State Site Certification process. In that event, EPC and FPC agree to abide by the approval of the narrowed corridor or right-of-way through the State Site Certification process.

c. To initiate the EPC review process, FPC will submit to EPC the equivalent of the appropriate fee, as established in Chapter 1-6.05(10) of EPC's rules, and a request that a wetland delineation be performed by EPC for all wetlands within the corridor using EPC's aerial photographic delineation method or field delineation method. EPC shall complete the wetland delineation within 30 days of receipt of a complete wetland delineation request and payment of the fee. EPC sign-off on the wetland delineation shall be provided in writing within 30 days of satisfactory completion of the delineation survey.

d. To minimize impacts to wetlands, FPC agrees that it shall consult with EPC as a part of its selection of a right-of-way within the certified corridor, and, to the extent practicable, avoid locating the right-of-way in wetlands.

e. EPC shall review FPC's right-of-way selection and decide whether wetland impacts have been avoided to the extent possible, given environmental, land use and engineering considerations. FPC's right-of-way selection shall be depicted on the same aerial photographs as were used for the wetland delineation. If FPC elects to propose a right-of-way prior to the completion of the State Site Certification process as provided in paragraph 6B above, this review shall be completed in sufficient time to resolve through the certification hearing any wetland avoidance issues remaining between EPC and FPC. If EPC reviews FPC's right-of-way selection as part of a post-certification review process, EPC's review shall be completed within 30 days following submittal of aerial photographs showing the right-of-way location. The results of this post-certification review process shall be an agreed upon right-of-way, and, thereafter, right-of-way location shall not be an issue in the EPC review process.

f. Upon completion of the wetland delineation and review of the right-of-way by EPC, FPC will submit the equivalent of the appropriate fees, as established in Chapter 1-6.05(11) of EPC's rules for wetland mitigation, and submit a Development and Mitigation Approval package in accordance with EPC guidelines, providing a complete explanation and justification of the proposed method of construction and any

proposed mitigation to EPC asking that EPC consider all impacts within a designated right-of-way. This submittal and EPC's consideration of it may include other public issues than wetlands protection.

g. EPC will review the submittal and decide whether wetland impacts within the right-of-way have been minimized given the environmental, land use and engineering considerations. EPC shall notify FPC of its decision in writing within 30 days of receipt of a complete submittal. Such notice shall specify the basis for EPC's conclusion, and possible corrective measures shall be suggested, if considered necessary.

h. FPC shall provide construction plans for the right-of-way and suitable kind-for-kind, acre-for-acre wetland mitigation or upland mitigation, where appropriate under Chapter 1-11, for all wetland impacts. This mitigation can be proposed either on FPC's own property or by written consent of the property owner, on the property of others in a mitigation bank according to EPC's standard mitigation criteria.

i. Upon review of the mitigation proposal required by Conditions XXXI.6.f and XXXI.6.h above and any modification that may be necessary to bring any required mitigation proposal into compliance with EPC's non-procedural standards, EPC will approve (by letter) the mitigation proposal and forward the attached Mitigation Agreement (see Attachment E) to FPC for execution. Review of the mitigation proposal and any modifications shall be accomplished with 30 days of FPC's submittal of all necessary information.

j. Once the Mitigation Agreement is executed and recorded, FPC may proceed with construction.

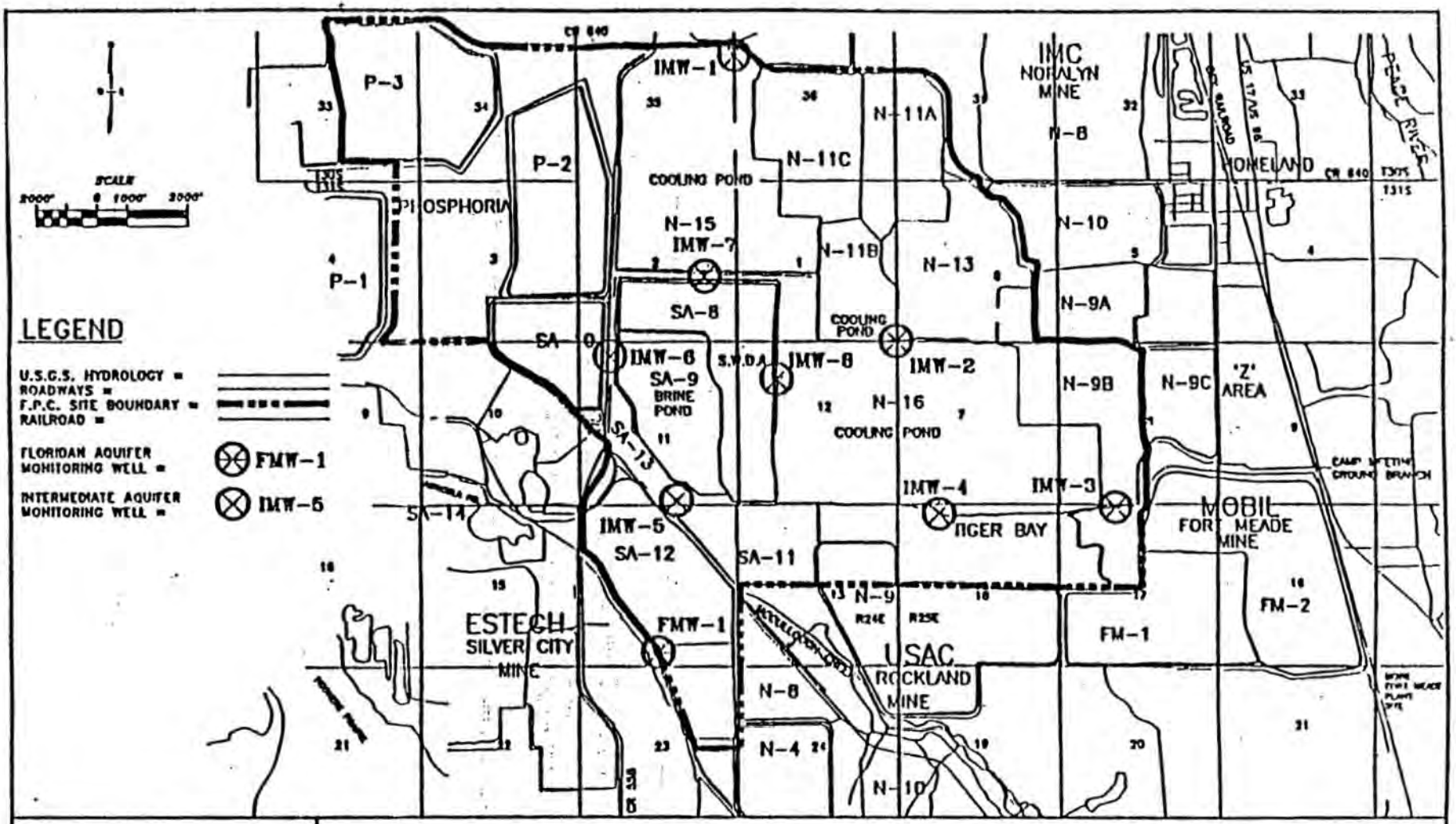
k. EPC shall make every effort to conform as closely as possible to the procedures and timetables established in the Conditions of Certification for other wetland review agencies.

7. Submerged Lands

The Tampa Port Authority (TPA) or its staff shall issue the appropriate concurrence for a natural gas pipeline crossing of lands and waterways under the jurisdiction of the Authority within 30 days of the submission of a complete application for such natural gas pipeline crossing demonstrating compliance with applicable provisions of the Tampa Port Authority's Rules for Sovereignty Lands Management (January 4, 1984). In the construction of the natural gas pipeline lateral, FPC shall follow the applicable standards of the Tampa Port Authority's Rules for Sovereignty Lands Management (January 4, 1984), unless FPC and Tampa Port Authority subsequently agree to the contrary.

8. Dispute Resolution

It is understood that FPC, the County, EPC and TPA shall strive to resolve disputes by mutual agreement. All parties to this stipulation may take whatever position(s) they deem appropriate with respect to any dispute resolution mechanism to be incorporated in Conditions of Certification imposed by the Governor and Cabinet sitting as the Siting Board.



Florida Power CORPORATION

Polk County Site

FIGURE 1
MONITORING WELL LOCATIONS

MWLOC DWG
REV. 10/93

VEGETATION PLAN FOR N-9B, N-13 AND SA-10
WITH CANDIDATE SPECIES AND PLANTING DENSITIES

MINE AREA N-9B

1. UPLAND FOREST

ACRES OF HABITAT TO BE ESTABLISHED: 41

Trees - Total average density of 300/acre

Slash Pine (*Pinus elliottii*)
Laurel Oak (*Quercus laurifolia*)
Southern Red Ceder (*Juniperus silicicola*)
Live Oak (*Quercus virginiana*)
Sweetgum (*Liquidamber styraciflua*)
American Holly (*Ilex opaca*)
Pignut Hickory (*Carya glabra*)
Redbud (*Cercis canadensis*) - Delayed until overstory shading
Dogwood (*Cornus florida*) - Delayed until overstory shading
Black Cherry (*Prunus serotina*) - Natural recruitment
Cabbage Palm (*Sabel palmetto*)

Shrubs - Total average density of 240/acre

Saw Palmetto (*Serenoa repens*)
Wax Myrtle (*Myrica cerifera*)
Beautyberry (*Callicarpa americana*)
Yaupon Holly (*Ilex vomitoria*)
Wild Olive (*Osmanthus americanus*)
Shining Sumac (*Rhus copallina*)
Hawthorne (*Crataegus* spp.)
Blueberry (*Vaccinium* spp.)
Groundsel Tree (*Baccharis halimifolia*) - Natural recruitment

Grasses, Forbs and Vines - 80 percent of ground cover

Eastern Gamagrass (*Tripsacum dactyloides*)
Panicum (*Panicum* spp.)
Blackberry (*Rubus* spp.) - Natural recruitment
Virginia Creeper (*Parthenocissus quinquefolia*) - Natural recruitment
Greenbriar (*Smilax* spp.) - Natural recruitment
Wild Grape (*Vitis munsoniana*) - Natural recruitment
Wood Fern (*Thelypterus* spp.) - Natural recruitment

2. SHRUB/BRUSHLAND

ACRES OF HABITAT TO BE ESTABLISHED: 23

Shrubs - Total average density of 240/acre

Saw Palmetto (*Serenoa repens*)
Wax Myrtle (*Myrica cerifera*)
Beautyberry (*Callicarpa americana*)
Yaupon Holly (*Ilex vomitoria*)
Wild Olive (*Osmanthus americanus*)
Shining Sumac (*Rhus copallina*)
Groundsel Tree (*Baccharis halimifolia*) - Natural recruitment

Grasses, Forbs and Vines - 80 percent of ground cover

Eastern Gamagrass (*Tripsacum dactyloides*)
Panicum (*Panicum* spp.)
Blackberry (*Rubus* spp.) - Natural recruitment
Virginia Creeper (*Parthenocissus quinquefolia*) - Natural recruitment
Greenbriar (*Smilax* spp.) - Natural recruitment
Wild Grape (*Vitis munsoniana*) - Natural recruitment
Wood Fern (*Thelypterus* spp.) - Natural recruitment

3. RANGELAND

ACRES OF HABITAT TO BE ESTABLISHED: 16

Grasses, Forbs and Vines - 100 percent of ground cover

Eastern Gamagrass (*Tripsacum dactyloides*)
Panicum (*Panicum* spp.)
Bluestems (*Andropogon* spp.)
Lopsided Indiangrass (*Sorgastrum secundum*)
Blackberry (*Rubus* spp.) - Natural recruitment
Partridge Pea (*Cassia chamaecrista*)
Wild Grape (*Vitis munsoniania*) - Natural recruitment
Hairy Indigo (*Indigofera hirsuta*) - Natural recruitment
Aster (*Aster* spp.) - Natural recruitment

4. PINE FLATWOODS

ACRES OF HABITAT TO BE ESTABLISHED: 27

Trees - Total average density of 200/acre

Slash Pine (*Pinus elliottii*)
Longleaf Pine (*Pinus palustris*)
Persimmon (*Diospyros virginiana*)

Shrubs - Total average density of 200/acre

Saw Palmetto (*Serenoa repens*)
Wax Myrtle (*Myrica cerifera*)
Beautyberry (*Callicarpa americana*)
Yaupon Holly (*Ilex vomitoria*)
Gallberry (*Ilex glabra*)
Fetterbush (*Lyonia lucida*)
Blueberry (*Vaccinium* spp.)

Grasses, Forbs and Vines - 80 percent of ground surface

Eastern Gamagrass (*Tripsacum dactyloides*)
Panicum (*Panicum* spp.)
Bluestems (*Andropogon* spp.)
Lopsided Indiangrass (*Sorgastrum secundum*)
Blackberry (*Rubus* spp.) - Natural recruitment
Greenbriar (*Smilax* spp.) - Natural recruitment
Partridge Pea (*Cassia fasiculata*)
Wild Grape (*Vitis munsoniania*) - Natural recruitment
Aeschyomene (*Aeschyomene* spp.)

5. SHRUB WETLAND

ACRES OF HABITAT TO BE ESTABLISHED: 25

Shrubs - Total average density of 300/acre

Buttonbush (*Cephalanthus occidentalis*)
Dahoon Holly (*Ilex cassine*)
Elderberry (*Sambucus simpsonii*)
Swamp Dogwood (*Cornus foemina*)
Swamp Hibiscus (*Hibiscus grandiflorus*)
Groundsel Tree (*Baccharis halimifolia*) - Natural recruitment
Carolina Willow (*Salix caroliniana*) - Natural recruitment
Wax Myrtle (*Myrica cerifera*) - Natural recruitment

Grasses, Forbs and Vines - 50 percent of remaining available ground surface

Panicum (*Panicum* spp.)
Lizard's Tail (*Saururus cernuus*)
Sedge (*Carex* spp. and *Cyperus* spp.)
Royal Fern (*Osmunda regalis*)
Cinnamon Fern (*Osmunda cinnamomea*)
Sawgrass (*Cladium jamaicense*)
Duck Potato (*Sagittaria* spp.)
Golden Ragwort (*Senecio glabellus*) - Natural recruitment
Wood Fern (*Thelypterus* spp.) - Natural recruitment
Wild Grape (*Vitis munsoniania*) - Natural recruitment
Camphorweed (*Pluchea* spp.) - Natural recruitment
Cow Pea (*Vigna luteola*) - Natural recruitment

6. FRESHWATER MARSH (HERBACEOUS WETLAND)

ACRES OF HABITAT TO BE ESTABLISHED: 89

Groundcover - 50 percent of remaining available ground surface

Panicum (*Panicum* spp.)
Sedge (*Carex* spp. and *Cyperus* spp.)
Sawgrass (*Cladium jamaicense*)
St. John's Wort (*Hypericum fasiculatum*)
Spike Rush (*Eleocharis* spp.)
Soft Rush (*Juncus effusus*)
Black Rush (*Juncus repens*)
Bullrush (*Scirpus* spp.)
Swamp Lily (*Crinum americanum*)
Spider Lily (*Hymenocallis* spp.)
Pickerelweed (*Pontederia cordata*)
Arrowroot (*Thalia geniculata*)
Canna Lily (*Canna* spp.)
Duck Potato (*Sagittaria* spp.)
Spatterdock (*Nuphar lutea*)
Water Lily (*Nymphaea* spp.)

7. ISLANDS AND OVERBURDEN MOUNDS

ACRES OF HABITAT TO BE ESTABLISHED: 6

Vegetation in these areas will require minimal to no plantings. They will either be overburden mounds left intact or constructed mounds tapered into the slough.

MINE AREA N-13

1. UPLAND FOREST

ACRES OF HABITAT TO BE ESTABLISHED: 65

Trees - Total average density of 300/acre

Slash Pine (*Pinus elliottii*)
Laurel Oak (*Quercus laurifolia*)
Southern Red Ceder (*Juniperus silicicola*)
Live Oak (*Quercus virginiana*)
Sweetgum (*Liquidamber styraciflua*)
American Holly (*Ilex opaca*)
Pignut Hickory (*Carya glabra*)
Redbud (*Cercis canadensis*) - Delayed until overstory shading
Dogwood (*Cornus florida*) - Delayed until overstory shading
Black Cherry (*Prunus serotina*) - Natural recruitment
Cabbage Palm (*Sabel palmetto*)

Shrubs - Total average density of 240/acre

Saw Palmetto (*Serenoa repens*)
Wax Myrtle (*Myrica cerifera*)
Beautyberry (*Callicarpa americana*)
Yaupon Holly (*Ilex vomitoria*)
Wild Olive (*Osmanthus americanus*)
Shining Sumac (*Rhus copallina*)
Hawthorne (*Crataegus* spp.)
Blueberry (*Vaccinium* spp.)
Groundsel Tree (*Baccharis halimifolia*) - Natural recruitment

Grasses, Forbs and Vines - 80 percent of ground cover

Eastern Gamagrass (*Tripsacum dactyloides*)
Panicum (*Panicum* spp.)
Blackberry (*Rubus* spp.) - Natural recruitment
Virginia Creeper (*Parthenocissus quinquefolia*) - Natural recruitment
Greenbriar (*Smilax* spp.) - Natural recruitment
Wild Grape (*Vitis munsoniana*) - Natural recruitment
Wood Fern (*Thelypterus* spp.) - Natural recruitment

2. SHRUB/BRUSHLAND

ACRES OF HABITAT TO BE ESTABLISHED: 22

Shrubs - Total average density of 240/acre

Saw Palmetto (*Serenoa repens*)
Wax Myrtle (*Myrica cerifera*)
Beautyberry (*Callicarpa americana*)
Yaupon Holly (*Ilex vomitoria*)
Wild Olive (*Osmanthus americanus*)
Shining Sumac (*Rhus copallina*)
Groundsel Tree (*Baccharis halimifolia*) - Natural recruitment

Grasses, Forbs and Vines - 80 percent of ground cover

Eastern Gamagrass (*Tripsacum dactyloides*)
Panicum (*Panicum* spp.)
Blackberry (*Rubus* spp.) - Natural recruitment
Virginia Creeper (*Parthenocissus quinquefolia*) - Natural recruitment
Greenbriar (*Smilax* spp.) - Natural recruitment
Wild Grape (*Vitis munsoniana*) - Natural recruitment
Wood Fern (*Thelypterus* spp.) - Natural recruitment

3. RANGELAND

ACRES OF HABITAT TO BE ESTABLISHED: 72

Grasses, Forbs and Vines - 100 percent of ground cover

Eastern Gamagrass (*Tripsacum dactyloides*)
Panicum (*Panicum* spp.)
Bluestems (*Andropogon* spp.)
Lopsided Indiangrass (*Sorgastrum secundum*)
Blackberry (*Rubus* spp.) - Natural recruitment
Partridge Pea (*Cassia chamaecrista*)
Wild Grape (*Vitis munsoniania*) - Natural recruitment
Hairy Indigo (*Indigofera hirsuta*) - Natural recruitment
Aster (*Aster* spp.) - Natural recruitment

4. WETLAND MIXED FOREST

ACRES OF HABITAT TO BE ESTABLISHED: 13

Trees - Total average density of 400/acre

Red Maple (*Acer rubrum*)
Sugarberry (*Celtis laevigata*)
Pop Ash (*Fraxinus caroliniana*)
Bald Cypress (*Taxodium distichum*)
Red Mulberry (*Morus rubra*)
Water Oak (*Quercus nigra*)

Shrubs - Total average density of 300/acre

Buttonbush (*Cephalanthus occidentalis*)
Dahoon Holly (*Ilex cassine*)
Elderberry (*Sambucus simpsonii*)
Swamp Dogwood (*Cornus foemina*)
Swamp Hibiscus (*Hibiscus grandiflorus*)
Wild Olive (*Osmanthus americanus*)
Groundsel Tree (*Baccharis halimifolia*) - Natural recruitment

Grasses, Forbs and Vines- 50 percent of remaining available ground surface

Panicum (*Panicum* spp.)
Lizard's Tail (*Saururus cernuus*)
Sedge (*Carex* spp.)
Royal Fern (*Osmunda regalis*)
Cinnamon Fern (*Osmunda cinnamomea*)
Wood Fern (*Thelypterus* spp.) - Natural recruitment
Wild Grape (*Vitis munsoniania*) - Natural recruitment

5. SHRUB WETLAND

ACRES OF HABITAT TO BE ESTABLISHED: 14

Shrubs - Total average density of 300/acre

Buttonbush (*Cephalanthus occidentalis*)
Dahoon Holly (*Ilex cassine*)
Elderberry (*Sambucus simpsonii*)
Swamp Dogwood (*Cornus foemina*)
Swamp Hibiscus (*Hibiscus grandiflorus*)
Groundsel Tree (*Baccharis halimifolia*) - Natural recruitment
Carolina Willow (*Salix caroliniana*) - Natural recruitment
Wax Myrtle (*Myrica cerifera*) - Natural recruitment

Grasses, Forbs and Vines - 50 percent of remaining available ground surface

. Panicum (*Panicum* spp.)
Lizard's Tail (*Saururus cernuus*)
Sedge (*Carex* spp. and *Cyperus* spp.)
Royal Fern (*Osmunda regalis*)
Cinnamon Fern (*Osmunda cinnamomea*)
Sawgrass (*Cladium jamaicense*)
Duck Potato (*Sagittaria* spp.)
Golden Ragwort (*Senecio glabellus*) - Natural recruitment
Wood Fern (*Thelypterus* spp.) - Natural recruitment
Wild Grape (*Vitis munsoniania*) - Natural recruitment
Camphorweed (*Pluchea* spp.) - Natural recruitment
Cow Pea (*Vigna luteola*) - Natural recruitment

6. FRESHWATER MARSH

ACRES OF HABITAT TO BE ESTABLISHED: 79

Groundcover - 50 percent of remaining available ground surface

Panicum (*Panicum* spp.)
Sedge (*Carex* spp. and *Cyperus* spp.)
Sawgrass (*Cladium jamaicense*)
St. John's Wort (*Hypericum fasiculatum*)
Spike Rush (*Eleocharis* spp.)
Soft Rush (*Juncus effusus*)
Black Rush (*Juncus repens*)
Bullrush (*Scirpus* spp.)
Swamp Lily (*Crinum americanum*)
Spider Lily (*Hymenocallis* spp.)
Pickerelweed (*Pontederia cordata*)
Arrowroot (*Thalia geniculata*)
Canna Lily (*Canna* spp.)
Duck Potato (*Sagittaria* spp.)
Spatterdock (*Nuphar lutea*)
Water Lily (*Nymphaea* spp.)

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

MINE AREA SA-10

PALMETTO PRAIRIE

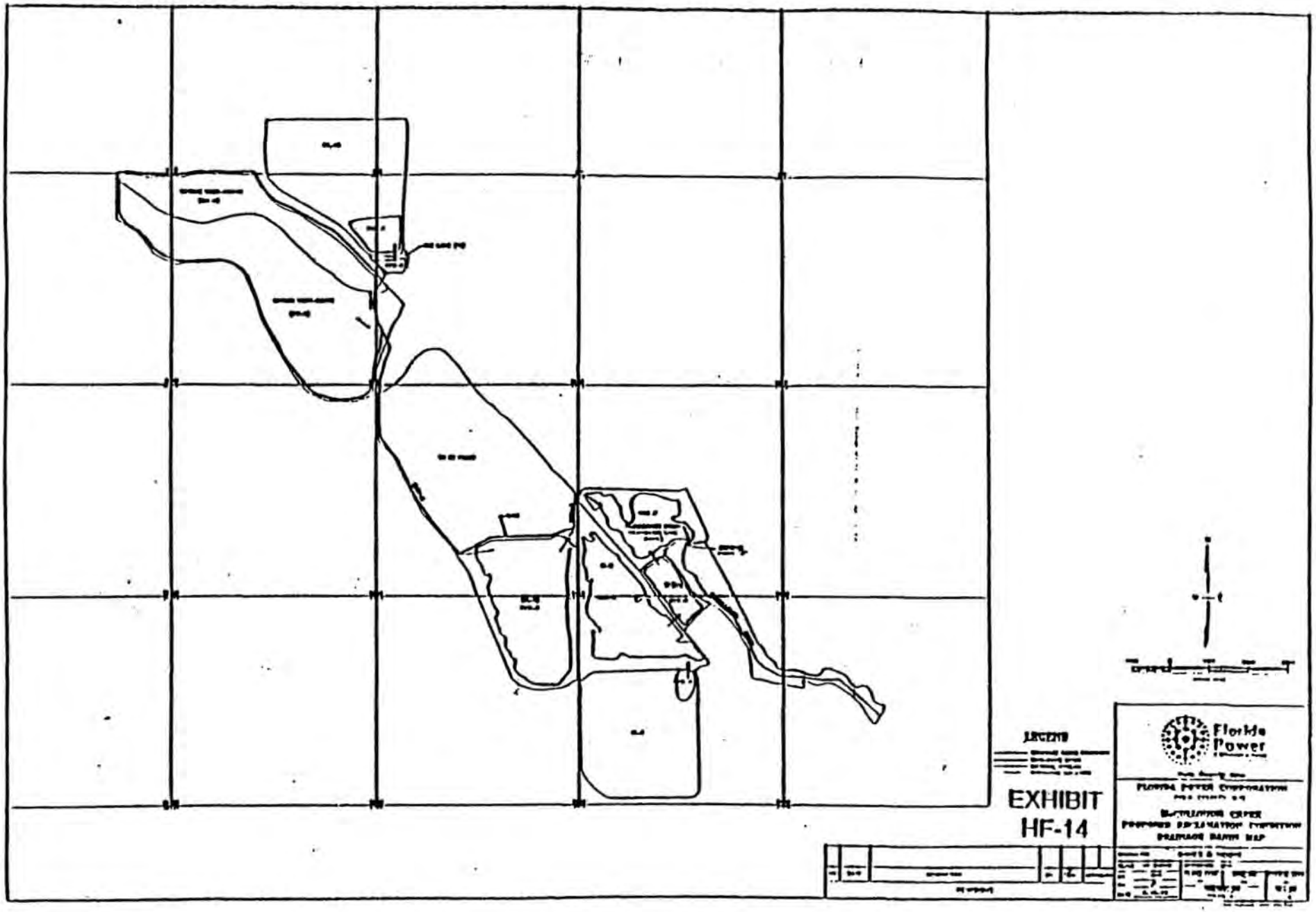
ACRES OF HABITAT TO BE ESTABLISHED: 268

Shrubs - Total average density of 50/acre

Saw Palmetto (*Serenoa repens*)
Wax Myrtle (*Myrica cerifera*)
Gallberry (*Ilex cassine*)
Fetterbush (*Lyonia lucida*)
Blueberry (*Vaccinium* spp.)

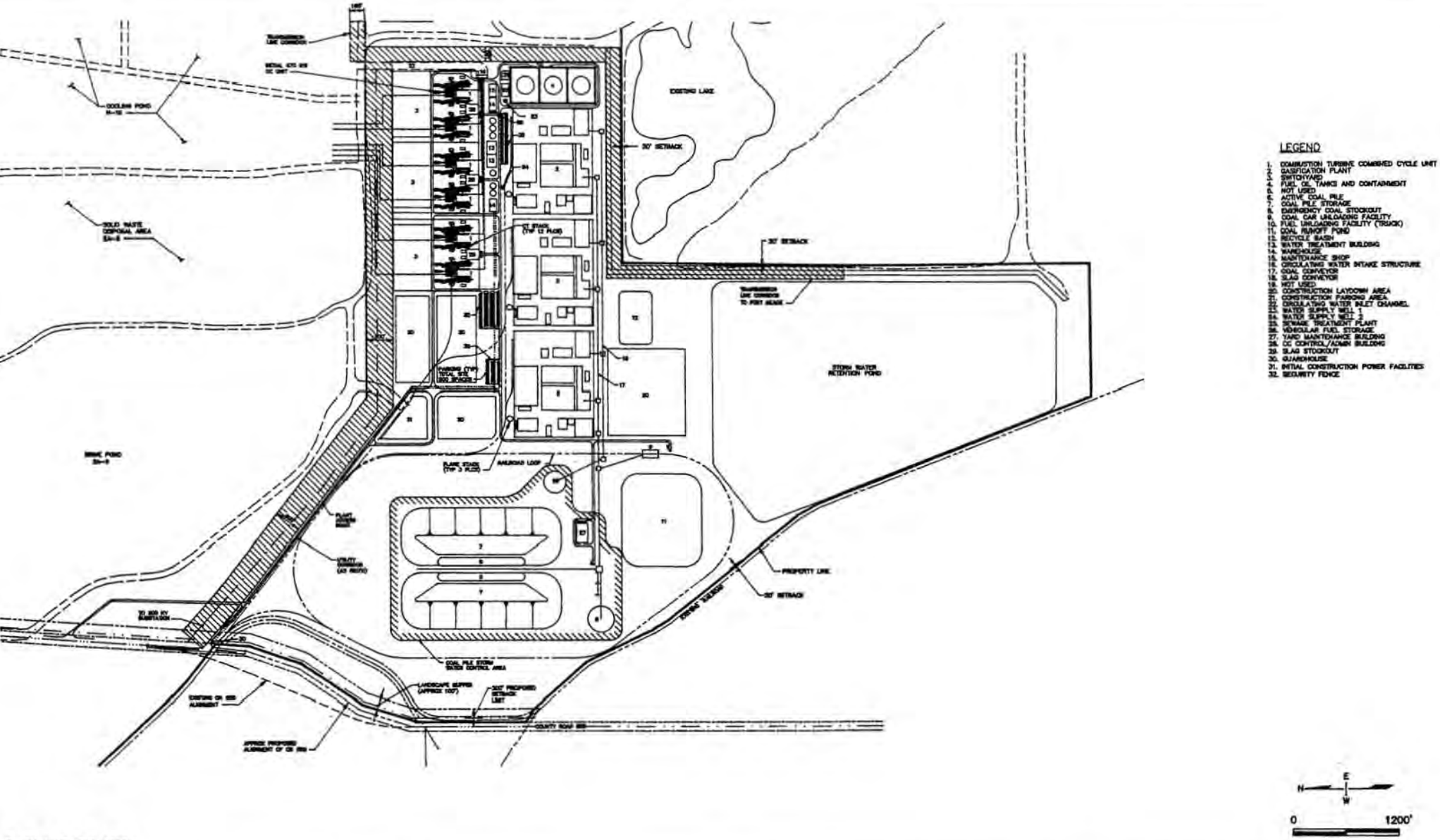
Grasses, Forbs and Vines - 100 percent of remaining ground cover

Eastern Gamagrass (*Tripsacum dactyloides*)
Panicum (*Panicum* spp.)
Bluestems (*Andropogon* spp.)
Lopsided Indiangrass (*Sorgastrum secundum*)
Blackberry (*Rubus* spp.) - Natural recruitment
Greenbriar (*Smilax* spp.) - Natural recruitment
Partridge Pea (*Cassia chamaecrista*)
Aeschynomene (*Aeschynomene* spp.) - Natural recruitment
Wild Grape (*Vitis munsoniania*) - Natural recruitment


EXHIBIT
HF-14
Florida Power

10.4.1.2 Hines Energy Complex Ultimate Buildout (3000 MW) Site Plan

This section contains the site plan which was submitted with the 1992 SCA. The site plan depicts the Hines Energy Complex at full buildout (3000 MW).



BLACK & VEATCH, 1992

Florida Power CORPORATION

County Site

FIGURE 3.2.1-1
PRELIMINARY ULTIMATE SITE ARRANGEMENT-CASE A
SIX COMBINED CYCLE UNITS

10.4.2 Final Order Modifying Condition of Certification (PA 92-33B)

This section contains the Final Order Modifying Conditions of Certification for the Hines Energy Complex in August 1997.

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In Re: Florida Power Corporation Hines Energy Complex (Polk County Site) Modification of Conditions of Certification Polk County, Florida	)))))))	DEP CASE NO. PA 92-33B

FINAL ORDER MODIFYING CONDITIONS OF CERTIFICATION

On January 27, 1994, the Governor and Cabinet, sitting as the Siting Board, issued a final order approving certification for Florida Power Corporation's Polk County site, now known as the Hines Energy Complex. That certification order approved the construction and operation of a 470 MW, natural gas-fired, combined cycle power plant and associated facilities located in Polk County, Florida.

On May 3, 1996, Florida Power Corporation (FPC) filed a request to amend the conditions of certification pursuant to Section 403.516(1)(b), Florida Statutes. FPC requested that the conditions be modified to allow conformance with existing rules, to require prior written approval of changes to drinking water systems, to allow deletion of a synthetic liner for the brine pond, to delete the requirement for certain preoperational studies, to provide alternate discharge points, treatment and sampling of liquid wastes, to require groundwater monitoring of exceedances, to reorganize solid waste conditions, and to allow automatic modification of conditions of certification concerning air emissions or water discharges whenever the Department approves modifications of the federally delegated PSD, Title V or NPDES Permits for the facility.

Copies of FPC's proposed modifications were made available for public review on March 7, 1997, on which date a Proposed Modification of Power Plant Certification was also published

in the Florida Administrative Weekly. As of March 17, 1997, all parties to the original proceeding had received copies of the intent to modify. The notice specified that a hearing would be held if a party to the original certification hearing objected within 45 days from receipt of the proposed modifications or if any other person, whose interests would be substantially affected, objected in writing within 30 days after issuance of the public notice. No written objection to the proposed modifications has been received by the Department. Accordingly, in the absence of any timely objection,

IT IS ORDERED:

The proposed changes to the Florida Power Corporation's (FPC's) Hines Energy Complex as described in its May 3, September 9, September 16, October 18, November 20, and December 23, 1996, and January 21, 1997, requests for modification are APPROVED. Pursuant to Section 403.516(1)(b), F.S., the conditions of certification for the Hines Energy Complex are **MODIFIED** as follows:

III.A. 1. FPC shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by FPC to achieve compliance with the terms and conditions of this certification. In the event of a malfunction of an electric generating unit's pollution control system which will result in non-compliance with the provisions of this Certification or applicable Department rules, either all or a portion of that unit's load shall be shifted to ~~any or all of the remaining units having a properly functioning pollution control system and the malfunctioning unit shall be properly shut down~~ other units within the Florida Power Corporation system, as necessary to maintain compliance with applicable state and federal regulations.

XI. Modification of Conditions

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

A. Pursuant to Subsection 403.516(1), F.S., the Board hereby delegates the authority to the Department to modify any condition of this certification.

B. This certification shall be automatically modified to conform to any subsequent amendments, modifications, or renewals made by DEP to any separately issued Prevention of Significant Deterioration (PSD) permit, Title V Air Permit, or National Pollutant Discharge

Elimination System (NPDES) permit for the facility under the federally delegated program. FPC shall send each party to the original certification proceedings (at the party's last known address as shown in the record of such proceeding) notice of requests for modifications or renewals to the NPDES permit if the request involves a relief mechanism (e.g., mixing zone, variance, etc.) from standards. DEP shall notify all parties to the certification proceeding of any intent to modify conditions under this section prior to taking final agency action.

C. All other modifications to these conditions shall be made in accordance with Section 403.516, F.S.

XVII.G.2. Site Specific Standards

b. ~~A 60 mil synthetic liner will be placed along the inside dam embankment and perimeter of the brine pond up to an area where the consolidated clay is at least 10 feet thick. The thickness of the consolidated clay liner will be determined using clay probings. The synthetic liner will be keyed into the consolidated clay liner to prevent seepage of brine beneath the synthetic liner. At least ninety days prior to the construction of the synthetic liner, FPC shall submit to DEP a construction quality assurance plan for the installation of the synthetic liner.~~ Groundwater monitoring for the brine pond will be performed in accordance with Condition XVII.G.2.e. and Section XVIII of this certification. If the groundwater monitoring data collected in accordance with these conditions indicates an exceedance of applicable groundwater standards at the boundary of the zone of discharge due to operation of the brine pond, FPC will consult with FDEP to formulate a mutually agreed upon corrective action plan. If the corrective action plan requires dewatering and construction work in the SA-9 brine pond, FPC will be allowed to transfer the brine from SA-9 to a suitable impoundment, and discharge brine to the temporary storage area for a period sufficient to perform the construction in SA-9. The selection of a suitable temporary storage facility and the establishment of the implementation schedule for any required corrective action will be by mutual agreement of FDEP and FPC.

c. A seepage collection ditch will be constructed along the west dam of SA-9 to prevent any discharge of seepage to off-site surface waters via the FDOT roadside swale along S.R. 555. The seepage ditch will extend from the northwest corner of SA-9 to the southwest corner, where it will connect to the plant island drainage swale which was constructed during the

earthworks phase of the facility construction. The seepage collection ditch will be graded to direct any surface seepage, either natural or as a result of operation of SA-9, to the plant drainage system.

d. FPC will submit detailed construction plans for the construction of all Reverse Osmosis reject (brine) disposal and seepage collection facilities, in accordance with the requirements of Section XII.A. of this Certification, for review and approval by the Department.

ce. A program to test and evaluate the impact of the brine on the permeability of the clay liner shall be implemented. The testing shall include pre-operation and operation phase programs. The pre-operation phase program shall consist of such tests as material classification, clay mineralogy, cation exchange capacity and selected laboratory or field permeability tests. Tests will be performed to assess impacts of the movement of brine through the clay on permeability. FPC shall submit detailed testing programs and protocols to FDEP for review at least three months prior to commencement of the testing. FPC shall submit the pre-operation test report to DEP, including all test data, analysis, and conclusions at least six months prior to the start of brine pond operations.

The operation phase program shall consist of performing laboratory and/or field tests of the clays in the brine pond for confirmation testing and comparison to the pre-operation phase testing. Tests shall be taken annually for the first five years after initiation of brine production. Testing beyond this time frame will continue only if unfavorable impact is observed. Continued testing shall be at a frequency proposed by FPC and approved by DEP.

df. No RCRA Hazardous Waste as defined by 40 C.F.R. § 261.3 shall be deposited in the brine pond.

e. g. Ground water monitoring for the brine pond will be performed in accordance with the Ground Water Monitoring Plan set forth in Conditions of Certification No. XVIII.

f. ~~At least ninety days prior to construction of the brine pond liner system, a quality control plan for liner construction and testing shall be submitted to DEP for review and approval. Upon approval the quality control plan shall be implemented.~~

g.h. FPC shall prepare a comprehensive operation plan that provides written instructions for the daily operation and weekly inspection of the brine evaporation pond. The plan

shall be submitted to DEP for review and approval. Upon approval, the plan shall be kept at the facility and shall be accessible to the operators. The plan shall be revised and submitted to DEP for review and approval if operational procedures change.

XVII.J. Non-Hazardous Low Volume Wastes

Demineralizer regeneration waste will be directed to either the cooling pond or to the brine pond for the initial natural gas fired units and to the coal gasification plants in later phases. Non-hazardous low volume liquid wastes, some of which may have ~~that have~~ high solids content ~~(demineralizer regeneration and lab drains)~~ (water pre-treatment filtrate, lab drains, boiler blowdown and floor drains after oil separation) ~~Relatively clean low volume waste (boiler blowdown and floor drains after oil separation)~~ will be ~~sent~~ directed either ~~directly~~ to the cooling pond or to the brine pond.

XVII.L. Chemical and Biocide Wastes

Chemical cleaning wastes resulting from the acid cleaning wash ~~and the first rinse will be collected and analyzed to determine if they are hazardous wastes.~~ and successive rinses may either be collected and characterized individually to determine if they are hazardous wastes or commingled prior to characterization to determine if the mixture is a hazardous waste. Based on the analytical results, the waste(s) will be handled in accordance with applicable state or federal rules and the conditions of this certification, either on-site in the brine pond, on-site in the cooling pond, or off-site, as appropriate. Chemical boiler cleaning wastes will be routed to the neutralization basin or to neutralization tanks for hazardous waste characterization. The mixture will then be neutralized and the residual wastes disposed of appropriately. Any residual non-hazardous wastewaters resulting from on-site treatment may either be disposed of in onsite impoundments or shipped offsite for disposal. Any hazardous wastes not neutralized or otherwise treated on-site will be transported off-site by a licensed hazardous waste disposal contractor for appropriate treatment and disposal at a licensed hazardous waste facility.

If hazardous wastes are treated onsite in tanks or containers regulated under 40 CFR 262.34, FPC will comply with applicable waste analysis plan and notification requirements under 40 CFR 268.7 (a)(4) and 268.9(d). Boiler cleaning wastes treated in a waste water treatment unit as defined in 40 CFR 260.10 are not subject to these requirements.

XVIII.A.8 Within six months of startup for new facilities FPC shall provide ~~a wastestream characterization for: reverse osmosis reject water, the plant sanitary effluent, boiler blowdown effluent floor drain effluent, plant island stormwater effluent and a copy of the water quality~~

~~results of the City of Bartow reclaimed water as received by the FPC.~~ separate wastestream characterizations for the cooling pond and for the brine pond. The cooling pond samples will be collected in the plant discharge canal and will be considered as representative of the combined wastestreams discharged to this impoundment. The brine pond samples will be collected in SA-9 and shall be considered as representative of the reverse osmosis, demineralizer, and any other waste (if applicable) discharges to this impoundment. In addition, a copy of the water quality results of the City of Bartow reclaimed water as received by the FPC shall be provided. Thereafter, a wastestreams characterization shall be performed from a surface water sample collected from the cooling pond ~~condenser intake structure~~ discharge canal within six months of the completion of coal gasification units but in no event with less frequency than every five years. The samples for characterization shall be analyzed for the Primary and Secondary Drinking Water Standards (Chapter ~~17~~62-550, F.A.C.), Fecal Coliform and the EPA Priority Pollutants. The components identified in the wastestream characterizations, and the leachate characterization pursuant to Section XXI as well as the ground water indicator parameters may be used to modify the Ground Water Monitoring Plan. The results shall be sent to the Technical Support Section, Southwest District Office.

XVIII.A.13. - Groundwater

~~If, at any time, background ground water standards are exceeded at the edge of the zone of discharge, FPC has 15 days from receipt of the laboratory analyses in which to resample the monitor well(s) to verify the original analyses. The monitoring test results must be submitted to the Department within 15 days of receipt of the reanalyses from the laboratory. Should FPC choose not to resample, the Department and FPC will consider the water quality analysis as representative of current ground water conditions at the facility.~~ Should the FPC wish to resample water quality analyses, taken pursuant to the Ground Water Monitoring Plan, the FPC will do so within 15 days of the receipt of the first sampled water quality analyses. The Department will then consider the resampled analyses to be acceptable; in any other event the original samples will be considered representative of formation waters--by the Department and by the FPC.

Section XXI - Solid Waste Storage and Disposal

A. General - The solid waste disposal areas (SWDAs) shall be designed, constructed, operated, maintained, closed and monitored in accordance with acceptable waste disposal practices providing environmental protection equivalent to those described in F.A.C. Chapter 62-701 and these conditions of certification. The prohibitions of F.A.C. Chapter 62-701 shall not be violated.

1. All engineering plans, reports, and related information shall be approved by the

engineer of record with professional certification and shall be approved by the Department's Solid Waste Section at Southwest District (SWSSWD) prior to construction. A construction certification report signed and sealed by a professional engineer, and record drawings showing all modifications to construction plans, shall be submitted for approval to the SWSSWD of the DEP prior to operation of each solid waste disposal area.

2. The facility shall have a comprehensive operation plan that provides written, detailed instructions for the daily operation of the solid waste disposal areas. The plan shall be kept at the facility and shall be accessible to the operators. The plan shall be revised if operational procedures change. A schedule for routine maintenance of the leachate collection and removal system shall be established to ensure operation of the system. The maintenance schedule shall be a part of the operational procedures for the plan. The initial operation plan shall include the SA-8 solid waste disposal area and shall be submitted for approval to the SWSSWD of the DEP prior to operation of the solid waste disposal area.

3. Hazardous waste or any hazardous substance shall not be accepted for disposal at this site. Hazardous waste is a solid waste identified by the Department as a hazardous waste in Chapter 62-730, F.A.C. Hazardous substances are those defined in Section 403.703, F.S., or in any other applicable state or federal law or administrative rule.

4. FPC shall maintain a program which prohibits the disposal of bulk industrial wastes which operation personnel reasonably believe to either be or contain hazardous waste, without obtaining a chemical analysis of the material showing the waste to be non-hazardous. The chemical analysis of any such material, along with the date of disposal, shall be kept on file at the facility.

5. A trained supervisor shall be responsible for maintaining the solid waste disposal areas in an orderly, safe, and sanitary manner. Sufficient personnel shall be employed for adequate operation. In the event of damage to any portion of the solid waste disposal area or failure of any portion of the solid waste disposal area or failure of any portion of the related systems, the Department's SWSSWD shall receive notification in accordance with Condition III.B.

6. FPC shall sample leachate from each SWDS for Primary and Secondary Drinking Water Standards as listed in Chapter 62-550, F.A.C., and for the parameters listed in 40 CFR 261.24 on an annual basis. Parameters detected in the leachate at levels of concern may be included in future groundwater sampling analyses. The results of the leachate analyses shall be submitted to the SWSSWD of the DEP within 30 days of receipt of the analytical results.

7. The groundwater monitoring for the solid waste disposal areas is incorporated into the Facility Groundwater Monitoring Plan as described in Section XVIII of these certification conditions. As new solid waste disposal areas are put into use, a modification of the Facility

Groundwater Monitoring Plan shall be submitted by FPC to the SWSSWD of the DEP to monitor the new disposal areas.

8. If groundwater concentrations significantly above both the background concentration and the applicable groundwater standard due to Solid Waste Disposal Area leachate are detected and verified by appropriate resampling, FPC shall submit a contamination assessment plan to the Department's SWSSWD within 150 days of knowledge of exceedance. The contamination plan shall provide a detailed plan for evaluating the vertical and horizontal extent of affected soils and groundwater.

B. Site Specific Standards - Coal Gasification Slag

1. The solid waste disposal area clay liner system shall provide protection equivalent to a composite or double liner system in accordance with these conditions of certification.

2. The Solid Waste Disposal Area shall have a leachate collection system. Leachate collection system piping shall be established in perimeter areas near the impoundment dams such that a minimum 10-foot clay thickness exists between the collector ditch and the impoundment dam contiguous with the waste clay underlying the collector ditch. If insufficient clay thickness exists, a synthetic 60 mil HDPE liner shall be installed in localized areas of insufficient clay thickness to prevent seepage outside of the liner system.

3. At least two years prior to disposal in SWDA, FPC shall commence consolidation of the clays in such area in the manner described in the SCA and sufficiency responses.

4. At least six months prior to disposal in SWDA, FPC shall conduct test probings in the SWDA to determine the thickness of the consolidated clay. The clay probings shall be conducted as follows:

a. Clay probings will be performed on approximately 50-foot centers where the consolidated clay covers overburden piles and approximately 150-foot centers between overburden piles. Locations of overburden piles will be determined initially from post-mining aerial photography and visual observation and confirmed by probing.

b. Based on the results of the clay probings, a contour map will be developed which shows the thickness of the consolidated clay over the surface of each proposed SWDA.

5. If the clay thickness is less than a minimum of ten (10) feet in any interior area away from the perimeter dams, restoration of the clay liner shall be made. Restoration shall consist of placing additional clay in the deficient area to achieve a ten-foot clay thickness or placing a 60 mil synthetic HDPE liner patch over the deficient area where the clay is less than 10 feet thick. The patch shall be keyed into the clay around the perimeter of the deficient area to prevent seepage beneath the synthetic liner.

6. The liner systems shall have a quality assurance plan equivalent to that for a composite or double liner system approved by the Department's Solid Waste Section of the SWSSWD prior to construction. Soil and/or synthetic liner construction quality assurance shall include a quality control plan specifying performance criteria for the liner, testing procedures and sampling frequencies.

~~7. All engineering plans, reports, and related information shall be approved by the engineer of record with professional certification and shall be approved by the Department's SWSSWD prior to construction. A construction certification report signed and sealed by a professional engineer, and record drawings showing all modifications to construction plans, shall be submitted for approval to the SWSSWD of the DEP prior to operation of each solid waste disposal area.~~

~~8. Water treatment plant sludge shall be segregated from the gasifier slag in a separate solid waste disposal area. The sludge disposal area shall be provided with a minimum two-foot sand or equivalent drainage blanket which drains to the perimeter leachate collection system piping.~~

~~9. The facility shall have a comprehensive operation plan that provides written, detailed instructions for the daily operation of the solid waste disposal areas. The plan shall be kept at the facility and shall be accessible to the operators. The plan shall be revised if operational procedures change. A schedule for routine maintenance of the leachate collection and removal system shall be established to ensure operation of the system. The maintenance schedule shall be a part of the operational procedures for the plan. The initial operation plan shall include the SA-8 solid waste disposal area and shall be submitted for approval to the SWSSWD of the DEP prior to operation of the solid waste disposal area.~~

~~10~~ 7. FPC is responsible for leachate level monitoring, sampling, analysis of the landfill leachate, and for providing copies of the leachate analysis to the Department's SWSSWD. FPC shall have a prepared contingency plan to handle leachate collection, removal, and treatment problems such as interruptions of discharges to a treatment plant. Quantities of leachate collected by the leachate collection and removal system shall be recorded in gallons per day before on-site treatment or transport off-site. A rain gauge shall be installed, operated, and maintained to record precipitation at the facility. Precipitation records shall be maintained and used to compare with leachate generation rates.

~~11. Hazardous waste or any hazardous substance shall not be accepted for disposal at this site. Hazardous waste is a solid waste identified by the Department as a hazardous waste in Chapter 62-730, F.A.C. Hazardous substances are those defined in Section 403.703, F.S., or in any other applicable state or federal law or administrative rule.~~

~~12. FPC shall maintain a program which prohibits the disposal of bulk industrial wastes which operation personnel reasonably believe to either be or contain hazardous waste, without obtaining a chemical analysis of the material showing the waste to be non-hazardous. The chemical analysis of any such material, along with the date of disposal, shall be kept on file at the facility.~~

~~13. A trained supervisor shall be responsible for maintaining the solid waste disposal areas in an orderly, safe, and sanitary manner. Sufficient personnel shall be employed for adequate operation. In the event of damage to any portion of the solid waste disposal area or failure of any portion of the solid waste disposal area or failure of any portion of the related systems, the Department's SWSSWD shall receive notification in accordance with Condition III.B.~~

~~14. FPC shall sample leachate from each SWDS for Primary and Secondary Drinking Water Standards as listed in Chapter 62-550, F.A.C., and for the parameters listed in 40 CFR 261.24 on an annual basis. Parameters detected in the leachate at levels of concern may be included in future groundwater sampling analyses. The results of the leachate analyses shall be submitted to the SWSSWD of the DEP within 30 days of receipt of the analytical results.~~

~~15. If groundwater concentrations significantly above both the background concentration and the applicable groundwater standard due to Solid Waste Disposal Area leachate are detected and verified by appropriate resampling, FPC shall submit a contamination assessment plan to the Department's SWSSWD within 150 days of knowledge of exceedance. The contamination plan shall provide a detailed plan for evaluating the vertical and horizontal extent of affected soils and groundwater.~~

~~16. The groundwater monitoring for the solid waste disposal areas is incorporated into the Facility Groundwater Monitoring Plan as described in Section XVIII of these certification conditions. As new solid waste disposal areas are put into of the Facility Groundwater Monitoring Plan shall be submitted by FPC to the SWSSWD of the DEP to monitor the new disposal areas.~~

~~17~~8. Closure shall be equivalent to lined landfill closures, and shall include a barrier layer. Installation of a barrier layer shall include pumping down of the leachate head above the clay liner using a system of well points installed in depressed areas of the disposal area. Well points shall be installed to the top of the clay liner and pumped to lower leachate head levels to less than 4 feet. The well point system shall remain as a dedicated installation upon closure of the areas for future pumping if leachate heads exceeding 4 feet redevelop after closure, or if leachate quality exceeds ground water standards.

~~18~~9. In the event FPC proposes to change the method of closing the solid waste disposal areas required by Condition XXI.B.~~17~~8 above, the Department may require financial assurance in

a manner equivalent to the requirements of Rule 17-701.630.

C. Site Specific Standards - Water Treatment Wastes

Water treatment plant sludge shall be segregated from the gasifier slag in a separate solid waste disposal area. The sludge disposal area shall be provided with a minimum two-foot sand or equivalent drainage blanket. Prior to use of the SWDA for disposal of coal gas slag, leachate from the sludge disposal area will drain to the remaining area within the SA-8 impoundment. This leachate will be allowed to drain from the perimeter of the sand blanket and to commingle with surface water within the remainder of the impoundment as part of the water crop for the cooling pond. After development of the remainder of the SWDA for disposal of coal slag, leachate from the sludge disposal area will be collected in the perimeter leachate collection system for disposal or transfer to the cooling pond, as appropriate.

~~C~~D. Additional Information Requirements (Unchanged)

~~D~~E. Processing Additional Information (Unchanged)

Any party to this Notice has the right to seek judicial review of the Order pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department of Environmental Protection, M.S.35, Office of General Counsel, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, and by filing a copy of the Notice of Appeal accompanied by the applicable filing fee with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date that this Final Order is filed with the Department of Environmental Protection.

DONE AND ENTERED this 18th day of August, 1997 in Tallahassee, Florida.

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION

Virginia B. Wetherell

VIRGINIA B. WETHERELL
SECRETARY
3900 Commonwealth Boulevard
Tallahassee, FL 32399-3000

10.4.3 Final Order Modifying Condition of Certification (PA 92-33C)

This section contains the Final Order Modifying Conditions of Certification for the Hines Energy Complex in December 1997.

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In Re:	Florida Power Corporation Hines Energy Complex (Polk County Site) Modification of Conditions of Certification Polk County, Florida	))))))	DEP CASE NO. PA 92-33C OGC CASE NO. 92-1494

FINAL ORDER MODIFYING CONDITIONS OF CERTIFICATION

On January 27, 1994, the Governor and Cabinet, sitting as the Siting Board, issued a final order approving certification for Florida Power Corporation' s Polk County site, now known as the Hines Energy Complex. That certification order approved the construction and operation of a 470 MW, natural gas-fired, combined cycle power plant and associated facilities located in Polk County, Florida.

On July 3, 1997, Florida Power Corporation (FPC) filed a request to amend the conditions of certification pursuant to Section 403.516(1)(b), Florida Statutes. FPC requested that the conditions be modified to allow for a revision in the site reclamation requirements to reflect the on-site topography and soil condition. On August 12, 1997, FPC provided hydrology calculations supporting their request for modification.

Copies of FPC' s proposed modification were made available for public review on September 26, 1997. On September 26, 1997, a Proposed Modification of Power Plant Certification was published in the Florida Administrative Weekly. As of October 3, 1997, all parties to the original proceeding had received copies of the intent to modify. The notice specified that a hearing would be held if a party to the original certification hearing objected within 45 days from receipt of the proposed modification or any other person, whose interests would be substantially affected, objected in writing within 30 days after issuance of the public notice. No written objection to the proposed modification has been received by the Department. Accordingly, in the absence of any timely objection,

IT IS ORDERED:

The proposed changes to the Florida Power Corporation' s (FPC' s) Hines Energy Complex as described in its July 3, and August 12, 1997, requests for modification are APPROVED. Pursuant to Section 403.516(1)(b), F.S., the conditions of certification for the Hines Energy Complex are **MODIFIED** as followed:

XXV. Mine Reclamation Conditions

F. Reclamation Compensation and Habitat Development

2. Mine Parcel SA-10

a. Unchanged

b. Upon completion of construction of the initial phase of the Polk County Site, Mining Parcel SA-10 shall be reclaimed as a ~~palmetto prairie~~ mixture of upland and wetland habitats, as shown on Attachment B to this Certification. ~~and~~ Parcel SA-10 will be contoured to drain to a system sending runoff water ultimately to McCullough Creek.

~~c. The palmetto prairie habitat portion of SA-10 shall encompass 268 acres of the total 4 acre mine area. The plantings will consist of native grasses with clumps of saw palmetto Serenoa repens) and shrubs established throughout the mine area in a density of 50 plants per acre. The remaining 26 acre of SA-10 will be planted in native grasses or shrubs.~~

3. - 9. Unchanged

10. Palmetto Prairie Reclamation

268 acres of the total 294 acres of mine area N-13 shall be reclaimed as a palmetto prairie. The palmetto habitat portion of N-13 will consist of native grasses with clumps of saw palmetto (Serenoa repens) and shrubs established throughout the mine area in a density of 50 plants per acre. The remaining 26 acres of N-13 will be reclaimed as wetland mixed forest and freshwater swamp as shown on Attachment B.

Any party to this Notice has the right to seek judicial review of this Order pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department of Environmental Protection, Office of General Counsel, 3900 Commonwealth Boulevard, MS 35, Tallahassee, Florida 32399-3000 and by filing a copy of the Notice of Appeal accompanied by the applicable

filing fee with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date that this Final Order is filed with the Department of Environmental Protection.

DONE AND ENTERED this 22nd day of December, 1997 in Tallahassee, Florida.

STATE OF FLORIDA, DEPARTMENT
OF ENVIRONMENTAL PROTECTION

F. Perry Odom

~~VIRGINIA B. WETHERELL~~
acting SECRETARY
Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, FL 32399-3000
Telephone: (904) 488-1554

FILING AND ACKNOWLEDGEMENT FILED, on this date, pursuant to S120.52 Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Patricia D. Neal — 12/24/97
Clerk **Date**

10.4.4 Siting Board's Final Order and Land Use Recommended Order

This section contains the Final Order and Land Use Recommeded Order issued by the Siting Board for the Hines Energy Complex in January 1993.

BEFORE THE GOVERNOR AND CABINET
STATE OF FLORIDA
SITTING AS THE SITING BOARD

IN RE:
APPLICATION FOR POWER PLANT
SITE CERTIFICATION OF
FLORIDA POWER CORPORATION
POLK COUNTY SITE,
PA 92-33
_____/

DOAH CASE NO. 92-5308EPP
OGC NO. 92-1494

FINAL ORDER

On January 26, 1993, this matter came before the Governor and Cabinet, sitting as the Siting Board, pursuant to the Florida Electrical Power Plant Siting Act (PPSA), Section 403.501, et seq., Florida Statutes (1991), for final agency action concerning a Recommended Order dated January 5, 1993, attached as Exhibit 1, which recommends that the proposed site for the Florida Power Corporation Polk County site is consistent with all applicable zoning ordinances and land use plans.

No exceptions to the Recommended Order have been filed. Having reviewed the Recommended Order and having otherwise been fully advised, it is ORDERED:

Pursuant to Section 120.57(1)(b)10, Florida Statutes (1991), the Recommended Order dated January 5, 1993, (Exhibit 1) is APPROVED and ADOPTED by the Board.

NOTICE OF RIGHTS

Any party to this certification proceeding has the right to seek judicial review of this Order pursuant to Section 120.68, Florida Statutes, by the filing of a notice of appeal pursuant to

RECEIVED
FEB 26 1993
Hopping, Boyd, Green & Sams

Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Siting Board in the Department of Environmental Regulation Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy with the appropriate District Court of Appeal. The notice of appeal must be filed within 30 days from the date this Final Order is filed with the Clerk of the Siting Board.

DONE and ORDERED this 26th day of January, 1993, in Tallahassee, Florida, pursuant to the vote of the Governor and Cabinet sitting as the Siting Board, at a duly-noticed and constituted Cabinet meeting on January 26, 1993.

THE GOVERNOR AND CABINET
SITTING AS THE SITING BOARD

BY: Lawton Chiles
THE HONORABLE LAWTON CHILES

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to §120.52 Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Kathy C Carter 2-24-93
Clerk Date

I hereby certify that the aforegoing was sent to the following list of parties on February 24, 1993.

Hamilton S. Oven

Hamilton S. Oven, P.E.
Administrator, Siting
Coordination Office
Department of Environmental

Linda Novak
Polk County Air Program Office
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Bartow, FL 33830

Gary P. Sams, Esquire
Richard W. Moore, Esquire
Hopping, Boyd, Green & Sams
P.O. Box 6526
Tallahassee, FL 32314-6526

James Antista, Esquire
FL Game & Fresh Water Commission
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Tallahassee, FL 32399-1600

Mark F. Carpanini, Esquire
Polk County Attorney
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John J. Dingfelder, Esquire
Hillsborough County Attorney
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Lakeland, FL 33807-6839

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Environmental Project Manager
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Sara M. Fotopulos
Chief Counsel
Environmental Protection Commission
of Hillsborough County
1900 Ninth Avenue
Tampa, FL 33605

State of Florida
Division of Administrative Hearings
The DeSoto Building, 1230 Apalachee Parkway
Tallahassee, FL 32399-1550
(904) 488-9675 • SunCom: 278-9675

Sharyn L. Smith
Director

Ann Cole
Clerk

January 5, 1993

Honorable Lawton Chiles
Governor
State of Florida
The Capitol
Tallahassee, FL 32399

Honorable Jim Smith
Secretary of State
State of Florida
The Capitol, PL-02
Tallahassee, FL 32399-0250

Honorable Robert A. Butterworth
Attorney General
State of Florida
The Capitol
Tallahassee, FL 32399-1050

Honorable Tom Gallagher
Treasurer and Insurance
Commissioner
State of Florida
The Capitol
Tallahassee, FL 32399-0300

Honorable Bob Crawford
Commissioner of Agriculture
State of Florida
The Capitol
Tallahassee, FL 32399-0810

Honorable Gerald A. Lewis
Comptroller
State of Florida
The Capitol, Plaza Level
Tallahassee, FL 32399-0350

Honorable Betty Castor
Commissioner of Education
State of Florida
The Capitol
Tallahassee, FL 32399

Re: Application for Power Plant Certification of Florida Power Corporation Polk County Site, PA 92-33, DOAH Case No. 92-5308EPP

Dear Siting Board:

Enclosed is my Recommended Order in the land use hearing of the referenced case. Exhibits received in evidence and the transcript of the land use hearing have been delivered to Richard T. Donelan, Jr., at the Department of Environmental Regulation.

As required by Section 120.58(5), Florida Statutes, please provide the Division of Administrative Hearings a copy of your final order in this case within 15 days of rendition.

Sincerely,

DIANE K. KIESLING
Hearing Officer

RECEIVED
JAN 8 1993
D. E. R.
SITING COORDINATION

DKK:smc

Enclosure as noted

Copies furnished:

Gary P. Sams
Pamela I. Smith
Richard T. Donelan, Jr.
Hamilton S. Oven, Jr.
Lucky T. Osho
Michael Palecki
M. B. Adelson, IV
Vernon Whittier
Doug Leonard
Ralph Artigliere
Julia Green
John J. Dingfelder
Mark Carpanini
Martin D. Hernandez
James Antista
Sara M. Fotopulos

STATE OF FLORIDA
DIVISION OF ADMINISTRATIVE HEARINGS

IN RE: APPLICATION FOR POWER PLANT CERTIFICATION OF FLORIDA POWER CORPORATION POLK COUNTY SITE PA 92-33	)	DOAH CASE NO. 92-5308EPP OGC CASE NO. 92-1494

LAND USE RECOMMENDED ORDER

Pursuant to notice, a formal hearing was held on the land use portion of this case on December 7, 1992, in Bartow, Florida, before the Division of Administrative Hearings, by its designated Hearing Officer, Diane K. Kiesling.

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STATEMENT OF THE ISSUES

The issue for determination is whether the proposed Florida Power Corporation (FPC) Polk County Site, including its associated linear facilities, is consistent and in compliance with the existing land use plans and zoning ordinances of Polk County and Hillsborough County, Florida, pursuant to 403.508(2), Florida Statutes (1991).

PRELIMINARY STATEMENT

Pursuant to the Florida Electrical Power Plant Siting Act (PPSA), Sections 403.501-403.519, Florida Statutes, on August 24, 1992, FPC filed an application for a power plant site certification (Application) for the initial construction and operation of 470 megawatts (MW) of combined cycle electric generation and ultimate site capacity of up to 3,200 MW on a site in southwest Polk County. This project is known as the Polk County Site.

At the hearing, FPC called Kathleen L. Small, Eric G. Major and Analee Moore. FPC's Exhibits 1 through 23 were admitted into evidence. No other parties called any witnesses or offered any exhibits at the hearing.

The transcript of the proceedings was filed on December 21, 1992, together with the Joint Proposed Recommended Order of FPC and DER. All proposed findings of fact and conclusions of law have been considered. A specific ruling on each proposed finding of fact is made in the Appendix attached hereto and made a part of this Recommended Order.

FINDINGS OF FACT

1. FPC published notices of this land use hearing on October 23, 1992, in the Lakeland Ledger and the Tampa Tribune, and published revised notices of the hearing on November 14, 1992, in the Lakeland Ledger and the Tampa Tribune. Copies of the original notice and the revised notice for the land use hearing were posted at the project site. The Department of Environmental Regulation (DER) published a notice of this hearing in the Florida Administrative Weekly on October 16, 1992. DER mailed notice of this hearing to the chief executives of the local and regional authorities with responsibility for zoning and land use planning and whose jurisdictions include the Polk County Site. DER also issued a news release concerning the land use hearing portion of the certification process.

2. On November 17, 1992, FPC filed a Notice of Amendment to the Application. This amendment added three corridor segments to the natural gas pipeline corridor associated with the Polk County Site. Information supporting this amendment to the Application was included as DER Exhibit 82-B in FPC's Responses to Sufficiency Comments filed by FPC on November 30, 1992.

The Polk County Site

3. The Polk County Site is a multi-phased electrical power plant project scheduled to begin operation in 1998. The initial phase of the project will be natural gas combined cycle generating units with additional generating units being brought on line sequentially to match the estimated growth of demand through the ultimate site capacity of up to 3,200 megawatts. The ultimate site capacity for the proposed Polk County Site includes five key areas. These are:

(a) plant island, 964 acres;

(b) cooling ponds, 2,600 acres;

(c) brine pond, 311 acres;

(d) solid waste disposal areas, 2,179 acres; and

(e) buffer areas, 1,649 acres.

4. Two scenarios are proposed for the ultimate site capacity of the Polk County Site. These scenarios are:

> Case A -- total site capacity of approximately 3,000 megawatts based on advanced combustion turbine technology and fueled by coal gasification; and
> Case B -- total site capacity of approximately 3,200 megawatts based on two pulverized coal units of 1,200 megawatts and 2,000 megawatts of coal gasification combined cycle units.

5. Three associated linear facilities are proposed for the initial phase of the Polk County Site. These associated facilities include a 230 kV transmission line upgrade, a natural gas pipeline lateral, and a reclaimed water pipeline.

Selection of Polk County Site and Associated Facilities

6. In January of 1989, FPC initiated the site selection process for a primary and alternate site for new power plant facilities. The new site had to be capable of accommodating approximately 3,000 megawatts of new electrical generation capacity while meeting several criteria, including multi-unit and clean-coal capability, cost-effectiveness, compliance with all government regulations, compatibility with FPC's commitment to environmental responsibility, and consistency with state land use objectives.

7. FPC used a systematic, five-phase site selection process for identifying the Polk County Site. This process began by screening potential areas throughout Florida and parts of Georgia and Alabama. Through a series of screenings, rankings, and evaluations, FPC narrowed the number of potential sites from 172 to five. The final phase of the selection process included evaluation of field data and other analytical information. The site selection process concluded with the selection of the Polk County Site as the primary site.

8. During each site selection phase, FPC evaluated environmental, socio-economic, and engineering criteria in order to select a site which would maximize environmental suitability, socio-economic compatibility, and engineering feasibility.

9. As part of the site selection process, FPC organized an independent Environmental Advisory Group (EAG) which was composed of environmentalists, educators, and community leaders.

The EAG reviewed FPC's selection process and the potential generating sites selected by FPC.

10. In October of 1990, FPC selected the Polk County Site as the appropriate site for the new electric power plant generating site. The EAG concurred with FPC's selection of the Polk County Site.

Location of the Polk County Site

11. The FPC Polk County Site is located on approximately 8,000 acres of mined-out phosphate lands located in southwest Polk County approximately 40 miles east of Tampa, 3 miles south of Bartow, and 3.5 miles northwest of Fort Meade. The Polk County Site is bounded on the north by County Road (CR) 640, and CR 555 runs through the site. The land uses surrounding the Polk County Site consist almost entirely of phosphate mining operations with the exception of one mobile home on the corner of CR 640 and CR 555.

12. The Polk County Site is composed of four different types of phosphate mining areas. The majority of the Polk County Site is comprised of areas which have been mined and converted into clay settling areas. The second area consists of mine cuts which have been mined but have not received clays. This area is located on the southern portion of the Polk County Site. In the western portion of the Polk County Site, known as Phosphoria, is land that has not been mined, but is scheduled for mining. Finally, there is one parcel of land, Tiger Bay, which has been mined, reclaimed, and released under the Florida Department of Natural Resources' mine reclamation program.

13. Three linear facilities are associated with certification of the first phase of the Polk County Site. A 230 kV transmission line corridor runs from the Barcola Substation, which is located in the northern portion of the Polk County Site, to the Fort Meade Substation, located on CR 630. A backup natural gas pipeline corridor runs from a Florida Gas Transmission pipeline at CR 39 in Hillsborough County east to the Polk County Site. The natural gas pipeline corridor includes a metering station site at CR 39. A reclaimed water pipeline corridor runs from the Bartow city limits south along a CSX Railroad line and U.S. Highway 17, then west to the Polk County Site. On December 1, 1992, FPC amended its Application by narrowing the width of the reclaimed water pipeline along the southern portion of U.S. Highway 17 to exclude a recently annexed portion of the City of Fort Meade. The excluded portion is no longer part of this proceeding.

Consistency and Compliance of the Polk County Site With the Polk County Land Use Plan, Zoning Ordinance, and Conditional Use Permit

14. As indicated on the Polk County Comprehensive Plan Future Land Use Map, the Polk County Site is located within the Rural Development Area in the Phosphate Mining (PM) land use category. Policy 2.114-A3 of the Future Land Use Element expressly permits construction, operation, and maintenance of electric power generation facilities, and ancillary uses and facilities required to be certified pursuant to the PPSA, in the Phosphate Mining land use category. The Polk County Planning Division staff expressly found that the "FPC proposed power

plant facility is consistent with the land use designation for the subject parcel."

15. The Polk County Site is located in the Rural Conservation (RC) zoning district. Under the Polk County Zoning Ordinance, Class III essential services, including generation facilities such as power plants, are allowed in the RC zoning district as a conditional use.

16. On January 24, 1992, FPC filed a Conditional Use Permit application with Polk County. FPC made presentations to the Zoning Advisory Board and the Board of County Commissioners for Polk County, and a public hearing on the Conditional Use Permit was held in May, 1992. On June 2, 1992, the Board of County Commissioners unanimously approved the issuance of Conditional Use Permit 92-06 to FPC for the Polk County Site. Copies of the Conditional Use Permit and staff report are included in Appendix 10.2 of the Application.

17. Exhibit D, Sheet 1, of the Conditional Use Permit depicts the Polk County Site layout and is consistent with the Site Plan in the Application. The Plant Island depicted in Exhibit D, Sheet 2, of the Conditional Use Permit is consistent with the Plant Island layouts for Case A and Case B in the Application.

18. The Polk County Conditional Use Permit set forth a Timetable of Development for the Polk County Site. The Timetable of Development requires FPC to begin site preparation within 12 months after certification of the Polk County Site and to complete the initial combined cycle generating units 48

months after compliance with the applicable building construction codes has been determined. FPC can comply with the timetable set forth in the Conditional Use Permit.

19. The FPC Polk County Conditional Use Permit also included several Special Conditions of Approval requiring that certain information be included in the Application. As indicated below, the required information has been included in the Application.

(a) Special Condition 6 requires that a landscape plan be included for a buffer area along CR 555. That landscape plan is included in Figure 3.2.1-4 of the Application.

(b) Special Condition 9 requires that FPC demonstrate that the clays underlying the Polk County Site solid waste disposal areas can be consolidated to have the same protective values as required for clay liners under the applicable DER rules. Information offered to demonstrate compliance with this condition is included in Section 3.7.1.3 of the Application.

(c) Special Condition 12 requires that FPC submit a stormwater management plan with the Application which meets Polk County standards. This plan is included in Section 3.8 of the Application.

(d) Special Condition 17 requires that the Application include a site plan showing compliance with zoning district setback and building separation regulations. FPC has demonstrated compliance with these regulations in Figure 3.2.1-1 for Case A and Figure 3.2.1-2 for Case B.

(e) Special Condition 22 requires that the nondesignated areas on the site plan included in the Conditional

Use Permit as Exhibit D remain undeveloped. Figure 2.1.3-1 of the Application shows the nondesignated areas as being undeveloped.

20. Other Special Conditions in the Conditional Use Permit require FPC to file plans and documents after certification or require FPC to perform other post-certification activities. For example, these Special Conditions include requirements for a fire protection plan, an emergency management plan, a spill prevention containment and control plan, a wildlife management plan, and an annual report on water use and conservation. Special Condition 9 requires FPC to monitor groundwater in relationship to the solid waste disposal areas. FPC is committed to complying with these and all other conditions of the Polk County Conditional Use Permit.

21. The Polk County Site, including the associated linear facilities, as designed, located and proposed in the Application, is consistent and in compliance with the Polk County Comprehensive Plan, Zoning Ordinance, and Polk County Conditional Use Permit 92-06.

Consistency and Compliance of the Natural Gas Pipeline, 230 kV Transmission Line, and Reclaimed Water Pipeline with the Polk County Land Use Plan and Zoning Ordinance

22. The Polk County Land Use Plan provides that utility facilities are allowed in all land use designations. The natural gas pipeline, transmission line, and reclaimed water pipeline are included within the enumerated list of utility facilities. The location of these associated facilities in the unincorporated portions of Polk County is consistent and in compliance with the Land Use Plan of Polk County.

23. Article V of the Polk County Zoning Ordinance permits Class I Essential Services in all zoning districts as a permitted use. The 230kV transmission line, natural gas pipeline, and reclaimed water line are included within the definition of Class I Essential Services. The locations of the Polk County Site associated linear facilities are consistent and in compliance with the Polk County Zoning Ordinance.

Consistency and Compliance of the Natural Gas Pipeline and Metering Station Site with the Hillsborough County Land Use Plan and Zoning Ordinance

24. The Hillsborough County Comprehensive Plan defines public facilities as including, but not limited to, transportation, sanitary sewers, potable water, drainage, solid waste, and parks. The natural gas pipeline and metering station site are similar to these types of facilities.

25. Policy A-5.6 of the Land Use Element of the Hillsborough County Comprehensive Plan requires that public facilities and utilities be located to maximize the efficiency of the services provided, minimize their cost, and minimize their impacts on the natural environment. Furthermore, Policy A-5.10 of the Land Use Element states that public facilities may be considered in any land use plan designation.

26. FPC considered the efficiency, cost, and impact on the natural environment in locating the natural gas pipeline corridor and metering station site in Hillsborough County. In correspondence with FPC, Hillsborough County staff has indicated that the location of the pipeline in the land use categories of agriculture and agricultural/mining would not be incompatible with the uses allowed in those land use categories.

27. Natural gas pipelines are not specifically regulated under the Hillsborough County Land Development Code; however, there is no provision in the Code which would prohibit these types of facilities. The metering station site in Hillsborough County would be considered an "other public service facility" under the Hillsborough County Land Development Code. "Other public service facilities" are allowed as limited uses in the Agricultural Rural (AR) zoning district where the metering station will be located.

28. During the course of the land use hearing, Hillsborough County and FPC entered into a stipulation addressing the consistency and compliance of the natural gas pipeline corridor and metering station site with the Hillsborough County Land Use Plan and zoning regulations. Hillsborough County agreed that the natural gas pipeline corridor and metering station site were consistent and in compliance with the Land Use Plan and zoning regulations of Hillsborough County. FPC agreed that Hillsborough County, in so stipulating to the consistency and compliance of the natural gas pipeline corridor and metering station site with the applicable land use plans and zoning regulations, did not waive its right to recommend that certification of the Polk County Site be subject to appropriate conditions of certification that may be reasonably necessary to satisfy performance criteria contained in County regulations, including the Hillsborough County Land Development Code.

CONCLUSIONS OF LAW

29. The Division of Administrative Hearings has jurisdiction over the parties to and the subject matter of these proceedings. Section 403.508(1), Florida Statutes (1991).

30. The sole issue for determination in this land use portion of the certification process is whether the FPC Polk County Site is consistent and in compliance with existing land use plans and zoning ordinances of Polk County and Hillsborough County. Section 403.508(2), Florida Statutes (1991).

31. FPC timely published notice of the land use hearing in newspapers of general circulation in Polk County and Hillsborough County. FPC published the revised notice of hearing approximately 23 days prior to the land use hearing. FPC and DER stipulated to the alteration of time limits for the publishing of the revised notice of hearing. In an Order dated December 3, 1992, the Hearing Officer approved the alteration of time limits for publishing the revised notice of hearing. All other notice requirements for the land use hearing specified in Rule 17-17.151, Florida Administrative Code, were complied with by FPC and DER.

32. The applicable land use plans and zoning ordinances for the Polk County Site are those which were adopted by Polk County and Hillsborough County and in effect at the time the Polk County Site Application was filed on August 24, 1992.

33. FPC established by competent, substantial evidence that the Polk County Site, including the associated 230 kV transmission line corridor, natural gas pipeline corridor and

reclaimed water pipeline corridor, is consistent and in compliance with the Polk County Land Use Plan, other applicable Comprehensive Plan provisions, and the Polk County Zoning Ordinance. No party presented any evidence to the contrary.

34. Pursuant to the provisions of the Polk County Comprehensive Plan and Zoning Ordinance, Polk County issued FPC Conditional Use Permit No. 92-06 for the development of the Polk County Site. FPC demonstrated by competent, substantial evidence that the Polk County Site as proposed in the Application will comply with Conditional Use Permit 92-06.

35. FPC presented competent, substantial evidence which demonstrated that the natural gas pipeline corridor and metering station site associated with the Polk County Site are consistent and in compliance with the Hillsborough County Land Use Plan and zoning regulations. No party presented any evidence to the contrary. FPC and Hillsborough County also stipulated that the natural gas pipeline and metering site are consistent and in compliance with the Hillsborough County Land Use Plan and zoning regulations. This stipulation does not waive Hillsborough County's right to recommend conditions which may be included in the certification of the Polk County Site.

RECOMMENDATION

Based on the foregoing, Findings of Fact and Conslusions of Law it is hereby

RECOMMENDED that the Governor and Cabinet, sitting as the Siting Board, enter a final order finding that the proposed FPC Polk County Site, including the associated 230 kV transmission

line, natural gas pipeline and metering station, and reclaimed water pipeline, as proposed in the Site Certification Application, is consistent and in compliance with the land use plans and zoning ordinances of the Polk County and Hillsborough County.

DONE and ENTERED this 5th day of January, 1993, in Tallahassee, Leon County, Florida.

DIANE K. KIESLING, Hearing Officer
Division of Administrative Hearings
The DeSoto Building
1230 Apalachee Parkway
Tallahassee, Florida 32399-1550
(904) 488-9675

Filed with the Clerk of the Division of Administrative Hearings this 5th day of January, 1993.

APPENDIX TO THE RECOMMENDED ORDER IN CASE NO. 92-5308EPP

The following constitutes my specific rulings pursuant to Section 120.59(2), Florida Statutes, on the proposed findings of fact submitted by the parties in this case.

Specific Rulings on Proposed Findings of Fact Submitted by FPC and DER

1. Each of the following proposed findings of fact is adopted in substance as modified in the Recommended Order. The number in parentheses is the Finding of Fact which so adopts the proposed finding of fact: 1-28(1-28).

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Honorable Tom Gallagher
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Honorable Gerald A. Lewis
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NOTICE OF RIGHT TO SUBMIT EXCEPTIONS: All parties have the right to submit written exceptions to this Recommended Order. All agencies allow each party at least 10 days in which to submit written exceptions. Some agencies allow a larger period within

which to submit written exceptions. You should contact the agency that will issue the final order in this case concerning agency rules on the deadline for filing exceptions to this Recommended Order. Any exceptions to this Recommended Order should be filed with the agency that will issue the final order in this case.

DOAH Case No. 92-5308EPP

10.4.5 Polk County Conditional Use Permit 92-06

This section contains Conditional Use Permit 92-06 for the Hines Energy Complex issued by the Board of County Commissioners of Polk County in June 1992.

FLORIDA POWER CORPORATION
POLK COUNTY SITE
CONDITIONAL USE PERMIT

92-06

CONDITIONAL USE PERMIT 92-06 is approved this 2nd day of June, 1992, for FLORIDA POWER CORPORATION (FPC), a Florida corporation, by the BOARD OF COUNTY COMMISSIONERS OF POLK COUNTY (COUNTY), a political subdivision of the State of Florida, based on the following determinations and subject to the following conditions:

DETERMINATIONS

A. FPC wishes to develop (in accordance with development plans as may be revised from time to time) electric power generating facilities fueled by natural gas, coal gas and/or pulverized coal, with oil as backup fuel, together with appurtenant and supportive facilities, all as more particularly described in FPC's Application for Conditional Use Permit and supporting documentation provided by FPC to the County (the Project). Said electric power generating facilities, comprising 3,000 - 3,200 megawatts of capacity, are to be located at a site (the Polk County Site) situated and being in Polk County, Florida, and legally described on Exhibit "A" attached hereto and made part hereof.

B. The Polk County Comprehensive Plan and Zoning Ordinance permit this type of development as proposed by FPC, subject to Conditional Use Permit approval for the Project at the Polk County Site.

C. FPC's Project will be evaluated further during proceedings under the Florida Electrical Power Plant Siting Act (PPSA), Chapter 403, Part II, Florida Statutes, in which Polk County may participate fully as a party and may raise questions or objections to the proposed plan of development. Certification issued under the PPSA for FPC's Polk County Site constitutes the necessary Development Plan approval for construction and operation of the Project and is subject to a determination that land use and zoning are appropriate for the Project.

D. Documents certifying proper authorization for FPC to represent the current owners of the Polk County Site are attached hereto and incorporated herein as Composite Exhibit "B".

E. CUP 92-06 is hereby granted for FPC's Project subject to the following conditions.

CONDITIONS

I. EXISTING ACTIVITY

The current owners of the Polk County Site and their successors in interest may continue to conduct phosphate mining and related activities at the Polk County Site without violating this CUP.

II. SITE AND DEVELOPMENT PLANS

CUP 92-06 shall be undertaken and carried out in accordance with the following:

1. Development of CUP 92-06 will be undertaken and carried out in accordance with the CUP Site Plan and the Development Plan as officially adopted and certified, respectively.

a. CUP 92-06 for the Polk County Site is approved in accordance with the CUP Site Plan, a reduced copy of which is attached hereto as Exhibit "D" (Exhibit "C" has been eliminated from CUP 92-06) and by reference made a part hereof.

b. The Site Certification Application to be filed by FPC under the PPSA for the Polk County Site will constitute the formal application for Development Plan approval and commencement of implementation for CUP 92-06 and shall be submitted to Polk County simultaneously with the Florida Department of Environmental Regulation (DER).

c. The remaining development of CUP 92-06 must be accomplished in accordance with any site certification order issued under the PPSA, which order will constitute Development Plan approval for CUP 92-06; provided that such Site Development Plan approval is generally consistent with the Site Plan approval hereby granted by Polk County.

2. The Timetable of Development as officially adopted by the County and agreed to by FPC, as shown in Exhibit "E" attached hereto and made part hereof, shall be adhered to by FPC.

3. The Special Conditions adopted or imposed by the County in the process of the approval of CUP 92-06, which requirements are set forth in Exhibit "F" attached hereto, are made part hereof.

4. All permits and authorizations shall be granted under the PPSA in accordance with such laws, ordinances, and regulations as may be in effect at the time of approval. Impact fees shall be assessed at the time of building construction code compliance review.

III. DESTRUCTION

In the event that all or a portion of the Project should be destroyed by a storm, fire or other common disaster, FPC, its grantees, successors or assigns, shall have the right to rebuild and/or repair so long as there is compliance with the Site and Development Plans, as the same may be amended from time to time.

IV. CHANGES AND ADDITIONS

There shall at all times be a strict adherence to the provisions of this CUP and the Development Plans approved under the PPSA. All modifications of the Project shall be submitted to the County. Any modification of the Project that would require amendment of this CUP but not amendment of the Development Plans approved under the PPSA shall be reviewed pursuant to the applicable laws and ordinances of the County. Any modification of the Project that would require amendment of both this CUP and the Development Plans

approved under the PPSA shall be reviewed pursuant to both the applicable laws and ordinances of the County and the PPSA. Any modification of the Project that would require amendment of the Development Plans approved under the PPSA but not amendment of this CUP shall be reviewed pursuant to the PPSA. The following shall be addressed during Development Plan review of phases of FPC's Project beyond the initial phase under the supplemental site certification procedure of the PPSA, Section 403.517, Florida Statutes:

1. Off-site linear facilities, except:
   a. The transmission line upgrades between the Polk County Site and the Barcola and Ft. Meade Substations;
   b. The natural gas pipeline lateral extending westward to Hillsborough County;
   c. Any potable water or sanitary sewer connection with the City of Ft. Meade;
   d. Any treated effluent connection with the City of Bartow; and
2. Construction traffic impacts and concurrency for operational traffic for any phase of FPC's Project which is scheduled to commence commercial operation later than the year 2008.
3. Air or water impacts which exceed those identified for ultimate site capacity in FPC's initial Site Certification Application for the Project filed under the PPSA.

Any wildlife corridor or other off-site amenity established as environmental mitigation is not part of this CUP approval. The

establishment of a wildlife corridor or other off-site amenity established as environmental mitigation will not require a modification of this CUP.

V. BREACH OF CUP 92-06

1. In the event that FPC, its grantees, successors or assigns, has not presented its design plans for an initial building construction code compliance review within thirty-six (36) months of the approval of the Development Plans under the PPSA, has fallen behind the approved development construction schedule as set forth in Exhibit "E" by twelve (12) months or more, or has violated any of the terms of this CUP in any material respect, the Board of County Commissioners may serve notice to FPC in writing of the date and place of a public hearing on the CUP, at which time FPC will be given an opportunity to explain the reasons for the scheduling delays and/or violation of the terms of this CUP and to propose a method of fulfilling its obligations under this CUP. The County may, at its discretion, allow FPC, by amendment of this CUP, time to demonstrate its willingness to meet the County's conditions.

2. If at the end of a reasonable period of time, in this case no more than twelve (12) months from the date notice is served on FPC as described above, FPC is clearly unable or unwilling to abide by the conditions of this CUP, or if the conditions of this CUP have in some other manner been clearly violated, the Board of County Commissioners may initiate a modification of the CUP to eliminate

FPC:

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COUNTY:

Polk County Board of County Commissioners
Post Office Box 1969
Bartow, FL 33830

With copies to:

Polk County Attorney
Post Office Box 60
330 W. Church Street
Bartow, FL 33830

Polk County Planning Department
Post Office Box 1969
Bartow, FL 33830

the affected property from the CUP or impose additional conditions that would remedy the violation.

VI. JURISDICTION

Any and all suits or actions at law pertaining to this CUP shall initially be brought in the Tenth Judicial Circuit, Polk County, Florida, and no other venue.

VII. SUCCESSOR AND ASSIGNS

This CUP shall be binding upon the parties hereto, their successors in interest and assigns.

VIII. NOTICE

All notices given pursuant to the terms of CUP 92-06 or which any party may desire to give hereunder shall be in writing and delivered personally, telegraphed or sent registered or certified mail and shall be conclusively presumed to have been given by such delivery. All notices shall be given to each of the following:

EXHIBIT A

Legal Description

DESCRIPTION: (O.R. BOOK 2927, PG. 0048, AND O.R. BOOK 2546, PG. 0782) LOCATION OF FLORIDA POWER CORPORATION'S POLK COUNTY GENERATION SITE IN:

Section 33, Township 30 South, Range 24 East

Section 34, Township 30 South, Range 24 East

Section 35, Township 30 South, Range 24 East

Section 36, Township 30 South, Range 24 East

Section 31, Township 30 South, Range 25 East

Section 1, Township 31 South, Range 24 East

Section 2, Township 31 South, Range 24 East

Section 3, Township 31 South, Range 24 East

Section 4, Township 31 South, Range 24 East

Section 10, Township 31 South, Range 24 East

Section 11, Township 31 South, Range 24 East

Section 12, Township 31 South, Range 24 East

Section 13, Township 31 South, Range 24 East

Section 14, Township 31 South, Range 24 East

Section 23, Township 31 South, Range 24 East

Section 5, Township 31 South, Range 25 East

Section 6, Township 31 South, Range 25 East

Section 7, Township 31 South, Range 25 East

Section 8, Township 31 South, Range 25 East

Section 17, Township 31 South, Range 25 East

Section 18, Township 31 South, Range 25 East

ALL BEING IN POLK COUNTY, FLORIDA, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

Beginning at the NE Corner of the SE 1/4 of Section 14, Township 31 South, Range 24 East; thence South 00° 28' 53" West along the East boundary of said SE 1/4 a distance of 2633.18 feet (1251747.116, 696515.847) to the SE Corner of said SE 1/4; thence South 00° 36' 50" East along the East boundary of the North 1/2 of Section 23, Township 31 South, Range 24 East, 2660.82 feet (1249086.451, 696544.351) to the SE Corner of said North 1/2; thence South 89° 40' 52" West along the South boundary of said North 1/2 a distance of 1524.13 feet (1249077.967, 695020.241) to a point 40.00 feet Easterly of as measured at right angles to the centerline of a private railroad track hereinafter referred to as the right-of-way line; thence North 21° 37' 25" West, along said right-of-way line 3351.61 feet (1252193.712, 693785.149) to the point of curvature of a curve concave Southwesterly and having a radius of 858.40 feet; thence along and with the arc of said curve through a central angle of 17° 15' 26", a chord bearing and distance of North 30° 15' 08" West, 257.57 feet (1252416.206, 693655.383) to the point of tangency of said curve; thence North 38° 52' 51" West along said right-of-way line 1891.34 feet (1253888.527, 692468.182) to the point of curvature of a curve concave Northeasterly and having a radius of 917.44 feet; thence along and with the arc of said curve through a central angle of 12° 45' 08", a chord bearing and distance of North 32° 30' 17" West 203.77 feet (1254060.377, 692358.682) to the point of tangency of said curve; thence North 26° 07' 42" West along said right-of-way line 845.09 feet (1254819.111, 691986.518) to the point of curvature of a curve concave Southwesterly and having a radius of 1470.58 feet; thence along and with the arc of said curve through a central angle of 31° 34' 19", a chord bearing and distance of North 41° 54' 51" West 800.13 feet (1255414.522, 691451.019) to the point of tangency of said curve; thence North 57° 42' 01" West, along said right-of-way line, 162.04 feet (1255501.109, 691315.051) to the East right-of-way line of County Road 555; thence North 00° 00' 41" West, along said East road right-of-way line, 1230.19 feet (1256731.302, 691314.808); thence South 89° 59' 39" East, along said East road right-of-way line, 10.00 feet (1256731.301, 691324.808) to the point of curvature of a curve concave Easterly and having a radius of 1085.92 feet; thence along and with the arc of said curve through a central angle of 33° 58' 40", a chord bearing and distance of North 16° 59' 39" East 634.58 feet (1257338.175, 691510.279) to the point of tangency of said curve; thence North 33° 58' 58" East, along said East right-of-way line, 821.38 feet (1258019.267, 691969.384) to the point of curvature of a curve concave Northwesterly and having a radius of 1205.92 feet; thence

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.

along and with the arc of said curve through a central angle of 30° 28' 14", a chord bearing and distance of North 18° 44' 50" East 633.79 feet (1258619.434, 692173.082) to the point of tangency of said curve; thence North 03° 30' 55" East, along said East right-of-way line, 372.67 feet (1258991.403, 692195.932) to the Northerly right-of-way line of CSX Railroad, said point being 50.00 feet from and at right angle to the centerline of said railroad; thence North 52° 13' 51" West, along said Northerly railroad right-of-way line, 513.84 feet (1259306.120, 691789.749) to the point of curvature of a curve concave Northeasterly and having a radius of 1849.50 feet; thence along and with the arc of said curve through a central angel of 09° 12' 54", a chord bearing and distance of North 47° 37' 24" West 297.14 feet (1259506.392, 691570.244) to the point of tangency of said curve; thence North 43° 00' 57" West, along said Northerly right-of-way line, 1449.48 feet (1260566.203, 690581.406) to the point of curvature of a curve concave Southwesterly and having a radius of 1950.90 feet; thence along and with the arc of said curve through a central angle of 18° 14' 08", a chord bearing and distance of North 52° 08' 01" West 618.30 feet (1260945.727, 690093.296) to the point of tangency of said curve; thence North 61° 15' 05" West along said Northerly right-of-way line 1555.82 feet (1261694.025, 688729.251) to the point of curvature of a curve concave Northeasterly and having a radius of 903.97 feet; thence along and with the arc of said curve through a central angle of 09° 11' 20", a chord bearing and distance of North 56° 39' 26" West 144.82 feet (1261773.627, 688608.266) to the West boundary of the NE 1/4 of Section 10, Township 31 South, Range 24 East; thence South 00° 06' 32" East, along said West boundary, 25.23 feet (1261748.397, 688608.314) to a point 30.00 feet from and radial to the centerline of said railroad, said point being on a curve concave Northeasterly and having a radius of 923.97 feet; thence along and with the arc of said curve through a central angle of 40° 49' 34", a chord bearing and distance of North 32° 36' 49" West 644.54 feet (1262291.307, 688260.927) to the North boundary of the NW 1/4 of said Section 10; thence South 89° 50' 05" West along said North boundary 2302.92 feet (1262284.662, 685958.019) to the NW Corner of said NW 1/4; thence South 89° 51' 50" West along the North boundary of Section 9, Township 31 South, Range 24 East, 1319.79 feet (1262281.529, 684638.230) to the NW Corner of the NE 1/4 of NE 1/4 of said Section 9; thence North 38° 21' 06" East 695.42 feet (1262926.390, 685069.729) to a point that is 20.00 feet East of as measured at right angle to an existing railroad track projected Southerly; thence North 01° 15' 25" East along said Southerly

projection and along said line 20.00 feet East of track and along a Northerly projection thereof, 5338.42 feet (1268164.028, 685186.831) to the South boundary of that parcel, as surveyed by W. A. Read, Jr. & Associates for International Minerals and Chemicals Corporation dated June 3, 1987, with a revised June 15, 1987 date; thence North 89° 55' 21" West, along the South boundary of said parcel 1793.51 feet (1268166.453, 683393.327) to the SW Corner of said parcel; thence North 01° 50' 58" East, along the West boundary of said parcel 1585.25 feet (1269750.878, 683444.488); thence North 10° 40' 11" West, along said West boundary, 1269.65 feet (1270998.576, 683209.416) to the NW Corner of said parcel; thence North 10° 40' 11" West, along a Northwesterly projection of said West boundary 614.93 feet (1271602.874, 683095.563) to the Easterly edge of an existing graded road; thence North 02° 29' 39" East, along said Easterly edge, 409.16 feet (1272011.644, 683113.368); thence North 09° 35' 59" West, along said Easterly edge, 138.03 feet (1272147.740, 683090.350); thence North 23° 59' 18" West, along said Easterly edge, 357.10 feet (1272473.996, 682945.171); thence North 09° 46' 19" West, along said Easterly edge, 269.78 feet (1272739.859, 682899.383); thence North 02° 19' 21" West, along said Easterly edge, 58.07 feet (1272797.877, 682897.030) to the South boundary of the North 450 feet of Section 33, Township 30 South, Range 24 East; thence North 89° 37' 11" East along said South boundary 3171.75 feet (1272818.928, 686068.708) to the East boundary of said Section 33; thence North 89° 30' 34" East along the South boundary of the North 450 feet of Section 34, Township 30 South, Range 24 East, 574.75 feet (1272823.849, 686643.436) to the Southwesterly right-of-way line of State Road 640, 55.00 feet from and radial to the centerline of said State Road, said point being on a curve concave Southwesterly and having a radius of 1854.52 feet; thence along and with the arc of said curve through a central angle of 11° 19' 20", a chord bearing and distance of South 59° 15' 29" East 365.88 feet (1272636.822, 686957.899) to the point of tangency of said curve; thence South 53° 35' 49" East, along said Southwesterly right-of-way line, 535.09 feet (1272319.269, 687388.568) to the point of curvature of a curve concave Northerly and having a radius of 1964.52 feet; thence along and with the arc of said curve through a central angle of 36° 00' 00", a chord bearing and distance of South 71° 35' 49" East 1214.14 feet (1271935.964, 688540.617) to the point of tangency of said curve; thence South 89° 35' 49" East, along said Southerly right-of-way line, 2827.90 feet (1271916.067, 691368.446) to the point of curvature of a curve concave Northerly and having a radius of 2919.28 feet; thence along and with the arc of said curve through a central

angle of 04° 57' 00", a chord bearing and distance of North 87° 55' 41" East 252.13 feet (1271925.182, 691620.411) to the point of tangency of said curve; thence North 85° 27' 11" East, along said Southerly right-of-way line, 398.85 feet (1271956.801, 692018.005) to the point of curvature of a curve concave Southeasterly and having a radius of 5673.57 feet; thence along and with the arc of said curve through a central angle of 04° 25' 20", a chord bearing and distance of North 87° 39' 51" East 437.79 feet (1271974.643, 692455.432) to the point of tangency of said curve; thence North 89° 52' 31" East, along said Southerly right-of-way line, 638.55 feet (1271976.032, 693093.980); thence South 00° 07' 28" East, along said Southerly right-of-way line, 35.00 feet (1271941.032, 693094.056) to a point 90.00 feet from and at right angle to the centerline of said State Road; thence North 89° 52' 31" East, along said Southerly right-of-way line, 584.85 feet (1271942.305, 693678.909); thence North 87° 41' 18" East, departing from said Southerly right-of-way line and crossing County Road 555 to a point on the Southerly right-of-way line of said State Road 640 and being on the East side of County Road 555, 267.00 feet (1271953.074, 693945.689); thence North 85° 48' 15" East, along said Southerly right-of-way line, 299.74 feet (1271975.004, 694244.626); thence North 89° 37' 49" East, along said Southerly right-of-way line, 131.08 feet (1271975.850, 694375.700); thence North 00° 22' 10" West, along said Southerly right-of-way line, 20.00 feet (1271995.849, 694375.571) to a point 40.00 feet Southerly of and at right angle to the centerline of said State Road; thence North 89° 37' 49" East, along said Southerly right-of-way line, 1891.12 feet (1272008.056, 696266.652) to the point of curvature of a curve concave Southerly and having a radius of 1105.56 feet; thence along and with the arc of said curve through a central angle of 41° 54' 48", a chord bearing and distance of South 69° 24' 47" East 790.84 feet (1271729.976, 697006.987) to the point of tangency of said curve; thence South 48° 27' 23" East, along said Southerly right-of-way line, 361.96 feet (1271489.924, 697277.900) to the point of curvature of a curve concave Northeasterly and having a radius of 1185.92 feet; thence along and with the arc of said curve through a central angle of 41° 39' 39", a chord bearing and distance of South 69° 17' 13" East 843.43 feet (1271191.610, 698066.816) to the point of tangency of said curve; thence North 89° 52' 58" East, along said Southerly right-of-way line, 4375.16 feet (1271200.562, 702441.966) to the point of curvature of a curve concave Southwesterly and having a radius of 1105.92 feet; thence along and with the arc of said curve through a central angle of 89° 59' 41", a chord bearing and distance of

South 45° 07' 11" East 1563.94 feet (1270097.007, 703550.146) to the point of tangency of said curve; thence South 00° 07' 22" East along said Southwesterly right-of-way line 297.98 feet (1269799.026, 703550.784); thence South 89° 52' 26" West, along said Southwesterly right-of-way line, 10.00 feet (1269799.004, 703540.783) to a point 50.00 feet from and at right angle to the centerline of said State Road; thence South 00° 07' 21" East, along the Westerly right-of-way line, 950.56 feet (1268848.45, 703542.814) to the point of curvature of a curve concave Northeasterly and having a radius of 1195.92 feet; thence along and with the arc of said curve through a central angle of 70° 13' 23", a chord bearing and distance of South 35° 14' 02" East 1375.71 feet (1267724.763, 704336.487) to the point of tangency of said curve; thence North 19° 39' 10" East, along said right-of-way line, 10.00 feet (1267734.180, 704339.850) to a point 40.00 feet from an at right angle to the centerline of said State Road; thence South 70° 20' 44" East, along said Southerly right-of-way line, 157.86 feet (1267681.083, 704488.516); thence South, departing from said Southerly right-of-way line, 204.13 feet (1267476.953, 704488.516) to the Northeasterly toe of slope of existing dike; thence along and with said toe of slope the following courses and distances; South 48° 03' 10" East 29.03 feet (1267457.551, 704510.104); South 27° 21' 04" East 114.41 feet (1267355.929, 704562.670); South 52° 04' 00" East 277.66 feet (1267185.239, 704781.668); thence departing from said toe of slope, South 27° 09' 36" East 91.63 feet (1267103.709, 704823.497) to a point 25 feet, more or less, Westerly of said toe of slope; thence along and with said line 25 feet, more or less, Westerly of toe of slope the following courses and distances; South 69° 59' 33" East 234.17 feet (1267023.588, 705043.537); South 87° 21' 03" East 201.65 feet (1267014.268, 705244.975); South 38° 41' 33" East 747.42 feet (1266430.896, 705712.221); South 25° 09' 52" East 212.07 feet (1266238.954, 705802.397); South 08° 19' 45" East 387.70 feet (1265855.340, 705858.560); South 11° 40' 20" East 258.71 feet (1265601.984, 705910.900); South 07° 33' 07" East 629.18 feet (1264978.262, 705993.589); South 74° 24' 24" East 444.61 feet (1264858.747, 706421.835); South 05° 12' 41" West 631.28 feet (1264230.079, 706364.497); thence departing from said line 25 feet, more or less, Westerly of toe of slope, South 18° 08' 29" West 130.18 feet (1264106.367, 706323.963) to the centerline of an existing dike; thence along and with said centerline of existing dike the following courses and distances; South 00° 03' 29" West 478.72 feet (1263627.647, 706323.479); South 02° 15' 46" East 279.15 feet (1263348.713, 706334.501); South 03° 36' 10" West 292.44 feet (1263056.850, 706316.124); South 00°

33' 03" East 212.63 feet (1262844.225, 706318.168); South 04° 58' 57" East 301.57 feet (1262543.795, 706344.360); South 21° 35' 48" East 139.01 feet (1262414.543, 706395.526); South 63° 26' 29" East 9692 feet (1262371.211, 706482.214); South 85° 55' 42" East 257.87 feet (1262352.901, 706739.434); South 89° 43' 25" East 647.31 feet (1262349.779, 707386.732); South 87° 11' 01" East 214.66 feet (1262339.231, 707601.137); South 85° 03' 03" East 274.55 feet (1262315.545, 707874.663); South 87° 11' 01" East 239.24 feet (1262303.790, 708113.617); North 86° 00' 45" East 329.20 feet (1262326.682, 708442.018); North 89° 02' 57" East 596.50 feet (1262336.581, 709038.438); South 78° 44' 42" East 88.62 feet (1262319.284, 709125.356); South 75° 41' 22" East 103.00 feet (1262293.824, 709225.162); South 71° 41' 58" East 111.85 feet (1262258.704, 709331.352); South 64° 56' 45" East 107.07 feet (1262213.361, 709428.351); South 56° 15' 05" East 114.17 feet (1262149.933, 709523.283); South 63° 44' 08" East 259.20 feet (1262035.232, 709755.727); thence departing said centerline, East 150.53 feet (1262035.232, 709906.252) to the West boundary of a parcel surveyed by Chastain Skillman, Inc. for IMC dated May 23, 1990; thence South 05° 14' 02' West, along said West boundary, 468.09 feet (1261569.095, 709863.553); thence South 00° 51' 39" West, along said West boundary, 406.09 feet (1261163.051, 709857.452); thence South 01° 30' 37" West, along said West boundary, 586.98 feet (1260576.271, 709841.982); thence South 04° 37' 03" East, along said West boundary, 465.18 feet (1260112.605, 709879.431); thence South 06° 24' 08" West, along said West boundary, 361.52 feet (1259753.336, 709839.119); thence South 04° 52' 43" East, along said West boundary, 522.79 feet (1259232.440, 709883.579); thence South 20° 51' 19" East, along said West boundary, 472.74 feet (1258790.670, 710051.879); to the most Southerly corner on said West boundary; thence South 12° 40' 48" West 429.41 feet (1258371.734, 709957.621) to the NE Corner of the South 100.00 feet of the West 200 feet of the North 1/2 of SE 1/4 of Section 8, Township 31 South, Range 25 East; thence South 00° 17' 18" East, along the East boundary of said South 100.00 feet of West 200.00 feet and along the East boundary of the West 200.00 feet of the South 1/2 of SE 1/4 of said section, 1416.32 feet (1256955.436, 709964.750) to the SE Corner of said West 200.00 feet; thence South 45° 03' 49" West 282.06 feet (1256756.211, 709765.083) to a point on the East boundary of the NW 1/4 of Section 17, Township 31 South, Range 25 East, said point being South 00° 05' 42" East, 200.00 feet from the NE Corner of said NW 1/4; thence South 00° 05' 42" East along the East boundary of said NW 1/4 a distance of 2433.10 feet (1254323.116, 709769.116) to the SE Corner of said NW 1/4; thence North 89° 53' 56" West

along the South boundary of said NW 1/4 a distance of 2640.76 feet (1254327.776, 707128.359) to the SW Corner of said NW 1/4; thence North 89° 23' 39" West along the South boundary of the North 1/2 of Section 18, Township 31 South, Range 25 East, 5250.31 feet (1254383.301, 701878.339) to the SW Corner of said North 1/2; thence South 89° 58' 00" West, along the South boundary of the NE 1/4 of Section 13, Township 31 South, Range 24 East, a distance of 2670.21 feet (1254381.747, 699208.126) to the SW Corner of said NE 1/4; thence South 89° 58' 01" West, along the South boundary of the NW 1/4 of said Section 13, a distance of 2670.15 feet (1254380.201, 696537.975) to the Point of Beginning.

LESS AND EXCEPT ROAD RIGHTS-OF-WAY, RAILROAD RIGHTS-OF-WAY, AND PARCELS CONVEYED TO FLORIDA POWER CORFORATION FOR SUBSTATIONS.

AND SUBJECT TO ALL EASEMENTS OF RECORD.

CONTAINING A TOTAL OF 8262.57 ACRES, MORE OR LESS, INCLUDING AREAS OF EXCEPTIONS AND EASEMENTS.

EXHIBIT B

OWNER'S AFFIDAVIT

State of Florida)
)ss
County of Polk)

Before me, the undersigned authority, personally appeared James A. Burleson, who being by me first duly sworn on oath, deposes and says:

(1) That he is the Vice President and General Manager of IMC Fertilizer, Inc., Mineral Operations which is the fee-simple owner of the property legally described on page two of this application.

(2) That he desires a Conditional Use for an electric generation plant on the property legally described on page two.

(3) That he has appointed Florida Power Corporation to act as agent on the behalf of IMC Fertilizer, Inc., Mineral Operations to accomplish the above.

IMC FERTILIZER, INC., MINERAL OPERATIONS
(corporation)
Address: P.O. Box 867
Bartow, FL 33830

James A. Burleson

(name) JAMES A. BURLESON
Title Vice President and General Manager

Sworn to and subscribed before me
this 13th day of January, 1992.

Valerie Lynn Hastings

Notary Public, State of Florida at Large

NOTARY PUBLIC STATE OF FLORIDA
MY COMMISSION EXP. AUG. 15, 1994
BONDED THRU GENERAL INS. UND.

My Commission Expires:

216.Land Owner.aff

Township 31 South, Range 24 East:

- All of Section 1 less the S 3/4 of W 1/2 of SW 1/4;
- All of Section 2 less S 3/4 of SE 1/4 and less S 1/2 of SW 1/4 and Less that part of S 1/2 of N 1/2 of SW 1/4 lying East of SR S-555 (as such road existed on April 8, 1969);
- All of Section 3 less S 1/2 of SE 1/4 and less that part of SE 1/4 of SW 1/4 lying East of the East boundary of Seaboard Coastline RR Company R/W;
- E 1/4 of Section 4;
- E 3/4 of Section 12;
- N 1/2 of NE 1/4 of Section 13;

Township 31 South, Range 25 East:

- All of Section 7;
- All of Section 6 less that part of NW 1/4 of NE 1/4 described as: begin 222 feet East of NW corner of NW 1/4 of NE 1/4, run thence South 105 feet; thence East 105 feet; thence North 105 feet; thence West 105 feet to POB;
- W 1/2 of Section 8 and the West 200 feet of the S 1/2 of SE 1/4; and the West 200 feet of the South 100 feet of the N 1/2 of SE 1/4;
- The NW 1/4 and that part of the NW 1/4 of NE 1/4 of Section 17 described as: begin at the Northwest corner of the NW 1/4 of NE 1/4, run thence East 200 feet, thence Southwesterly to a point 200 feet South of the point of beginning, thence North to the point of beginning;
- N 1/2 of Section 18.

Township 30 South, Range 24 East:

- E 1/2 of Section 33 less the North 450 feet;
- Section 34 lying South of SR S-640 less that part of the North 450 feet of the NW 1/4 of NW 1/4 of NW 1/4 lying South of R/W of C.R. 640;
- That part of Section 35 lying South of SR S-640 and less that parcel described in that certain deed from IMC Corp. to Florida Power Corp. dated 1/25/68 and recorded in OR 1142, Page 591;

- That part of Section 36 lying South of SR S-640;

Township 30 South, Range 25 East:

- That part of Section 31 lying S of SR 640 less the cemetery.

EXHIBIT B

OWNER'S AFFIDAVIT

State of Florida)
)ss
County of Polk)

Before me, the undersigned authority, personally appeared Joseph E. Davis, who being by me first duly sworn on oath, deposes and says:

(1) That he is the President of Estech, Inc. which is the fee-simple owner of the property legally described on page two of this application.

(2) That he desires a Conditional Use for an electric generation plant on the property legally described on page two.

(3) That he has appointed Florida Power Corporation, which appointment is revocable by the undersigned, to act as agent on the behalf of Estech, Inc. to accomplish the above.

ESTECH, INC.
PO Box 208
Bartow, FL 33830

Joseph E. Davis
President

The foregoing instrument was acknowledged before me this 21st day of January, 1992, by Joseph E. Davis, President of Estech, Inc., a Delaware corporation, on behalf of the corporation, who is personally known to me or who has produced FL DRIVER LICENSE as identification and who did/did not take an oath.

Notary Public, State of Florida at Large

My Commission Expires:

Notary Public, State of Florida at Large
My Commission Expires July 6, 1994

Township 31 South, Range 24 East:

- S 3/4 of W 1/2 of SW 1/4 of Section 1;
- S 3/4 of SE 1/4; SE 1/4 of SW 1/4; and that part of S 1/2 of N 1/2 of SW 1/4 lying East of East boundary of CR 555; and, SW 1/4 of SW 1/4 less State Road S-555 R/W, all lying in Section 2;
- S 1/4 of Section 3 lying East of East boundary of Seaboard Coastline Railroad Company R/W;
- That part of NE 1/4 and NE 1/4 of NW 1/4 of Section 10 lying East of Seaboard Coastline Railroad Company R/W;
- All of Section 11 less road R/W and railroad R/W;
- W 1/4 of Section 12;
- NW 1/4 of Section 13;
- That part of Section 14 lying Easterly of the Easterly right-of-way line of the Estech General Chemical RR R/W, less and except the right-of-way for State Road S-555;
- That part of the NW 1/4 and NE 1/4 of Section 23 lying Easterly of the Easterly right-of-way line of Estech General Chemical Railroad.

EXHIBIT B

OWNER'S AFFIDAVIT

State of Florida)
)ss
County of Polk)

Before me, the undersigned authority, personally appeared Joseph E. Davis, who being by me first duly sworn on oath, deposes and says:

(1) That he is the President of C & G Citrus Company, General Partner of C & G Citrus L.P., Limited which is the fee-simple co-owner of the property legally described on page two of this application.

(2) That he desires a Conditional Use for an electric generation plant on the property legally described on page two.

(3) That he has appointed Florida Power Corporation, which appointment is revocable by the undersigned, to act as agent on the behalf of C & G Citrus Company, as General Partner of C & G Citrus L.P., a Delaware Limited Partnership to accomplish the above.

C & G Citrus Company, General Partner
of C & G Citrus L.P., a Delaware Limited
Partnership
701 Harger Road, Suite 190
Oak Brook, IL 60521

Joseph E. Davis
President

The foregoing instrument was acknowledged before me this 21st day of January, 1992, by Joseph E. Davis, President of C & G Citrus Company, General Partner of C & G Citrus L.P., a Delaware Limited Partnership, on behalf of the Limited Partnership, who is personally known to me or who has produced FL. DRIVER LICENSE as identification and who did/did not take an oath.

NOTARY PUBLIC STATE OF FLA

Notary Public, State of Florida at Large

My Commission Expires: Notary Public, State of Florida at Large My Commission Expires July 5, 1994

Township 31 South, Range 24 East:

- S 3/4 of W 1/2 of SW 1/4 of Section 1;
- S 3/4 of SE 1/4; SE 1/4 of SW 1/4; and that part of S 1/2 of N 1/2 of SW 1/4 lying East of East boundary of CR 555; and, SW 1/4 of SW 1/4 less State Road S-555 R/W, all lying in Section 2;
- S 1/4 of Section 3 lying East of East boundary of Seaboard Coastline Railroad Company R/W;
- That part of NE 1/4 and NE 1/4 of NW 1/4 of Section 10 lying East of Seaboard Coastline Railroad Company R/W;
- All of Section 11 less road R/W and railroad R/W;
- W 1/4 of Section 12;
- NW 1/4 of Section 13;
- That part of Section 14 lying Easterly of the Easterly right-of-way line of the Estech General Chemical RR R/W, less and except the right-of-way for State Road S-555;
- That part of the NW 1/4 and NE 1/4 of Section 23 lying Easterly of the Easterly right-of-way line of Estech General Chemical Railroad.

EXHIBIT B

OWNER'S AFFIDAVIT

State of Florida)
)ss
County of Polk)

Before me, the undersigned authority, personally appeared Wayne R. Brobeck, who being by me first duly sworn on oath, deposes and says:

(1) That he is the Director - Real Estate of U.S. Agri-Chemicals Corporation, which is the fee-simple owner of the property legally described as the South 1/2 of the NE 1/4 of Section 13, Township 31 South, Range 24 East, as recorded in OR 2810, Pages 1319-1332 of the Public Records of Polk County, Florida.

(2) That he desires a Conditional Use for an electric generation plant on the property legally described herein.

(3) That he has appointed Florida Power Corporation to act as agent on the behalf of U.S. Agri-Chemicals Corporation to accomplish the above.

U.S. AGRI-CHEMICALS CORPORATION
Address: 3225 S.R. 630 West
Ft. Meade, FL 33841-9799

(name) Wayne R. Brobeck
Title Director - Real Estate

The foregoing instrument was acknowledged before me this 11th day of May, 1992, by Wayne R. Brobeck of U.S. Agri-Chemicals Corporation, a Florida corporation, on behalf of the corporation, who is personally known to me or who has produced Driver's License as identification and who did/did not take an oath.

(SEAL)

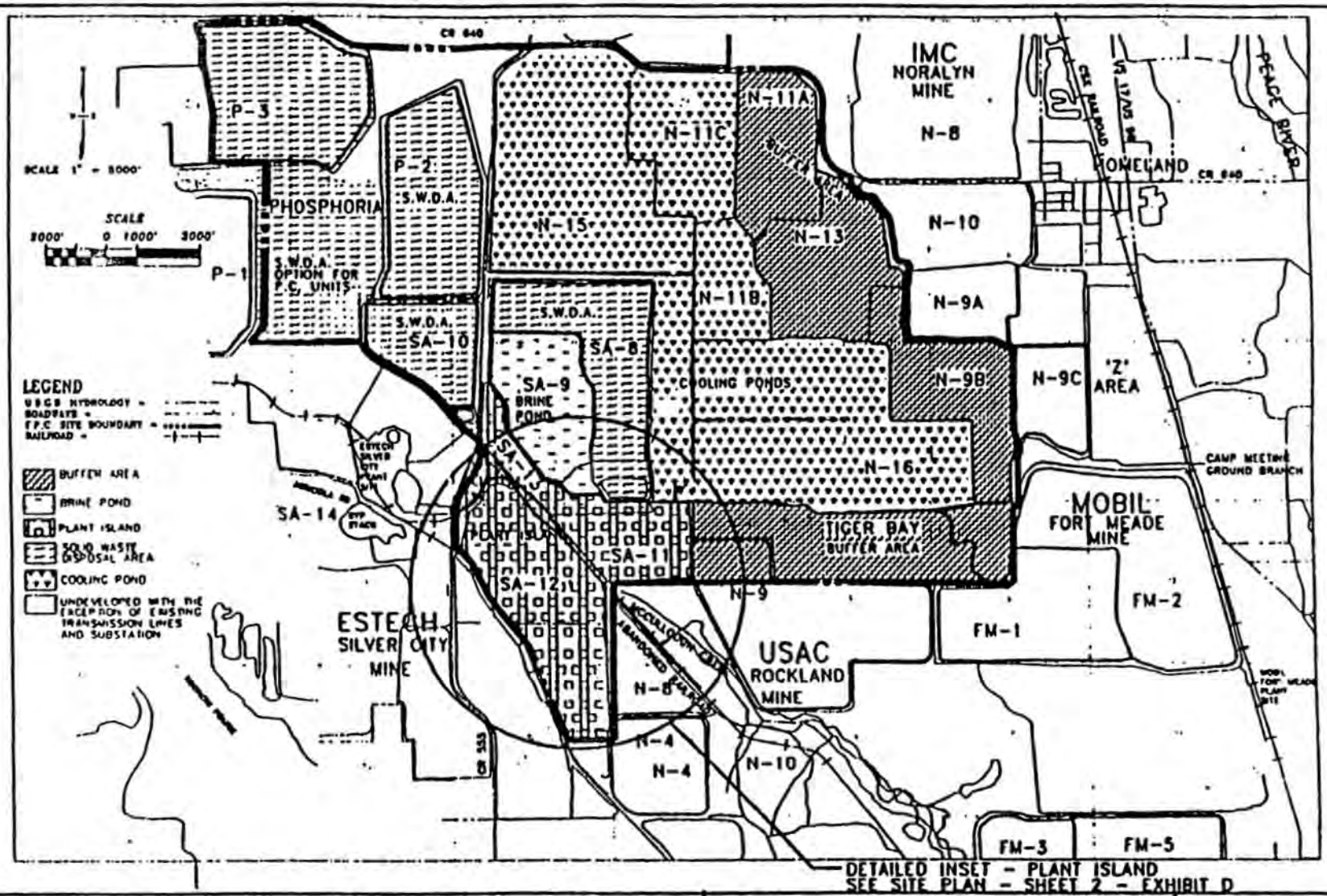
Name:
Notary Public
Serial Number:

Maria Irena Dobson
Notary Public State of Florida
My Commission Expires May 6, 1995
Commission No. CC103228

My Commission Expires:

Polk Co. Owner.aff

EXHIBIT C
THIS EXHIBIT HAS BEEN ELIMINATED FROM CUP 92-06.



Florida Power CORPORATION

Polk County Site

SITE PLAN
SHEET 1

EXHIBIT D

REV. 0 DATE: 04-28-92.

SOURCE: DAMES & MOORE

CAD F[illegible]EXHIBIT3.DWG

supplement to or modification of their site certification application to the State regarding a defined, proposed corridor route for any new, proposed transmission lines associated with the FPC Polk Power Plant.

17. Compliance with District Regulations - The Development Plan included in the application for Development Plan Approval (Site Certification Application) shall reflect all required setbacks, buffers and building separations as required by the standards set forth in the Polk County Zoning Ordinance, Article V, Section 5.7(B)(3).

18. Wildlife Management Plan - A wildlife management plan for the buffer areas as shown on the CUP Site Plan (Exhibit D) shall be required and approved by the Florida Game and Freshwater Fish Commission as part of the Site Certification Process.

19. Water Use and Conservation Reporting - FPC shall supply a report on water use quantities, methods of water conservation, and estimates of water conservation if available on an annual basis to Polk County (Planning and Water Resource Divisions).

20. Ambient Air Quality Testing - To the extent not already provided for through the DER Title V funded statewide air quality monitoring network or other means, FPC shall provide up to two ambient air quality monitoring stations concurrent with the operation of the first unit at the Polk County Site. The purpose of this condition is to provide reasonable assurance that sufficient monitoring apparatus will be put in place to determine actual air quality conditions in the area affected by FPC's Polk County Site. Monitoring requirements, such as station location, parameters to be monitored, number of monitoring stations and quality assurance procedures shall be determined by the Florida Department of Environmental Regulation in consultation with the Polk County air program manager and FPC.

21. Protection of Wells - The applicant shall remediate any potable water well located on lands owned by Mr. Donald Haag which has been determined by the Polk County Water Resources Director to have been adversely impacted by applicant's operation.

22. Exhibit D - The non-designated area on the Land Use Plan, Exhibit D, shall be designated as undeveloped with the exception of the existing transmission line and substation.

EXHIBIT F
SPECIAL CONDITIONS OF APPROVAL

1. Permits - Copies of all federal permits and the PPSA certification order required for each phase of development of the Polk County Site facility shall be provided to the Polk County Planning Division prior to the commencement of building construction code compliance review.

2. Fuel - The project shall be restricted to the burning of natural gas, coal gas, coal, or oil unless a CUP modification is received.

3. Fire Protection Plan - Following site certification, and prior to completion of building construction code compliance review, the Florida Power Corporation shall submit an acceptable fire protection plan to Polk County outlining specific measures to be taken to meet all local fire codes and regulations. As part of these plans, FPC shall install on the fuel oil tanks either subsurface foam systems or outside foam systems and shall maintain foam for operation of these systems on-site.

4. Emergency Management Plan - Following site certification, and prior to completion of building construction code compliance review, the Florida Power Corporation shall submit an acceptable emergency management plan to Polk County (Office of Public Safety). This Plan will detail emergency management procedures for any project-related, on-site incidents so as to insure minimum response time and maximum effectiveness to protect the public's health, safety, and welfare.

5. Emergency Notice - The applicant shall agree to immediately contact Polk County's Office of Public Safety when the applicant becomes aware of project related on-site incidents which have the potential for affecting the public's health, safety, and welfare.

6. Landscape Buffer - At the time of application for Development Plan approval (Site Certification Application), FPC shall submit a landscape plan providing for a 6 foot visual buffer along CR 555 in the vicinity of the power block and fuel storage facilities.

7. Tall Structure Compliance - The applicant shall, at the time it proposes to construct any structure over 500 feet in height at its site, comply with all regulations as imposed by

installed, or other necessary intersection improvements are made.

h. When the number of employees reporting to the site at the same shift time exceeds 350, FPC shall begin a traffic monitoring program at the intersection of CR 555 and CR 640 for the need to install a traffic signal or to make geometric improvements. Intersection monitoring shall consist of conducting turning movement counts and a signal warrant analysis. The monitoring shall be conducted once per year in January, February, or March, until the number of employees has peaked, a signal is installed, or other necessary intersection improvements are made.

i. Following site certification, FPC shall submit an acceptable Transportation Demand Management Plan to Polk County outlining specific measures to be taken to minimize the impacts of both construction and operations traffic on the surrounding transportation network.

j. The site shall be limited to the two access points on CR 555 shown on the Preliminary Development Plan (Exhibit D). The entrances shall be built for use during the construction phase of this project. All construction traffic shall park inside the site, well away from the road right-of-way.

9. Solid Waste Disposal -

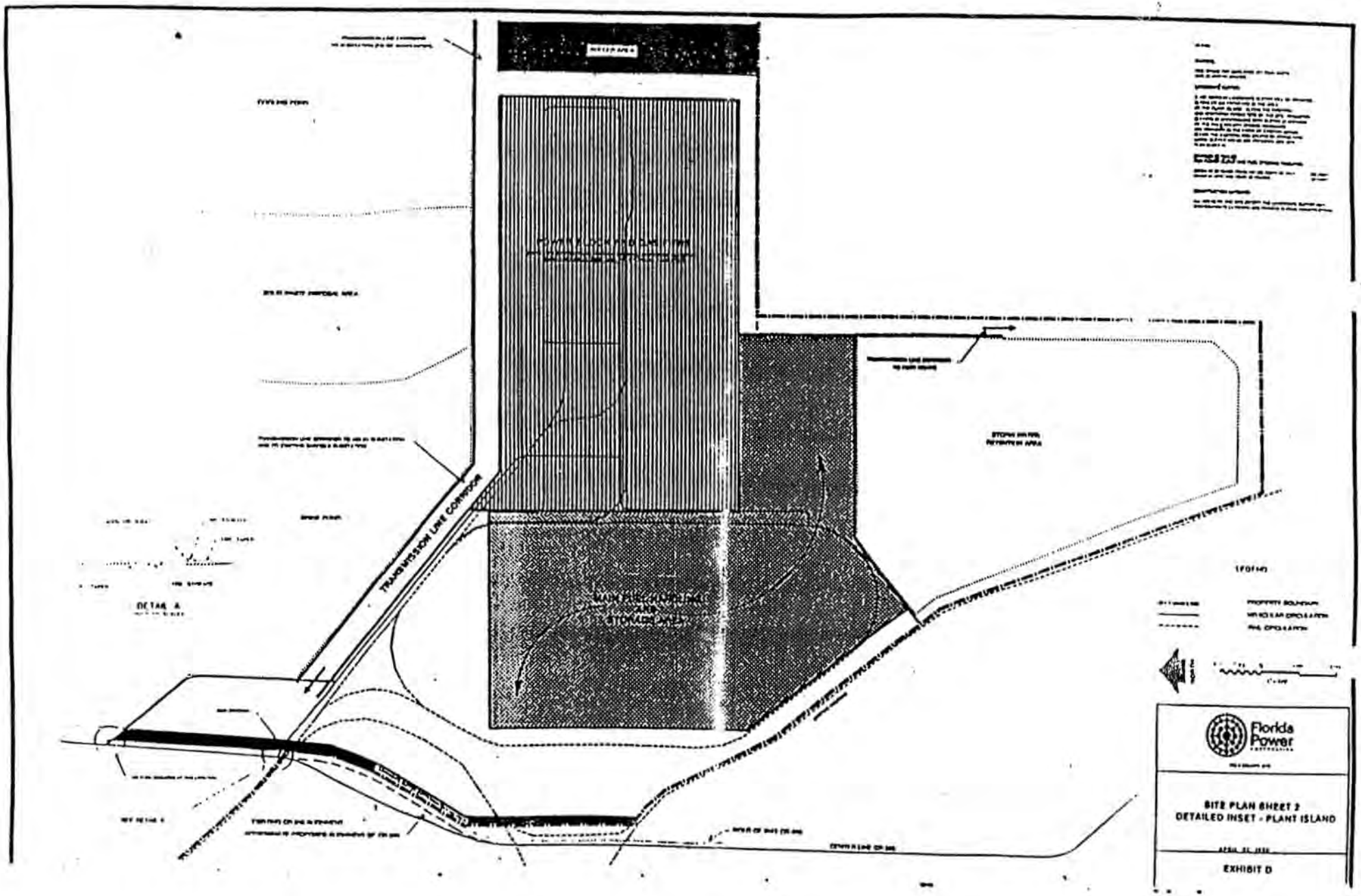
a. At the time of application for Development Plan approval (Site Certification Application), FPC shall demonstrate that clays underlying the proposed Polk County Site solid waste disposal areas can be consolidated to form liners with permeability characteristics, taking into account both thickness and coefficient of permeability, having at least the same protective value as required for clay liners under DER rules for sanitary landfills or as required for liners under rules directly applicable to the FPC Project which may be adopted by DER.

b. FPC shall be responsible for proper disposal of slag and/or ash byproducts produced in the power generation process at locations other than at County landfills.

c. FPC shall monitor groundwater in relation to solid waste disposal areas and make available to the County all data produced from the groundwater monitoring system. Upon

IMAGE QUALITY

AS YOU REVIEW THE NEXT FEW PAGES, PLEASE NOTE THAT THE ORIGINAL DOCUMENT WAS OF POOR QUALITY.


TRANSMISSION LINE CORRIDOR
Florida Power
SITE PLAN SHEET 2
DETAILED INSET - PLANT ISLAND
EXHIBIT D

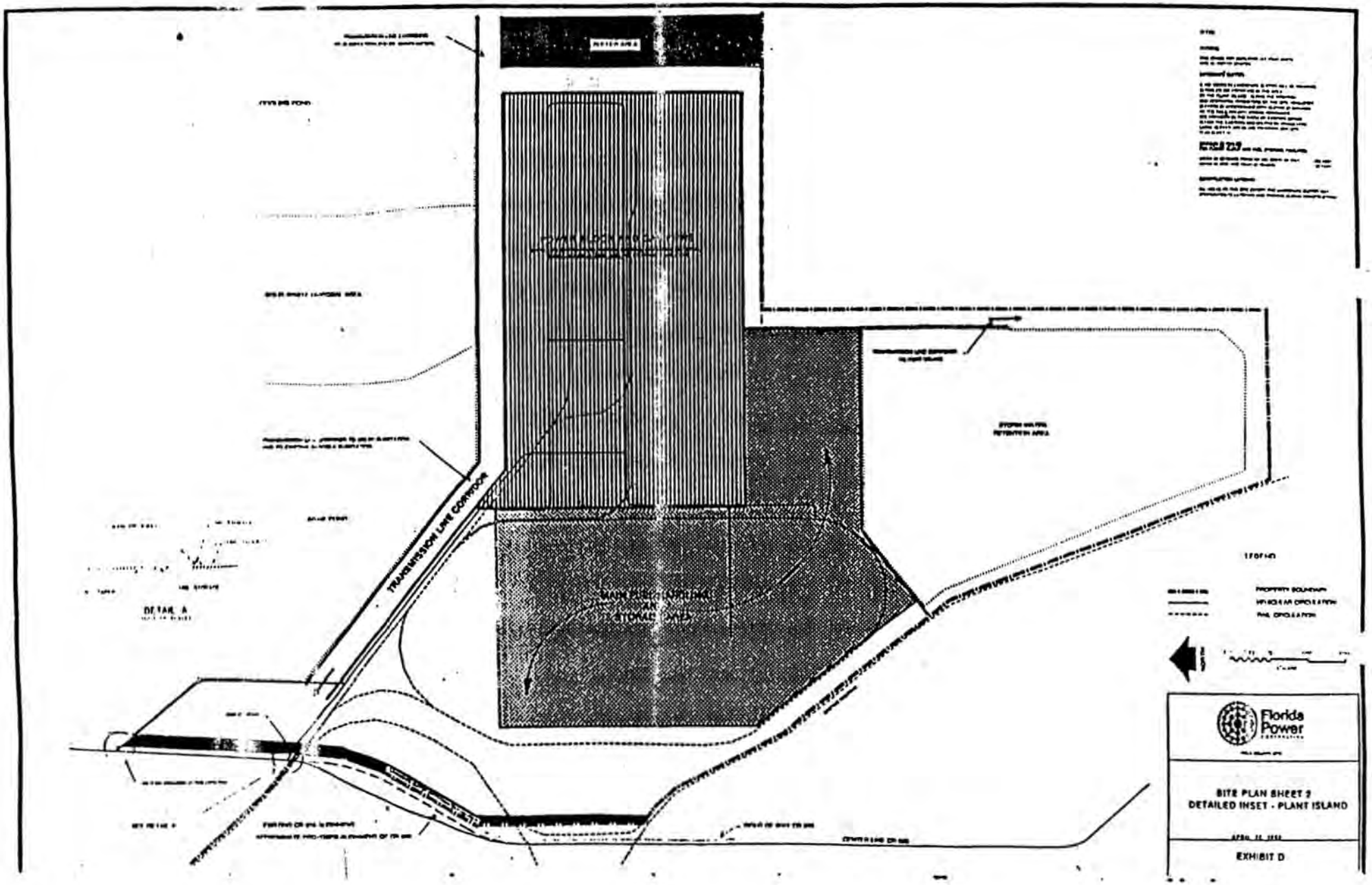

TRANSMISSION LINE CORRIDOR
DETAIL A
Florida Power
SITE PLAN SHEET 2
DETAILED INSET - PLANT ISLAND
EXHIBIT D

EXHIBIT E
TIMETABLE OF DEVELOPMENT

Development of the Polk County Site pursuant to CUP 92-06 shall be in accordance with the CUP Site Plan, a reduced copy of which is attached hereto as Exhibit "D" and made a part hereof. The principal facilities to be constructed and the periods of time after the date of Development Plan approval, as represented by site certification order under the PPSA, within which such facilities are to be completed, are set forth below. The CUP expressly recognizes, however, that the site certification proceedings, which will result in Development Plan approval, could be extended due to circumstances inherent in such licensing efforts.

1. Site certification for FPC's Polk County Site is expected to become final no later than July, 1994. No later than twelve (12) months after the Siting Board's site certification order becomes final, FPC shall commence site preparation; provided, however that no permit for such site preparation work shall cause any period of time set forth in Paragraph 3 below to commence.

2. Within thirty-six (36) months after the site certification order under the PPSA becomes final, FPC shall submit to Polk County its initial design plans for building construction code compliance review for its initial natural gas combined cycle unit at the Polk County Site.

3. Construction of each principal facility of FPC's Project, as defined herein, shall be completed within the following period of time after determination of building construction code compliance:

a. each combined cycle unit alone, 48 months;
b. each coal gasification unit alone, 48 months;
c. each combined cycle/coal gasification unit, combined, 60 months;

--or--

d. each pulverized coal unit, 60 months.

4. Construction of all principal and associated facilities of FPC's Project shall be completed within the fifteen (15) years specified in DER Rule 17-17.241, F.A.C.

5. This CUP 92-06 authorizes operation of FPC's Project for the economic life of the facility following site certification under the PPSA.

EXHIBIT F
SPECIAL CONDITIONS OF APPROVAL

1. Permits - Copies of all federal permits and the PPSA certification order required for each phase of development of the Polk County Site facility shall be provided to the Polk County Planning Division prior to the commencement of building construction code compliance review.

2. Fuel - The project shall be restricted to the burning of natural gas, coal gas, coal, or oil unless a CUP modification is received.

3. Fire Protection Plan - Following site certification, and prior to completion of building construction code compliance review, the Florida Power Corporation shall submit an acceptable fire protection plan to Polk County outlining specific measures to be taken to meet all local fire codes and regulations. As part of these plans, FPC shall install on the fuel oil tanks either subsurface foam systems or outside foam systems and shall maintain foam for operation of these systems on-site.

4. Emergency Management Plan - Following site certification, and prior to completion of building construction code compliance review, the Florida Power Corporation shall submit an acceptable emergency management plan to Polk County (Office of Public Safety). This Plan will detail emergency management procedures for any project-related, on-site incidents so as to insure minimum response time and maximum effectiveness to protect the public's health, safety, and welfare.

5. Emergency Notice - The applicant shall agree to immediately contact Polk County's Office of Public Safety when the applicant becomes aware of project related on-site incidents which have the potential for affecting the public's health, safety, and welfare.

6. Landscape Buffer - At the time of application for Development Plan approval (Site Certification Application), FPC shall submit a landscape plan providing for a 6 foot visual buffer along CR 555 in the vicinity of the power block and fuel storage facilities.

7. Tall Structure Compliance - The applicant shall, at the time it proposes to construct any structure over 500 feet in height at its site, comply with all regulations as imposed by

the Polk County AZO, prior to completion of building construction code compliance review for the structure.

8. Transportation -

a. Following site certification, FPC shall submit a plan for monitoring the number of employees reporting to the site at the same shift time and relating this information to Polk County. This plan shall be the basis for transportation improvements.

b. FPC shall be required to construct a Case III intersection at the main driveway connection to CR 555 in accordance with Polk County subdivision regulations.

c. FPC shall provide left-turn storage and acceleration/deceleration lanes at the main driveway connection to CR 555.

d. FPC shall be required to construct a Case II (balanced) intersection at the secondary or northern most driveway connection to CR 555 in accordance with Polk County's subdivision regulations.

e. Prior to the time that the number of employees reporting to the site at the same shift time exceeds 150, FPC shall add a signal phase for westbound left-turns which operates as protected/permissive at the intersection of CR 555 and SR 60. Modifications to the transportation system must conform to the requirements of the Florida Department of Transportation.

f. Prior to the time the number of employees reporting to the site at the same shift time exceeds 700, FPC shall add a second westbound left-turn lane by restripping the existing pavement at the intersection of US 98 and SR 60A. Modifications to the transportation system must conform to the requirements of the Florida Department of Transportation.

g. When the number of employees reporting to the site at the same shift exceeds 350, FPC shall begin a traffic monitoring program at the intersection of SR 37 and CR 640 for the need to install a traffic signal or to make geometric improvements. Intersection monitoring shall consist of conducting turning movement counts and a signal warrant analysis. The monitoring shall be conducted once per year in January, February, or March, until the number of employees has peaked, a signal is

supplement to or modification of their site certification application to the State regarding a defined, proposed corridor route for any new, proposed transmission lines associated with the FPC Polk Power Plant.

17. Compliance with District Regulations - The Development Plan included in the application for Development Plan Approval (Site Certification Application) shall reflect all required setbacks, buffers and building separations as required by the standards set forth in the Polk County Zoning Ordinance, Article V, Section 5.7(B)(3).

18. Wildlife Management Plan - A wildlife management plan for the buffer areas as shown on the CUP Site Plan (Exhibit D) shall be required and approved by the Florida Game and Freshwater Fish Commission as part of the Site Certification Process.

19. Water Use and Conservation Reporting - FPC shall supply a report on water use quantities, methods of water conservation, and estimates of water conservation if available on an annual basis to Polk County (Planning and Water Resource Divisions).

20. Ambient Air Quality Testing - To the extent not already provided for through the DER Title V funded statewide air quality monitoring network or other means, FPC shall provide up to two ambient air quality monitoring stations concurrent with the operation of the first unit at the Polk County Site. The purpose of this condition is to provide reasonable assurance that sufficient monitoring apparatus will be put in place to determine actual air quality conditions in the area affected by FPC's Polk County Site. Monitoring requirements, such as station location, parameters to be monitored, number of monitoring stations and quality assurance procedures shall be determined by the Florida Department of Environmental Regulation in consultation with the Polk County air program manager and FPC.

21. Protection of Wells - The applicant shall remediate any potable water well located on lands owned by Mr. Donald Haag which has been determined by the Polk County Water Resources Director to have been adversely impacted by applicant's operation.

22. Exhibit D - The non-designated area on the Land Use Plan, Exhibit D, shall be designated as undeveloped with the exception of the existing transmission line and substation.

installed, or other necessary intersection improvements are made.

h. When the number of employees reporting to the site at the same shift time exceeds 350, FPC shall begin a traffic monitoring program at the intersection of CR 555 and CR 640 for the need to install a traffic signal or to make geometric improvements. Intersection monitoring shall consist of conducting turning movement counts and a signal warrant analysis. The monitoring shall be conducted once per year in January, February, or March, until the number of employees has peaked, a signal is installed, or other necessary intersection improvements are made.

i. Following site certification, FPC shall submit an acceptable Transportation Demand Management Plan to Polk County outlining specific measures to be taken to minimize the impacts of both construction and operations traffic on the surrounding transportation network.

j. The site shall be limited to the two access points on CR 555 shown on the Preliminary Development Plan (Exhibit D). The entrances shall be built for use during the construction phase of this project. All construction traffic shall park inside the site, well away from the road right-of-way.

9. Solid Waste Disposal -

a. At the time of application for Development Plan approval (Site Certification Application), FPC shall demonstrate that clays underlying the proposed Polk County Site solid waste disposal areas can be consolidated to form liners with permeability characteristics, taking into account both thickness and coefficient of permeability, having at least the same protective value as required for clay liners under DER rules for sanitary landfills or as required for liners under rules directly applicable to the FPC Project which may be adopted by DER.

b. FPC shall be responsible for proper disposal of slag and/or ash byproducts produced in the power generation process at locations other than at County landfills.

c. FPC shall monitor groundwater in relation to solid waste disposal areas and make available to the County all data produced from the groundwater monitoring system. Upon

prior notice FPC shall allow County staff members access to the site for purposes of examining the condition of the groundwater monitoring equipment.

10. Hazardous Materials Storage: FPC shall annually report their storage and usage of hazardous material to the County as required by SARA Title 3 and upon prior notice shall allow County staff members access to the site for purposes of determining compliance with reporting requirements. As part of the first report, FPC shall specifically address provision (a) through (g) of Comprehensive Plan Policy 2.310-A4.

11. Spill Prevention Containment and Control Plan (SPCC) - FPC shall be required to submit a preliminary Spill Prevention Containment and Control Plan (SPCC) to the Polk County Public Safety Department and the Polk County Planning Department as part of the building construction code compliance review. The final SPCC Plan shall be submitted within six months after the date the facility begins operations. SPCC Plan updates and amendments, due to a change in design, construction, operation, technology or maintenance, shall be submitted within six months of such change.

12. Stormwater Management - FPC shall submit, with its application for Development Plan approval (Site Certification Application), the stormwater management plan for on-site surface water management, which meets, at a minimum all level of service standards set forth in the Polk County Comprehensive Plan and all standards of Ordinance 88-04, the Polk County Flood Protection and Surface Water Management Code.

13. Flood Study - FPC shall submit a flood study within one year of release of reclamation of the site.

14. Stack Emissions Monitoring - FPC shall make available to the County all data produced from the emissions monitoring system for the exhaust stack when requested and shall allow designated County staff members access to the site for purposes of examining the condition of this equipment upon prior notice.

15. Compliance with Applicable Air Quality Regulations - FPC shall comply with applicable air quality regulations in effect at the time of filing of each site certification application or supplemental application for each phase of development of the Polk County Site.

16. Transmission Lines - FPC shall apply to the County for a modification to CUP 92-06 at the time they submit a

10.4.6 IMC Noralyn/Phosphoria Conceptual Reclamation

This section contains the IMC Noralyn/Phosphoria Conceptual Reclamation Plan Modification Application.

62C-16.0095
Reclamation Forms

Form No. 6

FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL RESOURCE PERMITTING
BUREAU OF MINE RECLAMATION
2051 EAST DIRAC DRIVE
TALLAHASSEE, FLORIDA 32310
RECLAMATION MODIFICATION/AMENDMENT APPLICATION

DNR Use Only
File No. IMCA-NP-CPF
Approved _____
BMR CODE _____

RECEIVED
SEP 09 1997
Bureau of Mine Reclamation

PART I. GENERAL INFORMATION

1. Type of Application:
   X Modification
   ____ Amendment to Program IMCA-NP-CPF (BMR Code)

2. Operator:
   a. Name: IMC AGRICO COMPANY
   b. Mine: NORALYN/PHOSPHORIA

3. Applicant (Authorized Agent)
   a. Name: LEE F. THURNER
   c. Title/Position: VICE PRESIDENT MINERALS - FLORIDA
   c. Business Address:
   d. Mailing Address: P. O. BOX 2000
   e. City, State & ZIP: MULBERRY, FL 33860
   f. Telephone Number: 941/ 428- 2500

   Person to Contact Regarding Contents of Application:
   a. Name: W. F. WASMUTH
   b. Title/Position: RECLAMATION PROGRAMS SUPERVISOR
   c. Telephone Number: (941)428-2500/EXT. 3618

PART II. APPLICATION SUMMARY

1. Acreage Affected by This Application: 18, 224

2. Nature of Application:

___ Add acreage	___ Water quality
X Delete acreage	___ Drainage
___ Site cleanup	___ Waste disposal
___ Backfilling	X Revegetation
___ Contouring	___ Wildlife
___ Soil zone	___ Time schedule
X Wetland restoration	___ Remaining natural resources
X Wetland/water body design	

PART III. See additional attached pages.

SEPTEMBER 4, 1997
Date Submitted

Signature of Applicant

PART III. DETAILED INFORMATION

1. DESCRIBE THE MODIFICATION OR AMENDMENT.

This modification to approved conceptual plan IMC-NP-CPF removes acreage which has been sold to the Florida Power Corporation, makes additional acreage adjustments resulting from reconfiguring the conceptual plan maps into the GIS, state plane coordinate system, and makes changes to several reclamation plan designs resulting from improved reclamation planning, design and construction techniques.

2. IDENTIFY EACH SPECIFIC PART AND ITEM NUMBER IN THE APPROVED PLAN OR PROGRAM THAT IS AFFECTED BY THIS APPLICATION. PROVIDE THE SPECIFIC LANGUAGE CHANGES WHICH MUST BE MADE.

Changes to specific parts and items of the currently approved plan are explained in detail in the maps and narrative which are part of this modification application.

3. EXPLAIN WHY THE MODIFICATION OR AMENDMENT IS REQUESTED.

This modification, which will become conceptual plan IMCA-NP-CPG, is requested in order to bring the currently approved conceptual plan into compliance with the requirements of Chapter 62C-16, Florida Administrative Code. The modification makes changes to reclamation plan/designs and reduces the acreage of the mine as a result of transfer of lands to the Florida Power Corporation.

FLORIDA
DEPARTMENT OF ENVIRONMENAL PROTECTION
DIVISION OF ENVIRONMENTAL RESOURCE
PERMITTING
BUREAU OF MINE RECLAMATION
2051 EAST DIRAC DRIVE
TALLAHASSEE, FLORIDA 32310
CONCEPTUAL RECLAMATION PLAN
APPLICATION

DNR Use Only
File No.
Approved
BMR Code

PART I. GENERAL INFORMATION

1. Operator
   a. Name: IMC AGRICO COMPANY
   b. Mine: NORALYN/PHOSPHORIA (IMCA-NP-CPG)
   c. Street Address:
   d. Mailing Address: P.O. BOX 2000
   e. City, State & ZIP: MULBERRY, FL 33860
   f. Telephone Number: 941 / 428- 2500

2. Applicant (Authorized Agent):
   a. Name: LEE F. THURNER
   b. Title/Position: VICE PRESIDENT MINERALS - FLORIDA
   c. Business Address:
   d. Mailing Address: P.O. BOX 2000
   e. City, State & ZIP: MULBERRY, FL 33860
   f. Telephone Number: 941 / 428- 2500

3. Person to Contact Regarding Contents of Application:
   a. Name: W. F. WASMUTH
   b. Title/Position: RECLAMATION PROGRAMS SUPERVISOR
   c. Business Address:
   d. Mailing Address: P.O. BOX 2000
   e. City, State & ZIP: MULBERRY, FL 33860
   f. Telephone Number: 941 / 428- 2500 (EXTENSION 3618)

PART II. APPLICATION SUMMARY
(Provide the following information for the conceptual reclamation plan area.)

1. Location and Acreage:

a. County	POLK	HILLSBOROUGH	HARDEE	MANATEE
b. Acres	18,224	0	0	0
c. Total Acres	18,224			

2. Mining Operation Acreage:

a. Mined before 7/1/75	5,651
b. Mined from 6/30/75 to present	8,751
c. To be mined	1,538
d. Disturbed before 7/1/75	1,440
e. Disturbed from 6/30/75 to present	346
f. To be disturbed	288
g. To remain undisturbed	210
h. Total	18,224

3. Status of Lands (in acres) Mined or Disturbed Before 7/1/75:

	In Use*	Unreclaimed	Reclaimed
a. Mined only	1,090	110	2,570
b. Mined - waste disposal use	1,881		
c. Disturbed only		215	160
d. Disturbed by waste disposal			1,065
e. Total	2,971	325	3,795

* for mining operations

4. Estimated Quantities Considered in Planning Reclamation:
   a. Dry tons of sand tailings to dispose of 60,600,000
   b. Dry tons of clay to dispose of 24,000,000
   c. Dry tons of other waste to dispose of 0

5. Estimate the following for each waste disposal site:

Waste Clay Disposal site designation	Disposal acres	Dam Height Above Grade (ft.) minimum	maximum	average
N-12	500	20	50	35
N-14	581	45	60	53
P-4	623	48	53	51
P-5	560	50	50	50

Type of disposal	Cap thickness (ft.)	Average Storage Depth (ft.)	Storage Acre-feet
WASTE CLAY	N/A	37	18,500
WASTE CLAY	N/A	50	29,000
WASTE CLAY	N/A	46	28,568
WASTE CLAY	N/A	45	25,200

Infill Rate (Dry Tons/Yr.)	% Solids* infill	Immediate+ % solids
1,350,000	03%	11%
1,900,000	03%	11%
1,850,000	03%	11%
1,940,000	03%	11%

*(at entry into CSA)
+(point at which self-weight consolidation begins)

6. Topography

	Premining	Postreclamation
a. Lowest elevation (LE)	100	98
b. Highest elevation (HE)	220	210
c. % 0-10 ft. above BE*	3%-567ac.	1%-239 ac.
d. % 10-20 ft. above BE	9%-1608 ac	3%-560 ac.
e. % 20-30 ft. above BE	12%-2183 ac	6%-1152 ac
f. % 30-40 ft. above BE	14%-2573 ac	20%-3624 ac
g. % more than 40 ft. above BE	62%-11,293 ac	70%-12,649 ac

*Base elevation (BE) equals nearest 10-foot contour LE.

7. Drainage *

	Premining Qty.	Premining Acres	Postreclamation Qty.	Postreclamation Acres
a. 1st order drainage basins	2	7,164	2	7,164
b. 2nd order drainage basins	2	8,389	2	8,389
c. 3rd order drainage basins	2	2,671	2	2,671
d. Wetlands under 20 acres	100	238	108	444
e. Wetlands 20 acres and over	10	495	18	909
f. Lakes (water bodies)	57	503	51	1,843

*Based on the Florida Land Use and Cover Classification System.

8. Threatened or Endangered Species Identified Prior to Mining
   a. Number of plant species 0
   b. Number of animal species 5

9. Permits
   a. Is this mine subject to DRI-ADA approval? No
   b. Is any area subject to DER approval? Yes
   c. Will any state or federal lands be mined/disturbed? No

10. Land Cover Acreage:

	Premining		Postreclamation	
a. Uplands	16,986		14,976	
b. Nonforested		15,020		11,680
c. Forested		1,966		3,296
d. Coniferous		0		51
e. Hardwood		920		848
f. Mixed		1,046		2,397
g. Lakes (water bodies)	598		2,495	
h. Fluctuating zone		95		652
i. Forested		0		221
j. Herbaceous		95		431
k. Low water		503		1,843
l. Shallow water		85		466
m. Deep water		418		1,377
n. Streams	2		53	
o. Wetlands	638		700	
p. Forested		42		546
q. Herbaceous		596		154
r. Total	18,224		18,224	

13. Time Schedule (mine years):

	Begins	Ends
a. Mining	1945	1999
b. Waste Disposal	1945	1999
c. Reclamation	1960	2004

PART III - IX. See additional attached pages.

SEPTEMBER 4, 1997
Date Submitted

Signature of Applicant

PART III. OWNERSHIP, LEASES, AND PERMITS

1. LIST THE NAMES AND ADDRESSES OF ALL PERSONS HAVING FEE SIMPLE OR LESSEE ESTATE IN THE APPLICATION AREA.

IMC AGRICO COMPANY
P.O. BOX 2000
MULBERRY, FL 33860
(813)428-2500

2. HAS THE STATE OF FLORIDA, IF NOT INCLUDED IN ITEM 1 ABOVE, CLAIMED OWNERSHIP OF ANY AREA WITHIN THE APPLICATION AREA? IF YES, DESCRIBE.

The state of Florida has not claimed ownership of any of the lands included in the Noralyn/Phosphoria Conceptual Plan boundary.

3. IF ANY PART OF THE APPLICATION AREA IS SUBJECT TO DRI-ADA APPROVAL UNDER SECTION 380.06, FLORIDA STATUTES, PROVIDE THE STATUS OF THE APPROVAL PROCESS, INCLUDING APPROVAL DATES AND THE APPROVING AGENCIES WHEN KNOWN.

The Noralyn Extension DRI was approved by the Polk County Board of Commissioners on November 19, 1985.

4. IDENTIFY THOSE AREAS WHERE A JURISDICTIONAL DETERMINATION HAS BEEN COMPLETED BY THE DEPARTMENT OF ENVIRONMENTAL REGULATION (NOW FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION DREDGE AND FILL). PROVIDE A COPY OF EACH PERMIT OBTAINED FOR AREAS DETERMINED TO BE WITHIN DER JURISDICTION. PROVIDE WRITTEN SUBSTANTIATION FOR AREAS DETERMINED NOT TO BE WITHIN DER JURISDICTION.

All jurisdictional areas are indicated on the accompanying "Mined, Disturbed, and Permit" map. Specific FDEP (formerly DER) jurisdictional sites are submitted to the bureau in necessary permit applications pertinent to each area.

5. LIST ALL OTHER PERMITS RELATED TO RECLAMATION ACTIVITIES THAT HAVE BEEN OBTAINED OR ARE KNOWN TO BE NEEDED FOR THE APPLICATION AREA. PROVIDE THE IDENTIFICATION NUMBER (IF APPLICABLE), TYPE, AGENCY FILED WITH OR TO BE FILED WITH, AND STATUS OF EACH PERMIT.

Other permits required for the mine are:

Approved mining units delineating areas to be mined/disturbed, approved by the Polk County Board of Commissioners. Presently all mining unit permits for the Noralyn/Phosphoria mine are approved.

Dredge and Fill Permits for wetlands under the jurisdiction of the U. S. Army Corps of Engineers. These permits and permit applications are supplied to the bureau as they are submitted or received, and numbered individually. The bureau has copies of each approved and pending permit or application.

PART IV. DESCRIPTION OF APPLICATION AREA.

DESCRIBE THE APPLICATION AREA IN A LIST FORMAT. HEADINGS FOR THE LIST SHALL BE TOWNSHIP, RANGE, SECTION, QUARTER SECTION, AND QUARTER-QUARTER SECTION. INCLUDE THE ACREAGE FOR EACH PARTIAL QUARTER-QUARTER SECTION.

TOWNSHIP RANGE SECTION 1/4 SECT 1/4-1/4 SECT. ACRES

Attached to this application for modification is a computer generated listing of acreage in the format requested.

PARTS V - VII. RESPOND TO THE FOLLOWING PARTS BY PROVIDING ENOUGH INFORMATION TO EVALUATE COMPLIANCE WITH THE STANDARDS IN 62C-16.0051 AND 62C-16.0053, F.A.C.:

PART V. PREMINING CONDITIONS.

1. DESCRIBE THE GEOLOGY, TOPOGRAPHY, DRAINAGE, VEGETATION, AND LAND USES WITHIN THE MINE PRIOR TO MINING OPERATIONS.

GEOLOGY: Generally, the geology of the mine is layered sandy clay, or clayey sand overburden varying in depth from 6′ to 35′ above a layer of phosphate rock ore varying in depth from >5′ to <15′. Underlying the phosphate layer is the Hawthorne limestone formation.

TOPOGRAPHY & DRAINAGE: Generally the topography of the Noralyn/Phosphoria mine slopes from an approximate high elevation of 210' MSL in the northern areas to the east, west and south to elevations of from (approximately) 160' MSL to (approximately) 110' MSL. Drainage generally follows these contour slopes and is intercepted throughout the mine site by creeks and lakes.

VEGETATION: The vegetation within the Noralyn/Phosphoria mine is diverse and representative of a wide variety of Central Florida vegetative types. Approximately 85+% of the Noralyn/Phosphoria mine has been mined over a period of about fifty years and has been reclaimed to numerous land forms. Vegetative communities within the mine currently include pastureland grasses, citrus groves, upland mixed, hardwood, and coniferous forest, wetland mixed, hardwood and coniferous forest, non-forested wetlands, and small tracts of grasslands and scrub/shrub and brushlands.

LAND USES: Land uses within the conceptual plan boundary are presently entirely industrial, for the extraction and processing of phosphate ore.

2. **DESCRIBE AND LIST, AS EXISTING IMMEDIATELY PRIOR TO MINING OPERATIONS AND SITE PREPARATION, THE PRESENCE AND HABITAT LOCATIONS OF PLANT AND ANIMAL SPECIES LISTED AS THREATENED OR ENDANGERED BY THE FLORIDA GAME AND FRESH WATER FISH COMMISSION OR THE U.S. FISH AND WILDLIFE SERVICE.**

At this stage in the life of the Noralyn/Phosphoria mine there are virtually no such areas undisturbed by mining or mining operations. More than 85% of the mine has been mined, disturbed and reclaimed. Reclamation has resulted in diverse habitat types and wildlife of all types native to the Central Florida region have either moved into, or been relocated into, the various land form types reclaimed. The most significant threatened/endangered species presently utilizing the reclaimed areas of the mine are the Scrub Jay, gopher Tortoise, Florida Mouse, and Eastern Indigo Snake, all of which have both migrated into these areas from other disturbed areas, or have been relocated from other areas prior to mining and other disturbances.

PART VI. RECLAMATION CONSIDERATIONS.

1. DESCRIBE THE MINING, WASTE DISPOSAL, AND RECLAMATION AND RESTORATION PLANS.

Mining of the Noralyn/Phosphoria mine has been and will continue to be accomplished using large draglines to first strip away and spoil the overburden layer. The phosphate layer is then removed and slurried at the mining site to be pumped to the plant sites for beneficiation, stockpiling, and shipping.

Waste disposal is confined to the waste phosphatic clays which are hydraulically pumped to above grade storage/retention areas referred to as clay settling areas (CSAs). The clays are slowly consolidated throught the life of the CSA and then further dewatered and crustally developed through the reclamation process to a land form suitable for various post reclamation uses, most notably agricultural use.

The reclamation process uses a variety of techniques deviloped over the years to both facilitate and optimize the post reclamation land uses. Approximately 60 - 70% of areas mined receive sand tailings as reclamation fill material as a basis for construction. These areas are then contoured to final grade and revegetated in keeping with plans approved by such agencies as the FDEP Bureau of Mine Reclamation, FDEP Dredge and Fill section, and the USACOE. Areas not backfilled first with tailings are clay ponds, or other sites contoured to a land and lakes configuration. Most of the reclamation planning currently used encompasses the acre-for-acre, type-for-type replacement of premining wetland acreage, and the Integrated Habitat Network design developed by the FDEP and the industry.

2. DESCRIBE THE METHODS AND ASSUMPTIONS USED IN DETERMINING QUANTITIES, BY WEIGHT AND VOLUME, OF EARTH MATERIALS TO BE CONSIDERED IN PLANNING THE RECLAMATION AND RESTORATION ACTIVITIES AS DESCRIBED IN PART II, ITEMS 4 AND 5.

Methodology used for determining the volumetric requirements of materials necessary for reclamation has evolved over the years to computerized calculations based upon aerial topographic input, allowing designers to more accurately pre-determine fill needs and placement for optimum reclamation results. These computerized calculations are site specific to each individual reclamation unit.

PART VII. POSTRECLAMATION CONDITIONS.

1. DESCRIBE POST RECLAMATION AND RESTORATION STRATIGRAPHY, TOPOGRAPHY, DRAINAGE, VEGETATION, AND LAND USES.

Post reclamation stratigraphy will consist primarily of areas of sand tailings capped with overburden, consolidated, crustally developed waste clays, or overburden contoured to post reclamation configurations all overlying the base limestone layer.

Post reclamation topography and drainage will approximate the premining conditions, sloping from the higher elevations in the northern portions of the mine, to the east, west and south. Post reclamation elevations will vary slightly from the premining conditions depending upon the thickness of the ore layer removed and the volume/thickness of sand tailings fill used in any given area. In general, however, the postreclamation topographic elevations will be within 15-20' of the premining elevations.

2. DESCRIBE HOW THE NATURAL RESOURCES WILL BE PRESERVED AND CONSERVED, AS SPECIFIED IN SECTION 16C-16.0053 IN AREAS TO REMAIN UNDISTURBED.

Only relatively (compared to the mine acreage) small areas of natural resources were protected/preserved during the operation of the Noralyn/Phosphoria mine as most of the area was significantly disturbed, altered and degraded by both agricultural use and mining activities during the past (approximately) fifty years. Those areas which have been, and will continue to be preserved and protected, will be protected through the use of operating/travel restrictions as necessary, berm/ditch systems, and fences and silt screening during both the mining and reclamation processes.

3. DESCRIBE THE THREATENED OR ENDANGERED SPECIES HABITAT EXPECTED TO BE PRESENT FOLLOWING RECLAMATION.

Forested and non-forested wetlands, and xeric scrub will be the primary types of threatened/endangered species habitat remaining after reclamation of this mine. As most of the Noralyn/Phosphoria mine has already been mined and long reclaimed, these areas are already on site in significant acreages, and either proven successful or trending greatly toward success. Primary examples of these habitat areas are the "Best of the West" Noralyn scrub, and the Hal Scott Wetland in the northwestern portion of the Hooker's Prairie.

PART VIII. VARIANCES.

FOR EACH VARIANCE REQUESTED PROVIDE A COMPLETED VARIANCE APPLICATION, RECLAMATION FORM NO. 7. IF NO VARIANCE IS REQUESTED, STATE: NO VARIANCE REQUESTED.

Presently there are no variances required as part of this application. An industrial use variance is currently in effect for the Farmland Hydro gypsum stack/plant site.

PART IX. MAPS AND AERIAL PHOTOGRAPHS.

PROVIDE THE FOLLOWING MAPS AND AERIAL PHOTOGRAPH(S). DO NOT COMBINE MAPS. IDENTIFY EACH MAP AND AERIAL PHOTOGRAPH BY NUMBER, TITLE, OPERATOR'S NAME, AND MINE NAME.

1. **LOCATION**
2. **MINED, DISTURBED, AND PERMIT AREAS.**
3. **WASTE DISPOSAL SITES.**
4. **PREMINING TOPOGRAPHY AND DRAINAGE.**
5. **PREMINING VEGETATION AND PREMINING LAND USE.**
6. **PREMINING HABITAT OF THREATENED OR ENDANGERED SPECIES.**
7. **POST RECLAMATION TOPOGRAPHY AND DRAINAGE.**
8. **POST RECLAMATION VEGETATION AND POST RECLAMATION LAND USE.**
9. **AERIAL PHOTOGRAPH(S) (TWO COPIES OF EACH).**

Maps and drawings labeled and numbered as requested above are furnished as part of this application.

MINE	LRUCODE	STATUS	FLUCCS	FLUCCS2	REP-ACRES	Total Acres by LRU
NP	GREENBAY	NM-WC-R	200	210	121	
NP	GREENBAY	NM-WC-R	400	430	22	143
NP	IMCA-N-025	NM-AR-WS	300	310	22	
NP	IMCA-N-025	NM-AR-WS	400	430	16	
NP	IMCA-N-025	NM-AR-WS	600	630	255	292
NP	IMCA-N-026	NM-AR-WS	200	210	215	
NP	IMCA-N-026	NM-AR-WS	300	320	3	
NP	IMCA-N-026	NM-AR-WS	400	430	50	
NP	IMCA-N-026	NM-AR-WS	600	630	13	281
NP	IMCA-N-027	NM-WC-R	200	210	169	
NP	IMCA-N-027	NM-WC-R	300	320	64	233
NP	IMCA-N-028	NM-AR-WS	200	210	536	
NP	IMCA-N-028	NM-AR-WS	400	430	91	
NP	IMCA-N-028	NM-AR-WS	500	520	83	
NP	IMCA-N-028	NM-AR-WS	600	630	8	718
NP	IMCA-N-029	NM-AR-WS	200	210	254	
NP	IMCA-N-029	NM-AR-WS	400	430	28	
NP	IMCA-N-029	NM-AR-WS	600	630	3	284
NP	IMCA-N-030	NM-AR-WS	200	210	768	
NP	IMCA-N-030	NM-AR-WS	400	430	87	855
NP	IMCA-N-031	NM-AR-WS	200	210	130	
NP	IMCA-N-031	NM-AR-WS	400	420	7	
NP	IMCA-N-031	NM-AR-WS	400	430	22	
NP	IMCA-N-031	NM-AR-WS	500	510	16	
NP	IMCA-N-031	NM-AR-WS	600	620	8	184
NP	IMCA-N-033	NM-WC-R	200	210	80	
NP	IMCA-N-033	NM-WC-R	300	320	26	106
NP	IMCA-N-1	NM-AR-WS	200	210	87	
NP	IMCA-N-1	NM-AR-WS	300	320	5	
NP	IMCA-N-1	NM-AR-WS	400	430	12	104
NP	IMCA-N-2	NM-AR-WS	200	210	99	99
NP	IMCA-N-24A	NM-WC-ULE	200	210	187	
NP	IMCA-N-24A	NM-WC-ULE	400	430	14	202
NP	IMCA-N-24C	NM-AR-WS	200	210	28	
NP	IMCA-N-24C	NM-AR-WS	400	430	157	
NP	IMCA-N-24C	NM-AR-WS	600	620	4	
NP	IMCA-N-24C	NM-AR-WS	600	640	1	191

NP	IMCA-N-5	NM-WC-R	400	430	127	127
NP	IMCA-N-Q	NM-AR-WS	200	210	66	
NP	IMCA-N-Q	NM-AR-WS	400	430	28	
NP	IMCA-N-Q	NM-AR-WS	600	630	14	107
NP	IMCA-NP-061	NM-WC-R	200	210	45	
NP	IMCA-NP-061	NM-WC-R	400	430	4	
NP	IMCA-NP-061	NM-WC-R	600	630	3	
NP	IMCA-NP-061	NM-WC-R	600	640	43	95
NP	IMCA-NP-062	NM-WC-R	200	210	102	
NP	IMCA-NP-062	NM-WC-R	400	430	11	113
NP	IMCA-NP-063	NM-AR-WS	200	210	13	
NP	IMCA-NP-063	NM-AR-WS	400	430	42	
NP	IMCA-NP-063	NM-AR-WS	600	630	35	90
NP	IMCA-NP-83(18)	NM-AR-WS	200	210	7	
NP	IMCA-NP-83(18)	NM-AR-WS	400	430	3	10
NP	IMCA-NP-CB(1)	ML-AR-WS	200	210	33	
NP	IMCA-NP-CB(1)	ML-AR-WS	300	330	42	
NP	IMCA-NP-CB(1)	ML-AR-WS	400	430	19	
NP	IMCA-NP-CB(1)	ML-AR-WS	500	520	49	
NP	IMCA-NP-CB(1)	ML-AR-WS	600	630	60	
NP	IMCA-NP-CB(1)	ML-AR-WS	600	640	12	
NP	IMCA-NP-CB(1)	ML-AR-WS	700	740	5	220
NP	IMCA-NP-CB(2)	ML-AR-WS	300	330	65	
NP	IMCA-NP-CB(2)	ML-AR-WS	400	430	2	
NP	IMCA-NP-CB(2)	ML-AR-WS	500	520	12	
NP	IMCA-NP-CB(2)	ML-AR-WS	600	640	7	85
NP	IMCA-NP-HP(1A)	ML-WC-WLE/ULR	100	150	22	
NP	IMCA-NP-HP(1A)	ML-WC-WLE/ULR	300	310	14	
NP	IMCA-NP-HP(1A)	ML-WC-WLE/ULR	300	330	14	
NP	IMCA-NP-HP(1A)	ML-WC-WLE/ULR	400	430	50	
NP	IMCA-NP-HP(1A)	ML-WC-WLE/ULR	500	520	101	
NP	IMCA-NP-HP(1A)	ML-WC-WLE/ULR	600	620	5	
NP	IMCA-NP-HP(1A)	ML-WC-WLE/ULR	600	630	59	
NP	IMCA-NP-HP(1A)	ML-WC-WLE/ULR	600	640	82	347
NP	IMCA-NP-HP(2A)	ML-AR-WS	200	210	30	
NP	IMCA-NP-HP(2A)	ML-AR-WS	400	430	45	
NP	IMCA-NP-HP(2A)	ML-AR-WS	500	520	359	
NP	IMCA-NP-HP(2A)	ML-AR-WS	600	630	53	
NP	IMCA-NP-HP(2A)	ML-AR-WS	600	640	67	553
NP	IMCA-NP-HP(3A)	ML-AR-WS	200	210	511	

NP	IMCA-NP-HP(3A)	ML-AR-WS	400	430	213	
NP	IMCA-NP-HP(3A)	ML-AR-WS	600	630	14	738
NP	IMCA-NP-HP(4)	ML-AR-WS	100	140	13	
NP	IMCA-NP-HP(4)	ML-AR-WS	100	150	6	
NP	IMCA-NP-HP(4)	ML-AR-WS	200	210	229	
NP	IMCA-NP-HP(4)	ML-AR-WS	300	310	1	
NP	IMCA-NP-HP(4)	ML-AR-WS	400	430	78	
NP	IMCA-NP-HP(4)	ML-AR-WS	500	520	27	
NP	IMCA-NP-HP(4)	ML-AR-WS	600	630	11	
NP	IMCA-NP-HP(4)	ML-AR-WS	600	640	93	458
NP	IMCA-NP-HP(5)	ML-AR-WS	200	210	564	
NP	IMCA-NP-HP(5)	ML-AR-WS	400	430	94	
NP	IMCA-NP-HP(5)	ML-AR-WS	500	520	26	
NP	IMCA-NP-HP(5)	ML-AR-WS	600	630	1	
NP	IMCA-NP-HP(5)	ML-AR-WS	600	640	6	691
NP	IMCA-NP-HP(6)	ML-AR-WS	200	210	44	
NP	IMCA-NP-HP(6)	ML-AR-WS	400	430	2	46
NP	IMCA-NP-NPA(1D)	ML-AR-WS	200	210	697	
NP	IMCA-NP-NPA(1D)	ML-AR-WS	300	330	33	
NP	IMCA-NP-NPA(1D)	ML-AR-WS	400	420	180	
NP	IMCA-NP-NPA(1D)	ML-AR-WS	400	430	241	
NP	IMCA-NP-NPA(1D)	ML-AR-WS	500	520	36	
NP	IMCA-NP-NPA(1D)	ML-AR-WS	600	640	74	1262
NP	IMCA-NP-SMC(1D)	ML-WC-WLE/ULR	200	210	601	
NP	IMCA-NP-SMC(1D)	ML-WC-WLE/ULR	400	430	65	
NP	IMCA-NP-SMC(1D)	ML-WC-WLE/ULR	500	520	9	
NP	IMCA-NP-SMC(1D)	ML-WC-WLE/ULR	600	630	1	
NP	IMCA-NP-SMC(1D)	ML-WC-WLE/ULR	600	640	7	683
NP	IMCA-NP-SMC(2A)	ML-AR-WS	200	210	453	
NP	IMCA-NP-SMC(2A)	ML-AR-WS	400	430	25	
NP	IMCA-NP-SMC(2A)	ML-AR-WS	500	520	12	
NP	IMCA-NP-SMC(2A)	ML-AR-WS	600	640	24	514
NP	IMCA-NP-SMC(3A)	ML-AR-WS	200	210	229	
NP	IMCA-NP-SMC(3A)	ML-AR-WS	300	330	87	
NP	IMCA-NP-SMC(3A)	ML-AR-WS	400	410	51	
NP	IMCA-NP-SMC(3A)	ML-AR-WS	400	420	21	
NP	IMCA-NP-SMC(3A)	ML-AR-WS	400	430	84	
NP	IMCA-NP-SMC(3A)	ML-AR-WS	500	510	10	
NP	IMCA-NP-SMC(3A)	ML-AR-WS	500	520	17	
NP	IMCA-NP-SMC(3A)	ML-AR-WS	600	630	9	
NP	IMCA-NP-SMC(3A)	ML-AR-WS	600	640	11	520
NP	IMCA-NP-SMC(4)	ML-AR-WS	200	210	58	
NP	IMCA-NP-SMC(4)	ML-AR-WS	400	430	50	

NP	IMCA-NP-SMC(4)	ML-AR-WS	500	510	18	
NP	IMCA-NP-SMC(4)	ML-AR-WS	500	520	29	
NP	IMCA-NP-SMC(4)	ML-AR-WS	600	630	91	245
NP	IMCA-NP-SMC(5)	ML-AR-WS	200	210	75	
NP	IMCA-NP-SMC(5)	ML-AR-WS	400	430	34	
NP	IMCA-NP-SMC(5)	ML-AR-WS	500	520	298	
NP	IMCA-NP-SMC(5)	ML-AR-WS	600	630	56	
NP	IMCA-NP-SMC(5)	ML-AR-WS	600	640	26	489
NP	IMCA-NP-SMC(6)	ML-F-A	200	210	1	
NP	IMCA-NP-SMC(6)	ML-F-A	400	430	95	
NP	IMCA-NP-SMC(6)	ML-F-A	600	630	6	102
NP	IMCA-NP-SP(6A)	ML-AR-WS	200	210	14	
NP	IMCA-NP-SP(6A)	ML-AR-WS	400	430	1	
NP	IMCA-NP-SP(6A)	ML-AR-WS	500	520	35	
NP	IMCA-NP-SP(6A)	ML-AR-WS	600	640	2	52
NP	IMCA-NP-SWB(1D)	ML-WC-WLE/ULR	200	210	141	
NP	IMCA-NP-SWB(1D)	ML-WC-WLE/ULR	300	330	3	
NP	IMCA-NP-SWB(1D)	ML-WC-WLE/ULR	400	420	318	
NP	IMCA-NP-SWB(1D)	ML-WC-WLE/ULR	400	430	55	
NP	IMCA-NP-SWB(1D)	ML-WC-WLE/ULR	500	520	58	
NP	IMCA-NP-SWB(1D)	ML-WC-WLE/ULR	600	630	15	
NP	IMCA-NP-SWB(1D)	ML-WC-WLE/ULR	600	640	44	634
NP	IMCA-NP-SWB(2)	ML-AR-WS	200	210	24	
NP	IMCA-NP-SWB(2)	ML-AR-WS	400	430	24	
NP	IMCA-NP-SWB(2)	ML-AR-WS	500	520	15	
NP	IMCA-NP-SWB(2)	ML-AR-WS	600	630	6	
NP	IMCA-NP-SWB(2)	ML-AR-WS	600	640	14	83
NP	IMCA-NP-SWB(3)	ML-AR-WS	200	210	183	
NP	IMCA-NP-SWB(3)	ML-AR-WS	300	330	1	
NP	IMCA-NP-SWB(3)	ML-AR-WS	400	420	311	
NP	IMCA-NP-SWB(3)	ML-AR-WS	400	430	89	
NP	IMCA-NP-SWB(3)	ML-AR-WS	500	520	25	
NP	IMCA-NP-SWB(3)	ML-AR-WS	600	640	20	
NP	IMCA-NP-SWB(3)	ML-AR-WS	700	740	2	630
NP	IMCA-NP-SWB(4)	ML-AR-WS	200	210	30	
NP	IMCA-NP-SWB(4)	ML-AR-WS	300	330	68	
NP	IMCA-NP-SWB(4)	ML-AR-WS	400	420	3	
NP	IMCA-NP-SWB(4)	ML-AR-WS	400	430	5	
NP	IMCA-NP-SWB(4)	ML-AR-WS	500	510	1	
NP	IMCA-NP-SWB(4)	ML-AR-WS	500	560	1	
NP	IMCA-NP-SWB(4)	ML-AR-WS	600	620	17	
NP	IMCA-NP-SWB(4)	ML-AR-WS	600	640	18	
NP	IMCA-NP-SWB(4)	ML-AR-WS	700	740	23	166

NP	IMCA-NP-TB(1)	ML-AR-WS	200	210	122	
NP	IMCA-NP-TB(1)	ML-AR-WS	400	430	27	
NP	IMCA-NP-TB(1)	ML-AR-WS	500	520	104	
NP	IMCA-NP-TB(1)	ML-AR-WS	600	640	35	288
NP	IMCA-P-1	ML-WC-R	200	210	125	125
NP	IMCA-P-10	ML-WC-WLE/ULR	200	210	27	27
NP	IMCA-P-14A	ML-AR-WS	200	210	16	
NP	IMCA-P-14A	ML-AR-WS	500	520	19	35
NP	IMCA-P-15	ML-AR-WS	200	210	28	28
NP	IMCA-P-2	ML-WC-R	200	210	350	350
NP	IMCA-P-3	ML-WC-R	200	210	319	319
NP	IMCA-P-4A	ML-AR-WS	200	210	11	
NP	IMCA-P-4A	ML-AR-WS	500	520	15	26
NP	IMCA-P-5A	ML-AR-WS	500	520	57	57
NP	IMCA-P-9	ML-WC-R	200	210	3	
NP	IMCA-P-9	ML-WC-R	500	520	9	12
NP	WRG-BL-02	NM-AR-WS	200	210	423	
NP	WRG-BL-02	NM-AR-WS	400	430	55	479
NP	WRG-BL-03	NM-AR-WS	200	210	263	
NP	WRG-BL-03	NM-AR-WS	400	430	31	294
NP	OUT	ND	0	0	121	
NP	OUT	ND	200	210	4	
NP	OUT	ML-F-I	0	0	242	
NP	OUT	ND	0	0	25	
NP	IMCA	ND	200	210	40	
NP	IMCA	ML-F-I	200	210	27	
NP	IMCA	ML-F-I	400	420	2	
NP	IMCA	ML-F-I	600	620	1	
NP	IMCA	ML-F-I	600	640	8	
NP	IMCA	ND	200	210	21	
NP	IMCA	ND	400	430	1	
NP	IMCA	NM-F-A	100	140	57	
NP	IMCA	NM-F-A	200	210	1724	
NP	IMCA	NM-F-A	300	320	52	
NP	IMCA	NM-F-A	300	330	51	
NP	IMCA	NM-F-A	400	420	51	
NP	IMCA	NM-F-A	400	430	274	
NP	IMCA	NM-F-A	500	510	8	

NP	IMCA	NM-F-A	500	520	364	
NP	IMCA	NM-F-A	500	560	44	
NP	IMCA	NM-F-A	600	620	11	
NP	IMCA	NM-F-A	600	630	13	
NP	IMCA	NM-F-A	600	640	12	
NP	IMCA	NM-F-A	700	740	516	
NP	IMCA	NM-F-A	700	750	151	
		TOTAL			15224	14792

10.4.7 SWFWMD Water Use Permit No. 2011407.00

This section contains the SWFWMD Water Use Permit which authorizes groundwater withdrawal for potable and sanitary purposes. The permit was issued December 1995.

Southwest Florida Water Management District

2379 Broad Street • Brooksville, Florida 34609-6899 • 1-800-423-1476 (Florida Only) or (904) 796-7211 • SUNCOM 628-4150 • T.D.D. Number Only (Florida Only): 1-800-231-6103

7601 Highway 301 North
Tampa, Florida 33637-6759
1-800-836-0797 or (813) 985-7481
SUNCOM 578-2070

170 Century Boulevard
Bartow, Florida 33830-7700
1-800-492-7862 or (941) 534-1448
SUNCOM 572-6200

115 Corporation Way
Venice, Florida 34292-3524
1-800-320-3503 or (941) 483-5970
SUNCOM 549-5970

2303 Highway 44 West
Inverness, Florida 34453-3809
(904) 637-1360

An Equal Opportunity Employer

December 6, 1995

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Land O' Lakes
Virginia S. Roo
Tampa

Peter G. Hubbell
Executive Director
Mark D. Farrell
Assistant Executive Director
Edward B. Helvenston
General Counsel

Florida Power Corporation
(Polk City Combined Cycle Facility)
Attn: B. Randall Melton
P.O. Box 14042, MAC H2G
St. Petersburg, FL 33733

Subject: Final Agency Action Transmittal Letter
General Water Use Permit No(s). **2011407.00**

Your Water Use Permit(s) was/were approved contingent on no objections being received within 14 days after receipt of this notice of Final Agency Action. Your Permit has been approved subject to all terms and conditions set forth in the approved Permit(s).

Any person who is substantially affected by the District's Final Agency Action concerning a Permit may challenge this Permit by requesting an Administrative Hearing in accordance with Section 120.57, Florida Statutes (F.S.), and Part V of Chapter 40D-1, Florida Administrative Code (F.A.C.). A request for hearing must (1) state any disputed issues of material fact; (2) explain how each petitioner's substantial interest will be affected by the District's action; and (3) otherwise comply with Rule 40D-1.521. A request for hearing must be filed with (received by) the Agency Clerk of the District at the address above within 14 days of receipt of this notice of Final Agency Action. Receipt is deemed to be the fifth day after the date on which this notice is deposited in the United States mail. Failure to file a request for hearing within this time period shall constitute a waiver of any right such person may have to request a hearing under Section 120.57, F.S.

Please be advised that the Governing Board has formulated a water shortage plan as referenced in Condition 4 of the Standard Water Use Permit Conditions (Exhibit A), and will implement such a plan during periods of water shortage. You will be notified during a declared water shortage of any change in the conditions of your Permit(s) or any suspension of your Permit(s), or of any restriction on your use of water for the duration of any declared water shortage. Please further note that water conservation is a condition of your Permit(s) and should be practiced at all times.

Excellence Through Quality Service

One of the enclosed ID tags must be affixed in a prominent location on each permitted withdrawal facility. The necessary tag(s) and instructions are enclosed. If you have any questions or concerns about your Permit, please contact the **Bartow** Regulation Department or contact this office at Extension 4338.

Sincerely,

Annie L. Taylor

Annie L. Taylor, Manager
Processing & Records

ALT:ag

Enclosures:
1. Approved Permit
2. Surface Water and/or Well Tags w/Instructions
3. Rule 40D-1.521, F.A.C.

INSTRUCTIONS FOR APPLYING WATER USE TAG

Enclosed are the necessary metal tags for the withdrawal points as indicated on your permit. Please display tags in a visible location.

The tags are to be permanently affixed by using the enclosed wire or by bolting or gluing to structure. Each withdrawal, well or surface, has been numbered in the same order as that shown on the permit column labeled District ID Number.

Proper care should be taken in the placing of these tags. We suggest the following:

1. Apply tag to the electrical panel box if one is located adjacent to the facility, or to a permanent structure next to withdrawal (block wall, post, etc.)

2. Apply tag to the base of the pump, that portion of the pump installation that is not normally removed for servicing the pump.

3. Apply tag to the well casing only when sufficient space is available between the ground surface and the base of the pump.

4. The tag must be placed on the pump of a portable facility.

5. Apply tag where other licenses or permits are displayed on public supply systems.

The following F.A.C. rules apply.

40D-2.401 Identification Tags
(1) When a Water Use Permit is issued, the Governing Board will issue a permanent tag bearing a use identification number, which tag shall be prominently displayed at the site of withdrawal by permanently affixing such tag to the pump, headgate, valve, or other withdrawal facility. If the Water Use Permit covers several facilities, such as a well field, a tag will be issued for each facility.
(2) Failure to display a permit tag as prescribed herein shall constitute a violation of these rules and may be grounds for suspension or revocation of the permit. The Permittee shall be allowed 10 days after notice to obtain a replacement tag. Upon failure of the Permittee to display such tag within 10 days, the Governing Board may cause the replacement of such tag and charge the Permittee one hundred dollars ($100) for such service.

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
PROCESSING AND RECORDS
(904) 796-7211

04-27-94

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
WATER USE
GENERAL
PERMIT NO. 2011407.00

EXPIRATION DATE: December 6, 2005 **PERMIT ISSUE DATE:** December 6, 1995

THE PERMITTEE IS RESPONSIBLE FOR APPLYING FOR A RENEWAL OF THIS PERMIT PRIOR TO THE EXPIRATION DATE WHETHER OR NOT THE PERMITTEE RECEIVES PRIOR NOTIFICATION BY MAIL. FAILURE TO DO SO AND CONTINUED USE OF WATER AFTER EXPIRATION DATE IS A VIOLATION OF DISTRICT RULES AND MAY RESULT IN A MONETARY PENALTY AND/OR LOSS OF WATER. APPLICATION FOR RENEWAL PRIOR TO THE EXPIRATION DATE IS SUBJECT TO DISTRICT EVALUATION AND APPROVAL.

This permit, issued under the provision of Chapter 373, Florida Statutes and Florida Administrative Code 40D-2, authorizes the Permittee to withdraw the quantities outlined herein, and may require various activities to be performed by the Permittee as outlined by the Special Conditions. This permit, subject to all terms and conditions, meets all District permitting criteria.

GRANTED TO: Florida Power Corporation
(Polk City Combined Cycle Facility)
P.O. Box 14042, MAC H2G
St. Petersburg, FL 33733

TOTAL QUANTITIES AUTHORIZED UNDER THIS PERMIT (in gpd)

AVERAGE: 1,000 PEAK MONTHLY: 1,000

Use	Average	Peak Monthly
Industrial or Commercial:	1,000 gpd	1,000 gpd

See Withdrawal Table for quantities permitted for each withdrawal point.

PROPERTY LOCATION: Polk County, approximately 3 miles south of the intersection of S.R. 640 and S.R. 555, on S.R. 555.

TYPE OF APPLICATION: New

WATER USE CAUTION AREA: Southern

APPLICATION FILED: October 18, 1995

ACRES: 2 Owned

APPLICATION AMENDED: N/A

WATER USE: INDUSTRIAL OR COMMERCIAL

FACILITY NAME	USE TYPE
FPC Polk County Site	Industrial Other Uses

I.D. NO. PERMITTEE/ DISTRICT	LOCATION LAT/LONG	DIAM. (INCHES)	DEPTH TOTAL/CASED	USE	GALLONS PER DAY AVERAGE	GALLONS PER DAY PEAK MONTHLY
11 / 1	274732/815326	6	400 / 160	I/C	1,000	1,000

I/C=Industrial or Commercial

DISTRICT I.D. NO.	SECTION/TOWNSHIP/RANGE
1	11/31/24

STANDARD CONDITIONS:

1. The Permittee shall comply with the Standard Conditions attached hereto, incorporated herein by reference as Exhibit "A" and made a part hereof.

BJ Jaus

Authorized Signature
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

40D-2
Exhibit "A"

WATER USE PERMIT CONDITIONS

STANDARD CONDITIONS

1. If any of the statements in the application and in the supporting data are found to be untrue and inaccurate, or if the Permittee fails to comply with all of the provisions of Chapter 373, F.S., Chapter 40D, or the conditions set forth herein, the Governing Board shall revoke this permit in accordance with Rule 40D-2.341, following notice and hearing.

2. This permit is issued based on information provided by the Permittee demonstrating that the use of water is reasonable and beneficial, consistent with the public interest, and will not interfere with any existing legal use of water. If, during the term of the permit, it is determined by the District that the use is not reasonable and beneficial, in the public interest, or does impact an existing legal use of water, the Governing Board shall modify this permit or shall revoke this permit following notice and hearing.

3. The Permittee shall not deviate from any of the terms or conditions of this permit without written approval by the District.

4. In the event the District declares that a Water Shortage exists pursuant to Chapter 40D-21, the District shall alter, modify, or declare inactive all or parts of this permit as necessary to address the water shortage.

5. The District shall collect water samples from any withdrawal point listed in the permit or shall require the Permittee to submit water samples when the District determines there is a potential for adverse impacts to water quality.

6. The Permittee shall provide access to an authorized District representative to enter the property at any reasonable time to inspect the facility and make environmental or hydrologic assessments. The Permittee shall either accompany District staff onto the property or make provision for access onto the property.

7. Issuance of this permit does not exempt the Permittee from any other District permitting requirements.

8. The Permittee shall cease or reduce surface water withdrawal as directed by the District if water levels in lakes fall below applicable minimum water level established in Chapter 40D-8 or rates of flow in streams fall below the minimum levels established in Chapter 40D-8.

9. The Permittee shall cease or reduce withdrawal as directed by the District if water levels in aquifers fall below the minimum levels established by the Governing Board.

10. The Permittee shall practice water conservation to increase the efficiency of transport, application, and use, as well as to decrease waste and to minimize runoff from the property. At such time as the Governing Board adopts specific conservation requirements for the Permittee's water use classification, this permit shall be subject to those requirements upon notice and after a reasonable period for compliance.

11. The District may establish special regulations for Water Use Caution Areas. At such time as the Governing Board adopts such provisions, this permit shall be subject to them upon notice and after a reasonable period for compliance.

12. The Permittee shall mitigate, to the satisfaction of the District, any adverse impact to existing legal uses caused by withdrawals. When adverse impacts occur or are imminent, the District shall require the Permittee to mitigate the impacts. Adverse impacts include:

    a. A reduction in water levels which impairs the ability of a well to produce water;
    b. Significant reduction in levels or flows in water bodies such as lakes, impoundments, wetlands, springs, streams or other watercourses; or
    c. Significant inducement of natural or manmade contaminants into a water supply or into a usable portion of any aquifer or water body.

13. The Permittee shall mitigate to the satisfaction of the District any adverse impact to environmental features or offsite land uses as a result of withdrawals. When adverse impacts occur or are imminent, the District shall require the Permittee to mitigate the impacts. Adverse impacts include the following:

    a. Significant reduction in levels or flows in water bodies such as lakes, impoundments, wetlands, springs, streams, or other watercourses;
    b. Sinkholes or subsidence caused by reduction in water levels;
    c. Damage to crops and other vegetation causing financial harm to the owner; and
    d. Damage to the habitat of endangered or threatened species.

14. When necessary to analyze impacts to the water resource or existing users, the District shall require the Permittee to install flow metering or other measuring devices to record withdrawal quantities and submit the data to the District.

15. A District identification tag shall be prominently displayed at each withdrawal point by permanently affixing the tag to the withdrawal facility.

16. The Permittee shall notify the District within 30 days of the sale or conveyance of permitted water withdrawal facilities or the land on which the facilities are located.

17. All permits issued pursuant to these Rules are contingent upon continued ownership or legal control of all property on which pumps, wells, diversions or other water withdrawal facilities are located.

SUBPART B - FORMAL PROCEEDINGS

40D-1.521 Initiation of Formal Proceedings

(1) Formal proceedings shall be initiated by petition to the District. The term petition as used herein includes any application or other document which expresses a request for formal proceedings. Each petition should be printed, typewritten or otherwise duplicated in legible form on white paper of standard letter size and signed by the petitioner or his representative. Unless printed, the impression shall be on one side of the paper only and lines shall be double-spaced and indented.

(2) All petitions filed under these rules shall contain:
- (a) The name and address of the District and the District's file or identification number, if known;
- (b) The name and address of the petitioner or petitioners;
- (c) An explanation of how each petitioner's substantial interests will be affected by the District's determination;
- (d) A statement of when and how petitioner received Notice of the District's Proposed or Final Agency Action;
- (e) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;
- (f) A concise statement of the ultimate facts which petitioner believes entitle him to relief sought as well as the rules and statutes which support petitioner's claim for relief;
- (g) A statement of preference of presiding officer;
- (h) A demand for the relief to which the petitioner deems himself entitled; and
- (i) Other information which the petitioner contends is material.

(3) Upon receipt of a petition for formal proceedings the District shall review the petition and shall provide a statement of compliance of the petition which the requirements of this rule to the Board and the petitioner. The Board shall accept those petitions in substantial compliance with this rule which have been timely filed and which state a dispute which is within the jurisdiction of the District to resolve. If the petition is accepted the Board shall designate the presiding office. The District shall promptly give written notice to all parties of the action taken on the petition, and shall state with particularity its reasons therefore.

(4) If the Board designates a Hearing Officer assigned by the Division of Administrative Hearings as the presiding officer, the Agency Clerk shall forward the petition and all materials filed with the District to the Division of Administrative Hearings, and shall notify all parties of such action.

(5) Petitioners entitled to a hearing pursuant to Subsection 120.57(1), Florida Statutes, may waive their right to a formal hearing and request an informal hearing before the Board pursuant to Subsection 120.57(2), Florida Statutes, which may be granted at the option of the District.

The District does not discriminate based on disability. Anyone requiring reasonable accommodation under the ADA should contact BJ Jarvis at (904) 796-7211 or 1-800-423-1476; TDD only 1-800-231-6103.

Southwest Florida Water Management District

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Curtis L. Law
Land O' Lakes
Virginia S. Roo
Tampa

Peter G. Hubbell
Executive Director
Mark D. Farrell
Assistant Executive Director
Edward B. Helvenston
General Counsel

NOTICE TO PERMITTEES IN THE SOUTHERN WATER USE CAUTION AREA

Your Water Use Permit has been granted for the quantities displayed on the first page of the permit, subject to the conditions that are listed on the following pages of your permit.

The District is currently in the process of developing rules establishing special regulations for the Southern Water Use Caution Area (SWUCA). These rules are likely to be adopted within the coming year. The rules may result in the reduction of permitted quantities on existing permits such as yours.

If you would like to receive information on these rules, fill in the information at the bottom and return to Claudia Alligood, Legal Secretary, at the above address. Check the appropriate space on the form below depending on the materials you would like to receive. The first list is for persons who would like to receive copies of all final rules. The second list is for persons who would like to receive notice of any workshops, public hearings, etc. on the rules, as well as final versions of the SWUCA rules.

This will not affect the status of you or your company on other mailing lists maintained by the District. We are compiling names of persons who are interested solely in the SWUCA rulemaking efforts.

\rules\03293\notice.ltr

Name: _____

Company: _____

Address: _____

_____

Phone: _____

Place a check-mark by the list you would like to be placed on:
Lists: [ ] Final Versions of SWUCA Rules
[ ] Notices of Workshops, Hearings, etc. on SWUCA Rules

Excellence Through Quality Service

10.4.8 Domestic Wastewater Permit FLA 017408-001-DW3P

This section contains the DEP Domestic Wastewater Permit No. FLA 017408-001-DW3P which authorizes the operation of the wastewater treatment facility at the Hines Energy Complex. The permit was issued January 1998.

Department of Environmental Protection

Lawton Chiles
Governor

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

Virginia B. Wetherell
Secretary

RECEIVED
JAN 30 1998
Environmental Svcs Department

STATE OF FLORIDA
DOMESTIC WASTEWATER FACILITY PERMIT

PERMITTEE:

Mr. W. Jeffrey Purdue, C.E.P.
Director of Environmental Services
Florida Power Corporation
3201 34th Street South
St. Petersburg, FL 33711

PERMIT NUMBER: FLA017408-001-DW3P
ISSUANCE DATE: 01/23/98
EXPIRATION DATE: 01/22/03
FACILITY I.D. NO: FLA017408

FACILITY:

Hines Energy Complex WWTP
7700 County Rd. 555
Polk County
Bartow, FL 33830
Latitude: 27° 47' 15" N Longitude: 81° 52' 21" W

This permit is issued under the provisions of Chapter 403, Florida Statutes, and applicable rules of the Florida Administrative Code. The above named permittee is hereby authorized to operate the facilities shown on the application and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

TREATMENT FACILITIES:

An existing 0.010 mgd maximum month average daily flow (MMADF) permitted capacity extended aeration domestic wastewater treatment plant consisting of aeration, secondary clarification, and chlorination with: one (1) aeration basins totaling 10,000 gallons, one (1) clarifier of 2,500 gallons with a surface loading rate of 200 gallons per day per square foot, one (1) chlorine contact tank of 260 gallons and one (1) digester of 3,000 gallons. This plant will be operated to provide secondary treatment with basic disinfection.

REUSE:

Land Application: An existing cooling water recirculation system impoundment (R001) of approximately 722 acres. Land application system R001 is located approximately at latitude 27° 47' 15" N, longitude 81° 52' 21" W.

IN ACCORDANCE WITH: The limitations, monitoring requirements and other conditions as set forth in Pages 1 through 14 of this permit.

I. RECLAIMED WATER AND EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Reuse and Land Application Systems

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to direct reclaimed water to Reuse System(s) R001. Such reclaimed water shall be limited and monitored by the permittee as specified below:

			Reclaimed Water Limitations				Monitoring Requirements			
Parameter	**Units**	**Max/Min**	**Annual Average**	**Monthly Average**	**Weekly Average**	**Single Sample**	**Monitoring Frequency**	**Sample Type**	**Monitoring Location Site Number**	**Notes**
Carbonaceous Biochemical Oxygen Demand (5 day)	mg/L	Maximum	20.0	30.0	-	60.0	Monthly	Grab	EFA-01-30109	
Total Suspended Solids	mg/L	Maximum	20.0	30.0	-	60.0	Monthly	Grab	EFA-01-30109	
pH	std. units	Range	-	-	-	6.0 to 8.5	5 Days/Week	Grab	EFA-01-30109	
Fecal Coliform Bacteria	See Permit Condition I.A.3.						5 Days/Week	Grab	EFA-01-30109	
Total Residual Chlorine (For Disinfection)	mg/L	Minimum	-	-	-	0.5	5 Days/Week	Grab	EFA-01-30109	See Cond I.A.4.
Nitrate (as N)	mg/L	Maximum	-	-	-	12.0	Monthly	Grab	EFA-01-30109	

2. Reclaimed water samples shall be taken at the monitoring site locations listed in Permit Condition I. A. 1. and as described below:

Monitoring Location Site Number	Description of Monitoring Location
EFA-01-30109	Effluent-after chlorination, prior to land application

3. The arithmetic mean of the monthly fecal coliform values collected during an annual period shall not exceed 200 per 100 mL of reclaimed water sample. The geometric mean of the fecal coliform values for a minimum of 10 samples of reclaimed water, each collected on a separate day during a period of 30 consecutive days (monthly), shall not exceed 200 per 100 mL of sample. No more than 10 percent of the samples collected (the 90th percentile value) during a period of 30 consecutive days shall exceed 400 fecal coliform values per 100 mL of sample. Any one sample shall not exceed 800 fecal coliform values per 100 mL of sample. Note: To report the 90th percentile value, list the fecal coliform values obtained during the month in ascending order. Report the value of the sample that corresponds to the 90th percentile (multiply the number of samples by 0.9). For example, for 30 samples, report the corresponding fecal coliform number for the 27th value of ascending order. *[62-600.440(4)(c), 6-8-93]*

4. A minimum of 0.5 mg/L total residual chlorine must be maintained for a minimum contact time of 15 minutes based on peak hourly flow. *[62-600.440(4)(b), 6-8-93]*

5. Flow meters shall be utilized to measure flow and calibrated at least annually. *[62-601.200(17) and .500(6), 5-31-93]*

6. The following is included for informational purposes only:

Location Site Number	Description of Location
30110	R001-Plant cooling water recirculation pond

B. Other Limitations and Monitoring and Reporting Requirements

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the treatment facility shall be limited and monitored by the permittee as specified below:

			Limitations				Monitoring Requirements			
Parameter	**Units**	**Max/Min**	**Annual Average**	**Monthly Average**	**Weekly Average**	**Single Sample**	**Monitoring Frequency**	**Sample Type**	**Monitoring Location Site Number**	**Notes**
Flow	mgd	0.010 MMADF	-	-	-	-	5 Days/Week	Meter	EFA-01-30109	See Cond.I.A.5.
Carbonaceous Biochemical Oxygen Demand (5 day)	mg/L	Report	-	-	-	-	Annual	Grab	INF-01-30108	
Total Suspended Solids	mg/L	Report	-	-	-	-	Annual	Grab	INF-01-30108	

2. Samples shall be taken at the monitoring site locations listed in Permit Condition I. B. 1 and as described below:

Monitoring Location Site Number	Description of Monitoring Location
INF-01-30108	At the headworks of the facility, prior to any return activated sludge lines

3. The three-month average daily flow to the treatment plant shall not exceed 0.010 mgd.

4. Influent samples shall be collected so that they do not contain digester supernatant or return activated sludge, or any other plant process recycled waters. *[62-601.500(4), 5-31-93]*

5. Parameters which must be monitored as a result of a surface water discharge shall be analyzed using a sufficiently sensitive method in accordance with 40 CFR Part 136. Parameters which must be monitored as a result of a ground water discharge (i.e., underground injection or land application system) shall be analyzed in accordance with Chapter 62-601, F.A.C. *[62-620.610(18), 11-29-94]*

6. The permittee shall provide safe access points for obtaining representative influent, reclaimed water, and effluent samples which are required by this permit. *[62-601.500(5), 5-31-93]*

7. During the period of operation authorized by this permit, the permittee shall complete and submit to the Department on a monthly basis Discharge Monitoring Report(s) (DMR), Form 62-620.910(10), as attached to this permit. The permittee shall make copies of the attached DMR form(s) and shall submit the completed DMR form(s) to the Department by the twenty-eighth (28th) of the month following the month of operation at the address specified below: *[62-620.610(18), 11-29-94][62-601.300(1), (2), and (3), 5-31-93]*

Florida Department of Environmental Protection
Wastewater Facilities Regulation Section, Mail Station 3551
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

9. Unless specified otherwise in this permit, all reports and notifications required by this permit, including 24-hour notifications, shall be submitted to or reported to, as appropriate, the Department's Southwest District Office at the address specified below:

Florida Department of Environmental Protection
Southwest District Office
3804 Coconut Palm Drive
Tampa, Florida 33619-8318

Phone Number - (813) 744-6100
FAX Number - (813) 744-8198 Water Facilities, All FAX copies shall be followed by original copies.

II. RESIDUALS MANAGEMENT REQUIREMENTS

Basic Management Requirements

1. The method of residuals use or disposal by this facility is being contracted with a licensed company. The permittee shall provide an Agricultural Use Plan to the SW District Office requesting this permit be revised to identify the stabilization method and location of the site for disposal.

2. The wastewater treatment facility permittee shall be responsible for proper handling, use, and disposal of its residuals and will be held responsible for any disposal violations that occur unless the permittee can demonstrate that it has delivered residuals that meet the chemical criteria and appropriate stabilization requirements of this permit and that the disposer (e.g. hauler, contractor, or disposal/land application site owner) has legally agreed in writing to accept responsibility for proper disposal. *[62-640.300(3), 3-1-91]*

III. GROUND WATER MONITORING REQUIREMENTS

Section III is not applicable to this facility.

IV. ADDITIONAL REUSE AND LAND APPLICATION REQUIREMENTS

Part IV Rapid Infiltration Basins

1. All ground water quality criteria specified in Chapter 62-520, F.A.C., shall be met at the edge of the zone of discharge. The zone of discharge for this project shall extend horizontally 100 feet from the application site or to the facility's property line, whichever is less, and vertically to the base of the surficial aquifer. *[62-520.200(23), 4-14-94] [62-522.400 and 62-522.410, 4-14-94]*

2. Advisory signs shall be posted around the site boundaries to designate the nature of the project area. *[62-610.518, 1-9-96]*

3. Rapid infiltration basins shall be routinely maintained to control vegetation growth and to maintain percolation capability by scarification or removal of deposited solids. Basin bottoms shall be maintained to be level. *[62-610.523(6) and (7), 1-9-96]*

4. Routine aquatic weed control and regular maintenance of storage pond embankments and access areas are required. *[62-610.514 and 62-610.414, 1-9-96]*

5. Overflows from emergency discharge facilities on storage ponds or on infiltration ponds, basins, or trenches shall be reported as an abnormal event to the Department's Southwest District Office within 24 hours of an occurrence as an abnormal event. The provisions of Rule 62-610.800(9), F.A.C., shall be met. *[62-610.800(9), 1-9-96]*

V. OPERATION AND MAINTENANCE REQUIREMENTS

1. During the period of operation authorized by this permit, the wastewater facilities shall be operated under the supervision of a(n) operator(s) certified in accordance with Chapter 61E12-41, F.A.C. In accordance with Chapter 62-699, F.A.C., this facility is a Category III, Class D facility and, at a minimum, operators with appropriate certification must be on the

site as follows: **A Class D or higher operator for three (3) nonconsecutive visits/ week for 1 1/2 hours/week. The lead operator must be a Class D operator, or higher.** *[62-699, 5-20-94] [62-620.630(3), 11-29-94] [62-699.310, 5-20-92] [62-610.462, 1-9-96]*

2. A certified operator shall be on call during periods the plant is unattended. *[62-699.311(1), 5-20-92]*

3. The application to renew this permit shall include an updated capacity analysis report prepared in accordance with Rule 62-600.405, F.A.C. *[62-600.405(5), 6-8-93]*

4. The application to renew this permit shall include a detailed operation and maintenance performance report prepared in accordance with Rule 62-600.735, F.A.C. *[62-600.735(1), 6-8-93]*

5. The permittee shall maintain the following records and make them available for inspection on the site of the permitted facility:

   a. Records of all compliance monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation and a copy of the laboratory certification showing the certification number of the laboratory, for at least three years from the date the sample or measurement was taken;

   b. Copies of all reports required by the permit for at least three years from the date the report was prepared;

   c. Records of all data, including reports and documents, used to complete the application for the permit for at least three years from the date the application was filed;

   d. Monitoring information, including a copy of the laboratory certification showing the laboratory certification number, related to the residuals use and disposal activities for the time period set forth in Chapter 62-640, F.A.C., for at least three years from the date of sampling or measurement;

   e. A copy of the current permit;

   f. A copy of the current operation and maintenance manual as required by Chapter 62-600, F.A.C.;

   g. A copy of the facility record drawings;

   h. Copies of the licenses of the current certified operators; and

   i. Copies of the logs and schedules showing plant operations and equipment maintenance for three years from the date of the logs or schedules. The logs shall, at a minimum, include identification of the plant; the signature and certification number of the operator(s) and the signature of the person(s) making any entries; date and time in and out; specific operation and maintenance activities; tests performed and samples taken; and major repairs made. The logs shall be maintained on-site in a location accessible to 24-hour inspection, protected from weather damage, and current to the last operation and maintenance performed.

[62-620.350,11-29-94][61E12-41.010(1)(e), 11-02-93]

VI. SCHEDULES

1. **The permittee shall provide an Agricultural Use Plan including stabilization method and the analysis (U.S. EPA publication-POTW Sludge Sampling and Analysis Guidance Document, 1989) as required by Chapter 62-640, FAC, prior to the removal and transport of domestic residuals from the treatment plant.**

VII. INDUSTRIAL PRETREATMENT PROGRAM REQUIREMENTS

This facility is not required to have a pretreatment program at this time. *[62-625.500, 11-29-94]*

VIII. OTHER SPECIFIC CONDITIONS

1. If the permittee wishes to continue operation of this wastewater facility after the expiration date of this permit, the permittee shall submit an application for renewal, using Department Forms 62-620.910(1) and (2), no later than one-hundred and eighty days (180) prior to the expiration date of this permit. *[62-620.410(5), 11-26-94]*

2. Florida water quality criteria and standards shall not be violated as a result of any discharge or land application of reclaimed water or residuals from this facility. *[62-610.850(1)(a) and (2)(a),1-9-96][62-640.700(3)(c), 3-1-91]*

3. In the event that the treatment facilities or equipment no longer function as intended, are no longer safe in terms of public health and safety, or odor, noise, aerosol drift, or lighting adversely affects neighboring developed areas at the levels prohibited by Rule 62-600.400(2)(a), F.A.C., corrective action (which may include additional maintenance or modifications of the permitted facilities) shall be taken by the permittee. Other corrective action may be required to ensure compliance with rules of the Department. *[62-600.410(8), 6-8-93]*

4. The deliberate introduction of stormwater in any amount into collection/transmission systems designed solely for the introduction (and conveyance) of domestic/industrial wastewater; or the deliberate introduction of stormwater into collection/transmission systems designed for the introduction or conveyance of combinations of storm and domestic/industrial wastewater in amounts which may reduce the efficiency of pollutant removal by the treatment plant is prohibited. *[62-604.130(3), 5-31-93]*

5. Collection/transmission system overflows shall be reported to the Department in accordance with Permit Condition IX. 20. *[62-604.550, 5-31-93] [62-620.610(20), 11-29-94]*

6. The operating authority of a collection/transmission system and the permittee of a treatment plant are prohibited from accepting connections of wastewater discharges which have not received necessary pretreatment or which contain materials or pollutants (other than normal domestic wastewater constituents):

   a. Which may cause fire or explosion hazards; or

   b. Which may cause excessive corrosion or other deterioration of wastewater facilities due to chemical action or pH levels; or

c. Which are solid or viscous and obstruct flow or otherwise interfere with wastewater facility operations or treatment; or

d. Which result in treatment plant discharges having temperatures above 40°C.

[62-604.130(4), 5-31-93]

7. The treatment facility, storage ponds, rapid infiltration basins, and/or infiltration trenches shall be enclosed with a fence or otherwise provided with features to discourage the entry of animals and unauthorized persons. *[62-610.514(20), 1-9-96] [and 62-600.410, 6-8-93]*

8. Screenings and grit removed from the wastewater facilities shall be collected in suitable containers and hauled to a Department approved Class I landfill or to a landfill approved by the Department for receipt/disposal of screenings and grit. *[62-7.540, 12-10-85]*

9. The permittee shall provide adequate notice to the Department of the following:

a. Any new introduction of pollutants into the facility from an industrial discharger which would be subject to Chapter 403, F.S., and the requirements of Chapter 62-620, F.A.C. if it were directly discharging those pollutants; and

b. Any substantial change in the volume or character of pollutants being introduced into that facility by a source which was identified in the permit application and known to be discharging at the time the permit was issued.

Adequate notice shall include information on the quality and quantity of effluent introduced into the facility and any anticipated impact of the change on the quantity or quality of effluent or reclaimed water to be discharged from the facility.

[62-620.625(2), 11-29-94]

IX. GENERAL CONDITIONS

1. The terms, conditions, requirements, limitations and restrictions set forth in this permit are binding and enforceable pursuant to Chapter 403, Florida Statutes. Any permit noncompliance constitutes a violation of Chapter 403, Florida Statutes, and is grounds for enforcement action, permit termination, permit revocation and reissuance, or permit revision. *[62-620.610(1), 11-29-94]*

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviations from the approved drawings, exhibits, specifications or conditions of this permit constitutes grounds for revocation and enforcement action by the Department. *[62-620.610(2), 11-29-94]*

3. As provided in Subsection 403.087(6), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor authorize any infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other Department permit or authorization that may be required for other aspects of the total project which are not addressed in this permit. *[62-620.610(3), 11-29-94]*

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from

the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title. *[62-620.610(4), 11-29-94]*

5. This permit does not relieve the permittee from liability and penalties for harm or injury to human health or welfare, animal or plant life, or property caused by the construction or operation of this permitted source; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department. The permittee shall take all reasonable steps to minimize or prevent any discharge, reuse of reclaimed water, or residuals use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. *[62-620.610(5), 11-29-94]*

6. If the permittee wishes to continue an activity regulated by this permit after its expiration date, the permittee shall apply for and obtain a new permit. *[62-620.610(6), 11-29-94]*

7. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control, and related appurtenances, that are installed and used by the permittee to achieve compliance with the conditions of this permit. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to maintain or achieve compliance with the conditions of the permit. *[62-620.610(7), 11-29-94]*

8. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit revision, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition. *[62-620.610(8), 11-29-94]*

9. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, including an authorized representative of the Department and authorized EPA personnel, when applicable, upon presentation of credentials or other documents as may be required by law, and at reasonable times, depending upon the nature of the concern being investigated, to:

   a. Enter upon the permittee's premises where a regulated facility, system, or activity is located or conducted, or where records shall be kept under the conditions of this permit;

   b. Have access to and copy any records that shall be kept under the conditions of this permit;

   c. Inspect the facilities, equipment, practices, or operations regulated or required under this permit; and

   d. Sample or monitor any substances or parameters at any location necessary to assure compliance with this permit or Department rules.

   [62-620.610(9), 11-29-94]

10. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data, and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except as such use is proscribed by Section 403.111, Florida

Statutes, or Rule 62-620.302, Florida Administrative Code. Such evidence shall only be used to the extent that it is consistent with the Florida Rules of Civil Procedure and applicable evidentiary rules. *[62-620.610(10), 11-29-94]*

11. When requested by the Department, the permittee shall within a reasonable time provide any information required by law which is needed to determine whether there is cause for revising, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. The permittee shall also provide to the Department upon request copies of records required by this permit to be kept. If the permittee becomes aware of relevant facts that were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be promptly submitted or corrections promptly reported to the Department. *[62-620.610(11), 11-29-94]*

12. Unless specifically stated otherwise in Department rules, the permittee, in accepting this permit, agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules. A reasonable time for compliance with a new or amended surface water quality standard, other than those standards addressed in Rule 62-302.500, F.A.C., shall include a reasonable time to obtain or be denied a mixing zone for the new or amended standard. *[62-620.610(12), 11-29-94]*

13. The permittee, in accepting this permit, agrees to pay the applicable regulatory program and surveillance fee in accordance with Rule 62-4.052, F.A.C. *[62-620.610(13), 11-29-94]*

14. This permit is transferable only upon Department approval in accordance with Rule 62-620.340, F.A.C. The permittee shall be liable for any noncompliance of the permitted activity until the transfer is approved by the Department. *[62-620.610(14), 11-29-94]*

15. The permittee shall give the Department written notice at least 60 days before inactivation or abandonment of a wastewater facility and shall specify what steps will be taken to safeguard public health and safety during and following inactivation or abandonment. *[62-620.610(15), 11-29-94]*

16. The permittee shall apply for a revision to the Department permit in accordance with Rules 62-620.300, 62-620.420 or 62-620.450, F.A.C., as applicable, at least 90 days before construction of any planned substantial modifications to the permitted facility is to commence or with Rule 62-620.300 for minor modifications to the permitted facility. A revised permit shall be obtained before construction begins except as provided in Rule 62-620.300, F.A.C. *[62-620.610(16), 11-29-94]*

17. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. The permittee shall be responsible for any and all damages which may result from the changes and may be subject to enforcement action by the Department for penalties or revocation of this permit. The notice shall include the following information:

    a. A description of the anticipated noncompliance;

    b. The period of the anticipated noncompliance, including dates and times; and

    c. Steps being taken to prevent future occurrence of the noncompliance.

    [62-620.610(17), 11-29-94]

18. Sampling and monitoring data shall be collected and analyzed in accordance with Rule 62-4.246, Chapters 62-160 and 62-601, F.A.C., and 40 CFR 136, as appropriate.

    a. Monitoring results shall be reported at the intervals specified elsewhere in this permit and shall be reported on a Discharge Monitoring Report (DMR), DEP Form 62-620.910(10).

    b. If the permittee monitors any contaminant more frequently than required by the permit, using Department approved test procedures, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

    c. Calculations for all limitations which require averaging of measurements shall use an arithmetic mean unless otherwise specified in this permit.

    d. Any laboratory test required by this permit for domestic wastewater facilities shall be performed by a laboratory that has been certified by the Department of Health and Rehabilitative Services (DHRS) under Chapter 10D41, F.A.C., to perform the test. On-site tests for dissolved oxygen, pH, and total chlorine residual shall be performed by a laboratory certified to test for those parameters or under the direction of an operator certified under Chapter 61E12-41, F.A.C.

    e. Under Chapter 62-160, F.A.C., sample collection shall be performed by following the protocols outlined in "DER Standard Operating Procedures for Laboratory Operations and Sample Collection Activities" (DER-QA-001/92). Alternatively, sample collection may be performed by an organization who has an approved Comprehensive Quality Assurance Plan (CompQAP) on file with the Department. The CompQAP shall be approved for collection of samples from the required matrices and for the required tests.

    [62-620.610(18), 11-29-94]

19. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule detailed elsewhere in this permit shall be submitted no later than 14 days following each schedule date. *[62-620.610(19), 11-29-94]*

20. The permittee shall report to the Department any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances. The written submission shall contain: a description of the noncompliance and its cause; the period of noncompliance including exact dates and time, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

    a. The following shall be included as information which must be reported within 24 hours under this condition:

        1. Any unanticipated bypass which causes any reclaimed water or effluent to exceed any permit limitation or results in an unpermitted discharge,

        2. Any upset which causes any reclaimed water or the effluent to exceed any limitation in the permit,

3. Violation of a maximum daily discharge limitation for any of the pollutants specifically listed in the permit for such notice, and

4. Any unauthorized discharge to surface or ground waters.

b. If the oral report has been received within 24 hours, the noncompliance has been corrected, and the noncompliance did not endanger health or the environment, the Department shall waive the written report.

[62-620.610(20), 11-29-94]

21. The permittee shall report all instances of noncompliance not reported under Permit Conditions IX. 18. and 19. of this permit at the time monitoring reports are submitted. This report shall contain the same information required by Permit Condition IX. 20 of this permit. *[62-620.610(21), 11-29-94]*

22. Bypass Provisions.

a. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless the permittee affirmatively demonstrates that:

1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage; and

2. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

3. The permittee submitted notices as required under Permit Condition IX. 22. b. of this permit.

b. If the permittee knows in advance of the need for a bypass, it shall submit prior notice to the Department, if possible at least 10 days before the date of the bypass. The permittee shall submit notice of an unanticipated bypass within 24 hours of learning about the bypass as required in Permit Condition IX. 20. of this permit. A notice shall include a description of the bypass and its cause; the period of the bypass, including exact dates and times; if the bypass has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent recurrence of the bypass.

c. The Department shall approve an anticipated bypass, after considering its adverse effect, if the permittee demonstrates that it will meet the three conditions listed in Permit Condition IX. 22. a. 1. through 3. of this permit.

d. A permittee may allow any bypass to occur which does not cause reclaimed water or effluent limitations to be exceeded if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Permit Condition IX. 22. a. through c. of this permit.

[62-620.610(22), 11-29-94]

23. Upset Provisions

a. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed contemporaneous operating logs, or other relevant evidence that:

1. An upset occurred and that the permittee can identify the cause(s) of the upset;

2. The permitted facility was at the time being properly operated;

3. The permittee submitted notice of the upset as required in Permit Condition IX. 20. of this permit; and

4. The permittee complied with any remedial measures required under Permit Condition IX. 5. of this permit.

b. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

c. Before an enforcement proceeding is instituted, no representation made during the Department review of a claim that noncompliance was caused by an upset is final agency action subject to judicial review.

[62-620.610(23), 11-29-94]

DEPARTMENT OF ENVIRONMENTAL PROTECTION DISCHARGE MONITORING REPORT - PART A

When Completed mail this report to: Department of Environmental Protection, Mail Station 3551, Twin Towers Office Building, 2600 Blair Stone Rd., Tallahassee, Fl 32399-2400

PERMITTEE NAME:	Mr. W. Jeffrey Purdue, CEP, Director of Environmental Services	PERMIT NUMBER:	FLA017408-001-DW3P	PERMIT ISSUE DATE:	
MAILING ADDRESS:	Florida Power Corporation	MONITORING PERIOD From:		To:	
	3201 34th Street South	LIMIT:	Final	REPORT:	Monthly
	St. Petersburg, FL 33711	CLASS SIZE:		GROUP:	Domestic
FACILITY:	Hines Energy Complex WWTP	FACILITY ID:	FLA017408	WAFR SITE NO.:	30110
LOCATION:	7700 County Rd. 555	GMS ID NO.:		GMS TEST SITE NO.:	
	South of Bartow	DISCHARGE POINT NUMBER:	R001		
		PLANT SIZE/TREATMENT TYPE:	IIID		
COUNTY:	Polk				

Parameter		Quantity or Loading		Units	Quality or Concentration			Units	No. Ex.	Frequency of Analysis	Sample Type
CBOD5	Sample Measurement										
STORET No. 80082 Mon.Site No. EFA-01-30109 Y	Permit Measurement				20.0 (An.Avg.)			mg/L		Monthly	Calculated
CBOD5	Sample Measurement										
STORET No. 80082 Mon.Site No. EFA-01-30109 1	Permit Measurement				30.0 (Mo.Avg.)		60.0 (Max.)	mg/L		Monthly	Grab
TSS	Sample Measurement										
STORET No. 00530 Mon.Site No. EFA-01-30109 Y	Permit Measurement				20.0 (An.Avg.)			mg/L		Monthly	Calculated
TSS	Sample Measurement										
STORET No. 00530 Mon.Site No. EFA-01-30109 1	Permit Measurement				30.0 (Mo.Avg.)		60.0 (Max.)	mg/L		Monthly	Grab
pH	Sample Measurement										
STORET No. 00406 Mon.Site No. EFA-01-30109 1	Permit Measurement				6.0 (Min.)	8.5 (Max.)		S.U.		5 Days/Week	Grab

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein; and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

NAME/TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	TELEPHONE NO	DATE (YY/MM/DD)

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here):

DISCHARGE MONITORING REPORT - PART A (Continued)

FACILITY NAME: Hines Energy Complex WWTP PERMIT NUMBER: FLA017408-001-DW3P DISCHARGE POINT NUMBER: R001 WAFR SITE No.: 30110

Parameter		Quantity or Loading		Units	Quality or Concentration			Units	No. Ex.	Frequency of Analysis	Sample Type
Fecal Coliform Bacteria	Sample Measurement										
STORET No. 31615 Mon.Site No. EFA-01-30109 Y	Permit Measurement				200 (An.Avg.)			#/100mL		Monthly	Calculated
Fecal Coliform Bacteria	Sample Measurement										
STORET No. 31615 Mon.Site No. EFA-01-30109 1	Permit Measurement						800 (Max.)	#/100mL		Monthly	Grab
TRC for disinfection	Sample Measurement										
STORET No. 50060 Mon.Site No. EFA-01-30109 1	Permit Measurement				0.5 (Min.)			mg/L		5 Days/Week	Grab
Nitrate (as N)	Sample Measurement										
STORET No. 00620 Mon.Site No. EFA-01-30109 1	Permit Measurement				12.0 (Max.)			mg/L		Monthly	Grab
Flow	Sample Measurement										
STORET No. 50050 Mon.Site No. EFA-01-30109 G	Permit Measurement	0.01 (3-Mo.Avg.)	Report (Mo.Avg.)	mgd				mgd		Continuous	Meter
CBOD5	Sample Measurement										
STORET No. 80082 Mon.Site No. INF-01-30108 G	Permit Measurement				Report Annual			mg/L		Annual	Grab
TSS	Sample Measurement										
STORET No. 00530 Mon.Site No. INF-01-30108 G	Permit Measurement				Report Annual			mg/L		Annual	Grab
	Sample Measurement										
	Permit Measurement										

DAILY SAMPLE RESULTS - PART B

Permit Number: FLA017408-001-DW3P (Hines Energy Complex WWTP)
Month/Year:

Three-month Average Daily Flow:
Daily Flow % of Permitted Capacity:

Days of the Months Parameter/Unit/Monitoring Location Site Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30/31
Flow (mgd), EFA-01-30109																														
pH (std. units), EFA-01-30109																														
TRC (For Disinfection) (mg/L), EFA-01-30109																														
CBOD5 (mg/L), EFA-01-30109																														
TSS (mg/L), EFA-01-30109																														
Fecal Coliform Bacteria (#/100 mL),EFA-01-30109																														
Nitrate (as N) (mg/L), EFA-01-30109																														
CBOD5 (mg/L), INF-01-30108																														
TSS (mg/L) INF-01-30108																														

Plant Staffing:

Day Shift Operator	Class	_____	Certificate No.	_____	Name: _____
Evening Shift Operator	Class	_____	Certificate No.	_____	Name: _____
Night Shift Operator	Class	_____	Certificate No.	_____	Name: _____
Lead Operator	Class	_____	Certificate No.	_____	Name: _____

Type of Effluent Disposal or Reclaimed Water Reuse:_____
Limited Wed Weather Discharge Activated: Yes____ No____ Not Applicable____ If yes, cumulative days of wet weather discharge:_____
*Attach additional sheets necessary to list all certified operators necessary for required operations.

INSTRUCTIONS FOR MONITORING REPORT

PART A - Discharge Monitoring Report

One report shall be completed and submitted for each discharge point, outfall, or testing site listed in the permit. Use additional sheets if necessary. Mail to Department of Environmental Protection at the address shown on the first page of report.

Permittee Name/Address: Complete the name as shown on the face of the permit. Complete the mailing address. Place a note beside the mailing address if the address has changed within the past month.
Facility/Location: Complete the name of the facility and the address or location of the facility.
Permit Number: This is the number of the permit issued to the permittee which contains the monitoring requirements in this report.
Monitoring Period: This is the period that the data on this report represents.
Limit: This is blank if the data represents interim limits on a facility under construction. If the data represents final limits achieved after construction, the word FINAL will be here.
Class Size/Group: The facility classification is either major or minor and the group is either industrial or domestic.
Facility ID: This is the identification number of the facility which was assigned by the Department at the time the facility was constructed.
Discharge Point Number: This is the number in the permit assigned to the outfall, discharge point, or test site from which this data was collected. Complete one of these reports for each outfall or discharge point from your facility.
Plant size/Treatment type: If this facility is a domestic wastewater treatment facility, enter a one digit and one letter code to indicate the type of treatment and the plant size. First record the number from the chart below that represents the type of treatment provided by the facility. Then record the letter that indicates the permitted capacity (plant size) as shown on the chart below.

	Type of Treatment	Plant Size (mgd)			
		A	B	C	D
1	Activated Sludge, Attached Growth, or Combined Treatment systems that include nutrient removal processes (Nitrification alone is not considered nutrient removal.)	≥3.0	≥0.5 but <3.0	≥0.002 but <0.5	...
2	Activated Sludge or Combined Treatment systems that do not include removal processes	≥5.0	≥1.0 but <5.0	≥0.002 but <1.0	...
3	Activated Sludge operated in the extended aeration mode and oxidation ditches	≥8.0	≥2.0 but <8.0	≥0.025 but <2.0	≥0.002 but <0.02
4	Attached Growth Treatment systems (trickling filters or RBCs) that do not include nutrient removal processes	≥10.0	≥3.0 but <10.0	≥0.025 but <3.0	≥0.002 but <0.02

Parameter: This is the variable or substance which must be monitored.
Sample Measurement: The data which was collected and analyzed.
Permit Requirement: The limit from the permit for that parameter and measurement.
Quantity or Loading: The amount or mass of the parameter discharged during the reporting period in **Average** quantity discharged during the reporting period after adding each day of discharge, **Maximum** quantity discharged on the day with the highest amount, and the **Unit** of measurement (lbs, g, tons, etc.)
Quality or Concentration: The concentration of the parameter discharged during the reporting period in **Minimum** concentration during the reporting period, **Average** of all the measurements for the parameter during the reporting period, **Maximum** or highest concentration discharged during the reporting period, and the **Unit** of measurement (mg/L, ug/L, etc.)
No. Ex.: The number of sample measurements during the sampling period that exceeded the maximum (minimum or 7-day average, as appropriate) permit requirement for each parameter. If none, enter zero.
Frequency of Analysis: The number of times the measurement is required to be made by the permit and the number of times the measurement was made.
Sample Type: The type of sample (grab, composite, continuous) required to be taken by the permit and the type that was taken.
Certificate, Signature: This report must be signed in accordance with Rule 62-620.305, F.A.C. Type or print the name and title of the signing official. Include the telephone number where the official may be reached in the event there are questions concerning this report. **Date** when the report is signed.
Comment and Explanation: Use this area to explain any exceedances, any upset or by-pass events, or other items which require explanation.

PART B - DAILY SAMPLE RESULTS

Complete one sheet for each outfall, discharge point, or test site where daily sampling is required by the permit. Record the results of daily monitoring for the parameters required to be sampled daily by your permit. Record the data in the units indicated. If there are no fecal coliforms detected, enter < 1 for MF technique and <2.2 for MPN technique, in the row labeled "fecal coliform." Use the blank rows as needed.

List the name, certificate number, and class of all state certified operators. Use additional sheets as necessary.

Enter the type of effluent disposal or reclaimed water reuse (surface water discharge, ocean outfall, slow rate land application-public access, slow rate land application-restricted public access, rapid rate land application, absorption field, underground injection).

PART B - DAILY SAMPLE RESULTS contd.

Enter the type of effluent disposal or reclaimed water reuse (surface water discharge, ocean outfall, slow rate land application-public access, slow rate land application-restricted public access, rapid rate land application, absorption field, underground injection).

If this plant does not have a limited wet weather discharge permitted under the provision of Rule 62-610.860, F.A.C., check not applicable. If the plant activated the wet weather discharge during the reporting month, check yes and attach PART C - LIMITED WET WEATHER DISCHARGE.

PART C - LIMITED WET WEATHER DISCHARGE

This part is applicable only to limited wet weather discharges from reuse systems describe in Rule 62-610.860, F.A.C. If applicable, this part is to be completed and submitted each month reclaimed water or effluent is discharged by a limited wet weather discharge. For months with no discharge, Part C need not be submitted. All information is to be provided for each day on which the limited wet weather discharge was activated. All information is to be typed or printed in ink.

Facility ID: This is the identification number assigned by the Department for the facility.
Month/Year: This is the period during which the data on this report was collected and analyzed.
Rainfall Information: **Rainfall gauging station** requires entry of the name and location of the station. **Source of Climatological (normal rainfall) data** is the source of the information required for **Cumulative rainfall for the average rainfall year** which is the amount of rain, in inches, which falls during an average rainfall year from January through the month for which this part contains data. **Cumulative rainfall to date for this calendar year** is the total amount of rain, in inches, that has been recorded since January 1 of the current year through the month for which this Part contains data.
Date: Enter the date on which the discharge occurred.
Duration of Discharge: Enter the number of hours, to the nearest 0.1 of an hour (0.1 = 6 min.) during each day of discharge that reclaimed water was actually discharged to surface waters.
Gallons Discharged: Enter the quantity in millions of gallons of reclaimed water discharged during the period shown in **Duration of Discharge**. Show the units as millions of gallons (mg), accurate to the nearest 0.01.
Average Discharge Flow Rate: Divide **Gallons Discharged** by **Duration of Discharge.** Record in million gallons per day (MGD).
Average Upstream Flow Rate: Enter the average flow rate in the receiving stream upstream from the point of discharge for the period shown in **Duration of Discharge**. The average flow rate can be calculated based on two measurements; one made at the start and one made at the end of the discharge period. Measurements are to be made at the upstream gauging station described in the permit.
Stream Dilution Factor: Enter the stream dilution ratio accurate to the nearest 0.1. To calculate the factor, divide the **Average Upstream Flow Rate** by the **Average Discharge Flow Rate.**
$CBOD_5$: Enter the average $CBOD_5$ of the reclaimed water discharged during the period shown in **Duration of Discharge.**
TKN: Enter the average TKN of the reclaimed water discharged during the period shown in **Duration of Discharge.**
Reason for Discharge: Provide a brief explanation of the factors contributing to the need to activate the limited wet weather discharge.

PART D - GROUNDWATER MONITORING REPORT

This part is applicable only to groundwater monitoring wells. Type or print in ink the required data. All samples shall be collected and analyzed in accordance with Chapter 62-160, F.A.C. Laboratory reports shall be kept on file in the location indicated in your permit and made available for inspection upon request by the Department.

Facility ID: This is the identification number of the facility assigned by the Department.
Test Site ID: This is the identification number of the sampling site listed in your permit.
Month/Year: This is the period during which the data on this report was collected and analyzed. If the period is greater than one month, indicate beginning month to ending month.
Well Type: Indicate if the well being sampled is background, intermediate, compliance, or other. If other, explain in the comment section.
Date Sample Obtained: This is the date the sample was taken.
Ground Water Class: This is the classification of the ground water under Chapter 62-522, F.A.C.
Parameter: Analyze the parameters the permit requires. List any additional parameters from the permit which are not pre-listed here. If there are any parameters listed here which are not required by your permit, enter NR on that line.
Storet Code: Enter the Storet Code associated with the parameter.
Sampling Method: Describe the sampling method used.
Samples Filtered: Indicate whether the sample obtained was filtered (Y) or unfiltered (N).
Preservatives Added: State what preservatives were added to the sample.
Analysis Method: Indicate the analytical method used. Record the number from Chapter 62-160 or Chapter 62-601, F.A.C., or from other sources.
Analysis Result/Units: Record the results of the analysis. If the result was below the minimum detection limit, indicate that. Enter the units associated with the results of the analysis.
Detection Limits/Units: Record the detection limits and the units associated with them.
Comments and Explanations: Use this space to make any comments on or explanations of results which are unexpected.

SIGNATORY AUTHORITY

I,_____, a person defined by Rule 62-620.305(1),
(Print Name of Principal Executive Officer)

Florida Administrative Code, responsible for the facility known as_____
(Facility Name)

do hereby grant_____, the authority
(Print Name and/or Title of Representative)

to sign the Discharge Monitoring Reports and other operational reports in accordance to the certification

written below:

" I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. "
[Rule 62-620.305(4), Florida Administrative Code]

_____ _____
(Signature of Principal Executive Officer) (Date)

_____ _____
(Signature of Representative) (Date)

History: New 11-29-94.

62-620.305 Signatories to Permit Applications and Reports.

(1) All permit applications under this chapter shall be signed as follows:

(a) For a corporation, a responsible corporate officer shall sign all applications for permit. A responsible corporate officer is considered to be

1. A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation; or

2. The manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(b) For a partnership or sole proprietorship, a general partner or the proprietor, respectively, shall sign all applications for permit.

(c) For public agencies, a principal executive officer or ranking elected official shall sign all permit applications. A principal executive officer includes the chief executive officer of the agency or a senior executive officer having the responsibility for the overall operations of a principal geographic unit of the agency, for example, a regional or district administrator, a director of public works, or city or county manager.

(2) All reports required by permits and other information requested by the Department under this chapter shall be signed by a person described in subsection (1) of this section or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(a) The authorization is made in writing by a person described in subsection (1) of this section;

(b) The authorization specifies either an individual or a position having overall responsibility for the operation of the regulated facility or activity, such as the position of plant manager, superintendent, certified chief operator, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company; and

(c) The written authorization is submitted to the Department.

(3) If an authorization under subsection (2) of this section is no longer valid because a different individual or position has overall responsibility for the operation of the facility or activity, a new authorization satisfying the requirements of subsection (2) of this section must be submitted to the Department prior to or together with any reports, information, or applications to be signed by an authorized representative.

(4) Any person signing a document under subsection (1) or (2) of this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Specific Authority: 403.061, 403.087, 403.088, 403.0885, 403.08851, 403.8055, F.S.

Law Implemented: 403.061, 403.087, 403.088, 403.0885, F.S.

History: New 11-29-94.

SIGNATORY AUTHORITY

I,_____, a person defined by Rule 62-620.305(1),
(Print Name of Principal Executive Officer)

Florida Administrative Code, responsible for the facility known as_____
(Facility Name)

do hereby grant_____, the authority
(Print Name and/or Title of Representative)

to sign the Discharge Monitoring Reports and other operational reports in accordance to the certification written below:

" I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. "
[Rule 62-620.305(4), Florida Administrative Code]

_____ _____
(Signature of Principal Executive Officer) (Date)

_____ _____
(Signature of Representative) (Date)

Department of
Environmental Protection

Lawton Chiles
Governor

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

Virginia B. Wetherell
Secretary

RECEIVED
JUN 29 1998
Environmental Svcs
Department

June 22, 1998

Mr. Jeffrey Purdue, C.E.P.
Director of Environmental Services
Florida Power Corporation
P.O. Box 14042
St. Petersburg, FL 33733

Re: Hines Energy Complex WWTP
FLA017408

Dear Mr. Purdue:

This office has reviewed the request dated May 01,1998, submitted by Randy Melton with Florida Power Corporation.

We understand the request is to connect the four (4) inch drain from the existing construction trailer complex to the wastewater treatment plant at the facility. It is also our understanding the connection will generate approximately 1,000 gallons a day of domestic flow and will be for a temporary period of time.

It is our decision to ***not require*** a permit for this connection into the existing wastewater treatment facility. The connection can be made according to the Company's time schedule.

If you have any questions concerning this letter, please contact me at (941)534-1448.

Sincerely,

Stephen G. Thompson
Permitting Engineer

cc: B. Randall Melton, FPC
Lorri Floyd, FDEP
N. Clyde Hill, FDEP

Department of Environmental Protection

JUN 01 1998

Environmental Svcs Department

Lawton Chiles
Governor

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

Virginia B. Wetherell
Secretary

May 26, 1998

Mr. Jeffrey Purdue, C.E.P.
Director of Environmental Services
Florida Power Corporation
3201 34th Street South
Tampa, FL 33711

Polk County-DW
Facility ID No.: FLA017408-001-DW3P

Modification of Permit
Hines Energy Complex WWTP

Dear Mr. Purdue:

The Department is in receipt of your request to modify the referenced domestic wastewater treatment facility, and to revise the permit conditions of the above referenced permit FLA017408, expiring on 1/22/2003. The following conditions are hereby changed:

Condition	From	To
Condition I.A.1. (Fecal Coliform)	Daily	Monthly*

* A new page 2, Condition I.A.1. is enclosed to reflect this monitoring frequency change.

This permit revision, **FLA017408-002-DW3R**, authorizing the above changes must be attached to your original permit and, together with any other preceding modification(s), becomes a part of that permit.

Sincerely,

Michael Hickey, P.E.
Water Facilities Administrator
Southwest District

c: N. Clyde Hill, FDEP
Steve Thompson, FDEP

I. RECLAIMED WATER AND EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Reuse and Land Application Systems

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to direct reclaimed water to Reuse System(s) R001. Such reclaimed water shall be limited and monitored by the permittee as specified below:

			Reclaimed Water Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Carbonaceous Biochemical Oxygen Demand (5 day)	mg/L	Maximum	20.0	30.0	-	60.0	Monthly	Grab	EFA-01-30109	
Total Suspended Solids	mg/L	Maximum	20.0	30.0	-	60.0	Monthly	Grab	EFA-01-30109	
pH	std. units	Range	-	-	-	6.0 to 8.5	5 Days/Week	Grab	EFA-01-30109	
Fecal Coliform Bacteria	See Permit Condition I.A.3.						Monthly	Grab	EFA-01-30109	
Total Residual Chlorine (For Disinfection)	mg/L	Minimum	-	-	-	0.5	5 Days/Week	Grab	EFA-01-30109	See Cond.I.A.4.
Nitrate (as N)	mg/L	Maximum	-	-	-	12.0	Monthly	Grab	EFA-01-30109	

10.4.9 Potable Water Permit PWIS# 6535433

This sections contains the Potable Water Permit for the construction and operation of the potable water system at the Hines Energy Complex. The permit was issued December 1997.

Department of Environmental Protection

Lawton Chiles
Governor

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

Virginia B. Wetherell
Secretary

Acknowledgment of Compliance with the
Conditions of Certification PA 92-33

PERMITTEE
Florida Power Corporation
Post Office Box 14042
St. Petersburg, FL 33733

Attn: W. Jeffrey Pardue, C.E.P
Director, Environmental Services

Permit/Certification
ID. Number: To be assigned
Date of Issue: 12/15/97
Expiration Date: 12/15/99
County: Polk
Lat/Long: 27°47'15N"/ 81°52'21W"
Sect/Town/Rge: 13/31S/24E
Project: Hines Energy Complex
Potable Water Treatment System

This document is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule(s) 62-555. Florida Power Corporation is hereby authorized to perform the construction of the proposed water treatment system detailed in the application submitted on September 02, 1997 and supported drawing(s), plans, and other documents, retained on file with department and made a part hereof and specifically described as follows:

Construction of a non-transient, non-community water supply system to serve the Hines Energy Complex. The construction is to be in accordance with engineering drawings and related documents prepared by Black & Veatch and is to include the following:

One 4-inches diameter, 300 feet deep wells equipped with a 50 GPM submersible pump;

One 5,000 gallons carbon steel hydropneumatic tank;

One Stenner, 17 gpd hypo-chlorinator;

Galvanized above ground yard piping;

Distribution lines of 2"and 3" to serve three buildings.

The plant permitted capacity is 0.005 MGD, based on the projected maximum day water demand as specified on Section VIA. No. 17 of the permit application.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations and restrictions set forth in this permit, are "permit conditions" and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in this permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, are required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees

to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times, access to the premises where the permitted activity is located or conducted to:

(a) Have access to and copy any records that must be kept under conditions of the permit;

(b) Inspect the facility, equipment, practices, or operations regulated or required under this permit; and

(c) Sample or monitor any substances or parameters at any location reasonable necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

a. A description of and cause of noncompliance; and

b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Section 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules. A reasonable time for compliance with a new or amended surface water quality standard, other than those standards addressed in Rule 17-302.500, shall include a reasonable time to obtain or be denied a mixing zone for the new or amended standard.

11. This permit is transferable only upon Department approval in accordance with Rule 17-4.120 and 17-730.300 F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500).

14. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

1. the date, exact place, and time of sampling or measurements;

2. the person responsible for performing the sampling or measurements;

3. the dates analyses were performed;

4. the person responsible for performing the analyses;

5. the analytical techniques or methods used; and

6. the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware the relevant facts were not submitted or

were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

PERMITTEE
W. Jeffrey Pardue, CEP
Hines Energy Complex
Potable Water Treatment System

Florida Power Corporation is authorized to operate the approved water treatment system in accordance with the conditions specified in the Conditions of Certification Section XVI Part C.

A. Clearance Requirements

1. Pursuant to Conditions of Certification (PA 92-33) Section XVI Part C. (3) a letter of clearance may be issued once the following items have been submitted:

a. Complete and fully executed form "Request for a Letter of Release to Place Water Supply System into Service", DEP Form 62-555.910(9);

b. Copy of a bacteriological survey of the well conducted once a day for at least twenty consecutive work days and in accordance with the procedure set forth in F.A.C. Rule 62-555.315;

c. Copies of satisfactory bacteriological analyses of water taken on two consecutive days from the hydropneumatic tank and at least two representative locations along the proposed distribution system (minimum chlorine residual readings of 0.2 mg/l must be recorded for each water sample or the analysis will not be acceptable for use in clearance of the system) or in accordance with American Water Works Association (AWWA) Standard C651-92 as follows;

Connection point to the existing system and at the endpoint of the proposed addition;

Any water lines branching off a main extension; and

Every 1200 feet on straight run of pipe;

d. Copy of a satisfactory pressure test of the distribution system performed in accordance with AWWA standards;

e. List of all chemicals to be used in the treatment of the water which contains the brand name of the chemical, manufacturer's name and address, location of plant producing the chemical, maximum usage in mg/l, and documentation that each chemical has been certified to be in conformance with ANSI/NSF Standard 60;

f. For all community systems, non-transient non-community systems, and non-community systems with food services, provide a copy of the certified (DBPR/DEP) water treatment plant operator contract. This contract should covers operation and compliance monitoring services and should include the name, phone number and certification number of the person responsible for the services.

B. Monitoring

1. As per Conditions of Certification Section XVI Part C (9) the compliance monitoring will be as follows:

a. The drinking water must be analyzed for primary and secondary contaminants listed in F.A.C. Rules 62-550.310 and .320 to the degree and frequency required pursuant to F.A.C. Rule 62-550.

b. The drinking water must be analyzed for coliform bacteria every monthly. At least one representative raw sample and distribution samples in numbers proportionate to the population served as outlined in F.A.C. Rule 62-550.518 must be collected.

c. The drinking water must be analyzed for the Group I and Group II Unregulated Organic Contaminants to the degree and frequency required pursuant to F.A.C. Rule 62-550.

d. All water quality analyses must be performed by a laboratory certified by the Department of Health and Rehabilitative Services and the results must be reported in the format approved by the Department.

2. All documents submitted pursuant to the conditions of the certification shall be accompanied by a cover letter stating the name and date of the document submitted, the file number and project name of the permit involved, and the number(s) of the specific condition(s) affected. All submittals shall be signed by the permittee or the permittee's authorized representative whose name is on file with the Department and shall be forwarded to the Southwest District Office, Drinking Water Compliance/Enforcement Section, Department of Environmental Protection, 3804 Coconut Palm Drive, Tampa, Florida 33619-8218.

C. General

1. On-site sewage disposal systems must not be located within 200 feet of the potable water supply well(s) pursuant to the requirements of F.A.C. Rule 62-555.312.

2. Other sanitary hazards as defined in Rule 62-550.200, F.A.C., must not be located within 100 feet of the potable water supply well.

3. The supplier of water must maintain a minimum free chlorine residual of .2 mg/l or

its equivalent throughout the distribution system at all times.

4. The supplier of water must maintain a minimum pressure of 20 psi throughout the distribution system.

5. The permittee must insure that only chemicals which have been certified to be in conformance with ANSI/NSF Standard 60 are used in the treatment of the water.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Michael S. Hickey, P.E.
Power Plant Siting Coordinator
Southwest District

cc: Hamilton Oven, P.E.

10.4.10 Division of Historical Resources Letter Regarding Archaeological and Historic Sites

This section contains a copy of the letter from the Florida Department of State which verifies that no significant archaeological or historical sites are recorded within the Hines Energy Complex site area.

FLORIDA DEPARTMENT OF STATE
Jim Smith
Secretary of State
DIVISION OF HISTORICAL RESOURCES
R.A. Gray Building
500 South Bronough
Tallahassee, Florida 32399-0250
Director's Office (904) 488-1480
Telecopier Number (FAX) (904) 488-3353

FEB 8 1992

January 30, 1992

Ms. Maryellen Tuttell
Moore/Bowers
3300 Henderson Boulevard, Suite 201
Tampa, Florida 33609

In Reply Refer To:
Denise M. Breit
Historic Sites
Specialist
(904) 487-2333
Project File No. 920200

RE: Cultural Resource Assessment Request
Florida Power Corporation Proposed Power Plant
Polk County, Florida

Dear Ms. Tuttell:

In accordance with Section 403.918 (2)(a)6, Florida Statutes, and implementing state regulations, we have reviewed the above referenced project(s) for possible impact to archaeological and historical sites or properties listed, or eligible for listing, in the National Register of Historic Places.

A review of the Florida Master Site File indicates that no significant archaeological or historical sites are recorded for or considered likely to be present within the project area. Furthermore, it is the opinion of this agency that because of the project location and/or nature it is considered unlikely that any such sites will be affected. Therefore, it is the opinion of this office that the proposed project will have no effect on any sites listed, or eligible for listing in the National Register of Historic Places. The project may proceed without further involvement with this agency.

If you have any questions concerning our comments, please do not hesitate to contact us. Your interest in protecting Florida's archaeological and historic resources is appreciated.

Sincerely,

Suzanne P. Walker
for George W. Percy, Director
Division of Historical Resources
and
State Historic Preservation Officer

GWP/Bdb

Archaeological Research

10.5 MONITORING PROGRAMS

10.5.1 Traffic Analysis

This sections contains the traffic analyses which were conducted by Kimley-Horn in 1992 and submitted with the 1992 SCA.

10.5.1.1 Transportation Conditions

This section contains a summary of the traffic conditions in the vicinity of the Hines Energy Complex site in 1992.

TRANSPORTATION

EXISTING TRAFFIC CONDITIONS. Existing traffic conditions in the vicinity of the project have been quantified. Roadway and intersection volumes have been obtained along with the geometric configurations to determine the existing levels of service (LOS) in the study area for the morning and afternoon peak hours.

STUDY AREA. Roadways and intersections on which project traffic is expected to have a significant impact were included in the area of study. Since construction and operations traffic have significantly different traffic generation characteristics, two study areas have been defined. The study area for each analysis was based on the project traffic assigned to the roadways.

The study area was determined to be roadways on which the construction or operation traffic contributes 5 percent or more of the LOS C volume. In accordance with Polk County guidelines, the determination of project impact is based on peak-hour peak-direction volumes.

LEVELS OF SERVICE. The concept of LOS is defined as a qualitative measure describing operational conditions within a traffic stream, and the perception of those conditions by motorists and passengers (TRB, 1985). A LOS definition generally describes these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety.

Six levels of service are defined. They are given letter designations, from A to F, with LOS A representing the best operating conditions and LOS F representing the worst. The operational conditions for these six designations can be conceptually described as follows (TRB, 1985):

LOS A - Motorists are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist and passenger is excellent.

LOS B - Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS A. The level of comfort and convenience provided is somewhat less than at LOS A, because the presence of others in the traffic stream begins to affect individual motorist behavior.

LOS C - The operation of individual motorists becomes significantly affected by interactions with others in the traffic stream. The selection of speed is affected by the presence of others, and maneuvering within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines noticeably at this level.

LOS D - Speed and freedom to maneuver are severely restricted, and the motorist experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.

LOS E - All speeds are reduced to a low, but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult, and it is generally accomplished by forcing a vehicle to "give way" to accommodate such maneuvers. Comfort and convenience levels are extremely poor.

LOS F - Operational conditions are forced or have broken down. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations. Operations within the queue are characterized by stop-and-go waves. Vehicles may progress at reasonable speeds for several hundred feet or more, then be required to stop in a cyclic fashion.

These definitions are general and conceptual in nature, and they apply primarily to uninterrupted flow. Levels of service for other facilities, such as intersections, vary widely in terms of both the user's perception of service quality and the operational variables used to describe them.

Roadways in the study area all have an adopted LOS standard, from the Florida Department of Transportation (FDOT) and/or Polk County, indicating the lowest acceptable LOS for that roadway. These standards are adopted by local governments as part of their comprehensive plans and are enforced in the development review process. The adopted LOS standards for roadways in the study area are shown in Table 2.2.7-2.

The following existing conditions analysis includes the roadways and intersections from the construction traffic impact area since it is the larger of the two study areas.

ROADWAY CONFIGURATION. Roadways in the project area were evaluated to determine their existing lane configuration and LOS volumes. Polk County and FDOT have different LOS volumes adopted for the state roads within the study area. FDOT has recently adopted the 1992 Florida's Level of Service Standards and Guidelines Manual for Planning. As a part of the Comprehensive Plan, Polk County has adopted LOS volumes which are based on the 1989 Florida's Level of Service Standards and Guidelines Manual for Planning. Since Polk County cannot accept the new FDOT volumes until a plan amendment accepting the new manual has been adopted, two capacity analyses have been performed for each roadway.

Roadways were divided into segments for analysis purposes. The segments were defined with major intersections or changes in roadway geometry at each end. Table 2.2.7-2 summarizes the existing roadway configuration, area type, and government agency responsible for maintenance for each segment. Table 2.2.7-3 provides the LOS volumes used by Polk County in determining existing conditions for each road. A similar table provides the FDOT LOS volumes (Table 2.2.7-4). The LOS volumes are provided for peak hour/peak direction assessment as required by Polk County and FDOT.

ROADWAY VOLUMES. Existing volumes were obtained for the roads in the vicinity of the power plant site. Volumes were obtained from FDOT and Polk County in locations where they were available. Additional traffic counts were conducted as necessary, the results of which are provided in Appendix 10.8.1.

Daily volumes were available on several area roads. Table 2.2.7-5 shows the daily volumes on area roads, as well as the date of the count. Figure 2.2.7-20 illustrates the daily volumes on area roads.

For the determination of LOS, actual a.m. and p.m. peak hour volumes were obtained for roadway links that are in the study network by conducting turning movement volume counts at the study intersections. Volumes were converted to a peak season basis using weekly adjustment factors provided by FDOT for Polk County. For some of the roads outside of the study area, peak hour volumes were determined using generalized K and D factors. K and D factors are used to quantitatively relate peak hour and peak direction volumes to daily volumes on a roadway segment. The K factor, also called a Design Hour factor, is the ratio of the two-way design hour volume to the average annual daily traffic. The D, or Directional, factor is a measure of the peak direction of traffic relative to the total volume of peak hour traffic. The roads for which volumes were determined using generalized K and D factors were listed for reporting purposes. The existing peak season roadway conditions are listed in Table 2.2.7-6. Figures 2.2.7-21 and 2.2.7-22 illustrate the a.m. and p.m. peak hour volumes.

SR 37 from CR 630 to the beginning of the 4-lane section at Cameron Street was found to be operating at a LOS D using both the FDOT and Polk County generalized LOS tables. The adopted LOS for this roadway segment is C. For future conditions, a more detailed analysis was performed as described in Section 4.6.1.4.

No other capacity deficiencies were found to exist on area roads. A deficiency unrelated to capacity exists on CR 555. The section of CR 555 between CR 640 and Agricola Road is

currently in extremely poor condition. The pavement is severely damaged and prone to flooding.

PROGRAMMED IMPROVEMENTS. FDOT has scheduled work projects which will improve the existing conditions of some roads in the study area. Using federal aid, FDOT has a project funded to widen and resurface the section of CR 555 which is in poor condition. The project is funded in fiscal year 1991-1992 under Work Program Improvement (WPI) No. 1127904.

FDOT is also currently funding a Project Development and Environmental study for SR 60A (Van Fleet Drive) from CR 555 to the Peace River (WPI No. 1118291). The project is to identify a long term solution to expected future capacity deficiencies on SR 60A and U.S. 98 in the Bartow area. The study is evaluating not only improvements to existing roads, but also the construction of new roads which would alter travel patterns through critical areas. While an alternative has not yet been selected for implementation, it is expected that the improvement will be in place prior to the construction traffic peak examined in Section 4.6.1.

INTERSECTION VOLUMES. Volumes were obtained for the eleven intersections that are in the study area for the power plant. Volumes at the five intersections in Bartow were obtained from FDOT. Volumes at the remaining intersections were collected by FPC's consultants in the latter half of 1991.

Using hourly volumes from 24-hour machine counters, it was found that the peak hour of the day occurs between 6:00 and 8:00 a.m., depending on the facility. The highest afternoon hours were found to occur between the 3:00 to 4:30 p.m. time period.

The early peak hours, with the highest hour occurring in the morning, is a result of the industrial related traffic. Data were collected between 6:00 and 8:00 a.m., and between 3:00 and 4:30 p.m. The counts were conducted in December 1991 and July 1991. Turning movement volumes are included in Appendix 10.8.1.

Existing traffic volumes were increased to peak season levels using the FDOT weekly adjustment factors for Polk County. Peak season intersection volumes are shown in

Appendix 10.8.2. For this analysis, the highest hour during the a.m and p.m. periods was used.

The study intersections were analyzed to determine the existing LOS. Unsignalized intersections were evaluated to determine if the installation of a traffic signal is warranted. None of the five unsignalized intersections was found to meet traffic signal volume warrants at this time.

All of the study intersections were analyzed using the Transportation Research Board's 1985 Highway Capacity Manual (HCM) signalized intersection methodology. Use of this methodology does not indicate the need for signalization nor is its use predicated upon the installation of a traffic signal. Rather its use at both signalized and unsignalized intersections is intended to derive an overall intersection LOS indication for each.

The results of the intersection analysis are shown in Table 2.2.7-7 and graphically on Figures 2.2.7-23 and 2.2.7-24. All of the intersections are currently operating at an acceptable LOS.

RAIL TRANSPORTATION. Rail transportation in Polk County is provided by CSX Transportation, Inc., and Florida Midland Railroad. The active rail lines on Florida Midland Railroad consist of a north-south route serving locally between Frostproof and Lake Wales, an east-west route serving locally through Lake Wales, and a northeast-southwest route connecting the Bartow Airbase to the CSX route SX-810. Since the remaining active rail lines on Florida Midland Railroad are local lines and are irrelevant to the FPC power plant site, the existing condition study for rail transportation in Polk County was focused on CSX transportation routes.

There are several north-south CSX rail routes currently serving Polk County, with an east-west route (A-301) connecting all the north-south routes (Figure 2.2.7-25). Route A-301 enters Polk County from the northeast at the County line adjacent to Osceola County, runs westward mostly along US 92/17 through Haines City, Lake Alfred, East Lakeland Carters Corner, and Lakeland. It then leaves Polk County and enters Hillsborough County. This

key east-west rail route also serves the Tampa area and connects with rail routes through the northern area of Florida. In addition to route A-301, east-west route SV-820 runs from Bartow westward through Mulberry to the Polk/Hillsborough County line and route SV-822/SV-825 runs from Fort Meade north-westerly through Bradley Junction, Agricola, Brewster, and Pinedale/Pierce, and then leaves Polk County at the vicinity of route SV-820.

The north-south CSX rail routes in Polk County include routes AY-306, SV-822, AR-370, AX-330, and SX-810. Route AY-306 starts from route A-301 in West Lakeland and runs southward through Mulberry and Green Bay and terminates at the FPC Polk County Site. Route SV-822 enters Polk County from Hardee County, runs northerly through Baird Station, west of Bradley Junction, Agricola/Brewster, and turns northwesterly towards Hillsborough County. Route SVH-823 connects route A-306 and route SV-822 to form a complete north-south rail route from Lakeland to the Polk/Hardee County line. Another CSX north-south rail route that runs between Lakeland and the Polk/Hardee County line is route AX-330. Route AX-330 runs along U.S. 17 from route A-301 through Lakeland, Highland City, Bartow, and Fort Meade. The portion of route AX-330 between Bartow and CR 640 is partially abandoned. The continuity of route AX-330 is maintained by the connections with route SVE-824 which runs just east of U.S. 17. Route AR-370 runs northwesterly from route A-301 to the Polk/Pasco County line, northwesterly through North Lakeland and Kathleen. Route SX-810 is the north-south rail route that runs through central Polk County between route A-301 and the Polk/Highlands County line. This rail route starts from A-301 in Auburndale, runs through Winter Haven, Eagle Lake, west of Lake Wales and Highland Park, west of Frostproof, and leaves Polk County just east of U.S. 27/98. At Eagle Lake, a local Florida Midland Railroad connects with CSX route SX-810 and runs southwesterly to Bartow Airbase.

In addition to the main east-west and north-south CSX rail routes, a few local spur lines also serve the Polk County area.

The most probable rail route for transporting coal overland to the FPC Polk County Site includes route A-301 and route AY-306. The existing conditions on the probable rail route such as number of crossings, number of trains per day, traffic volumes on crossing

highways, and the maximum train travel speed limits were identified by using the FDOT Railroad Crossing Locator maps and the Rail-Highway Crossing Inventory. The resulting information is summarized in Table 2.2.7-8. As shown in Table 2.2.7-8, the total number of rail crossings on the probable rail route in Polk County is 86, including 14 private crossings. The number of trains per day ranges mostly from 11 to 24 with some crossings having less train traffic. One private crossing has 45 trains per day.

The maximum train speed falls mostly between 40 mph and 79 mph. Most of the highway crossings carry less than 5,000 vehicles per day (vpd) and the highest volume, 21,800 vpd, occurred at the crossing of U.S. 98 and CSX route A-301 in Lakeland.

TABLE 2.2.7-2
EXISTING ROADWAY CONFIGURATION

Roadway Segment	No. of Lanes	Type	Agency	Polk LOS Standard[1]	FDOT LOS Standard[2]
State Road 60:					
County Road 676 to State Road 37	4 Divided	Urban	FDOT	D	D
State Road 37 to County Road 555	4 Divided	Rural	FDOT	C	B
County Road 555 to State Road 60A	4 Divided	Urban	FDOT	D	C
State Road 60A:					
State Road 60 to U.S. 98	4 Divided	Urban	FDOT	D	C
U.S. 98 to Wilson Avenue	4 Divided	Urban	FDOT	D	C
Wilson Avenue to Van Fleet Drive	4 Divided	Urban	FDOT	D	C
County Road 640:					
Hillsborough County to State Road 37	2 Undivided	Rural	Polk	D	N/A
State Road 37 to County Road 555	2 Undivided	Rural	Polk	D	N/A
County Road 555 to U.S. 17/98	2 Undivided	Rural	Polk	D	N/A
U.S. 17/98 to Pool Branch Road	2 Undivided	Rural	Polk	D	N/A
County Road 630:					
State Road 37 to County Road 555	2 Undivided	Rural	Polk	D	N/A
County Road 555 to U.S. 17/98	2 Undivided	Rural	Polk	D	N/A

Note: N/A = Not Applicable

(1) Polk County Comprehensive Plan adopted 1989 FDOT standards.

(2) FDOT, 1992. Florida's Level of Service Standards and Guidelines for Planning, 1992.

Source: Kimley-Horn, 1992

TABLE 2.2.7-3
POLK COUNTY LEVEL OF SERVICE VOLUMES
PEAK HOUR/PEAK DIRECTION

Roadway Segment	A	B	C	D	E
SR 37:					
Carter Rd to SR 60	1,620	1,730	1,790	1,890	1,990
SR 60 to Cameron St	1,080	1,610	1,680	1,760	1,850
Cameron St to CR 640	170	330	540	870	1,400
CR 640 to CR 630	170	330	540	870	1,400
CR 630 to CR 674	170	330	540	870	1,400
CR 555:					
SR 60 to CR 640	170	330	540	870	1,400
CR 640 to Plant Entrance	170	330	540	870	1,400
Plant Entrance to CR 630	170	330	540	870	1,400
U.S. 98:					
CR 540A to Manor Dr	1,620	1,730	1,790	1,890	1,990
Manor Dr to SR 60A	--	--	1,660	2,510	2,720
U.S. 17:					
CR 630 to S. 9th St	--	--	1,090	1,640	1,800
S. 9th St to Sand Mountain Rd	1,160	1,690	2,280	2,810	3,520

TABLE 2.2.7-3
POLK COUNTY LEVEL OF SERVICE VOLUMES
PEAK HOUR/PEAK DIRECTION

Roadway Segment	A	B	C	D	E
U.S. 17/98:					
SR 60 to CR 640	1,160	1,690	2,280	2,810	3,520
CR 640 to CR 630	1,160	1,690	2,280	2,810	3,520
SR 60:					
CR 676 to SR 37	1,160	1,690	2,280	2,810	3,520
SR 37 to CR 555	1,160	1,690	2,280	2,810	3,520
CR 555 to SR 60A	1,160	1,690	2,280	2,810	3,520
SR 60A:					
SR 60 to U.S. 98*	1,080	1,610	1,680	1,760	1,850
U.S. 98 to Wilson Ave	1,080	1,610	1,680	1,760	1,850
Wilson Ave to Van Fleet Dr	1,080	1,610	1,680	1,760	1,850
CR 640:					
Hillsborough County to SR 37	170	330	540	870	1,400
SR 37 to CR 555	170	330	540	870	1,400
CR 555 to U.S. 17/98	170	330	540	870	1,400
U.S. 17/98 to Pool Branch Rd	170	330	540	870	1,400
CR 630:					
SR 37 to CR 555	170	330	540	870	1,400
CR 555 to U.S. 17/98	170	330	540	870	1,400

Note: *Based on 4 Lane Service Volume
Source: Kimley-Horn, 1992; Polk County

TABLE 2.2.7-4
FDOT LEVEL OF SERVICE VOLUMES
PEAK HOUR/PEAK DIRECTION

Roadway Segment	A	B	C	D	E
SR 37:					
Carter Rd to SR 60	–	1,340	1,650	1,770	1,770
SR 60 to Cameron St	–	1,340	1,650	1,770	1,770
Cameron St to CR 640	140	280	460	740	1,190
CR 640 to CR 630	140	280	460	740	1,190
CR 630 to CR 674	140	280	460	740	1,190
U.S. 98:					
CR 540A to Manor Dr	1,110	1,660	2,190	2,680	3,080
Manor Dr to SR 60A	–	1,920	2,330	2,510	2,510
U.S. 17:					
CR 630 to S. 9th St	–	1,250	1,540	1,660	1,670
S. 9th St to Sand Mountain Rd	1,110	1,660	2,190	2,680	3,080
U.S. 17/98:					
SR 60 to CR 640	1,110	1,660	2,190	2,680	3,080
CR 640 to CR 630	1,110	1,660	2,190	2,680	3,080
SR 60:					
CR 676 to SR 37	570	1,450	1,900	2,210	2,600
SR 37 to CR 555	1,110	1,660	2,190	2,680	3,080
CR 555 to SR 60A	–	1,250	1,540	1,660	1,670
SR 60A:					
SR 60 to U.S. 98	–	1,250	1,540	1,660	1,670
U.S. 98 to Wilson Ave	–	1,250	1,540	1,660	1,670
Wilson Ave to Van Fleet Dr	–	1,250	1,540	1,660	1,670

Source: Kimley-Horn, 1992; FDOT, 1992.

TABLE 2.2.7-5
DAILY ROADWAY VOLUMES

Roadway Segment*	Daily Volume	Date of Count	Source
SR 37:			
Carter Rd to SR 60	14,404	2-21-90	FDOT
SR 60 to Cameron St	12,027	2-21-90	FDOT
Cameron St to CR 640	7,963	2-21-90	FDOT
CR 640 to CR 630	3,620	5-3-89	FDOT
CR 630 to CR 674	3,907	3-29-89	FDOT
CR 555:			
SR 60 to CR 640	4,400	1991 AADT	FDOT
CR 640 to Plant Entrance	1,667	7/91	KHA
Plant Entrance to CR 630	1,666	7/91	KHA
U.S. 98:			
CR 540A to Manor Dr	28,400	1991 AADT	FDOT
Manor Dr to SR 60A	27,400	1991 AADT	FDOT
U.S. 17:			
CR 630 to S.E. 9th Street	8,950	4-10-89	FDOT
U.S. 17/98:			
SR 60 to CR 640	9,174	4-10-89	FDOT
CR 640 to CR 630	13,770	2-21-90	FDOT
State Road 60:			
CR 676 to SR 37	21,422	2-21-90	FDOT
SR 37 to CR 555	18,000	1991 AADT	FDOT
CR 555 to SR 60A	19,800	1991 AADT	FDOT
SR 60A:			
SR 60 to U.S. 98	14,600	1991 AADT	FDOT
U.S. 98 to Wilson Ave	24,100	1991 AADT	FDOT
CR 640:			
Hillsborough County to SR 37	N/A	N/A	N/A
SR 37 to CR 555	3,737	1989	PC
CR 555 to U.S. 17/98	2,448	1989	PC
U.S. 17/98 to Pool Branch Rd	N/A	N/A	N/A
CR 630:			
SR 37 to CR 555	2,455	1989	PC
CR 555 to U.S. 17/98	N/A	N/A	N/A

* See Figure 2.2.7-20 for locations

Sources: N/A = Not Available
AADT = Average Annual Daily Traffic
FDOT = Florida Department of Transportation
KHA = Kimley-Horn & Associates
PC = Polk County Engineering Department

TABLE 2.2.7-6
EXISTING PEAK SEASON ROADWAY CONDITIONS

Roadway Segment[1]	A.M. Peak Hour				P.M. Peak Hour			
	Northbound/ Eastbound	Southbound/ Westbound	Polk LOS	FDOT LOS	Northbound/ Eastbound	Southbound/ Westbound	Polk LOS	FDOT LOS
SR 37:								
Carter Rd to SR 60	491	934	A	B	1,255	661	A	B
SR 60 to Cameron St	360	592	A	B	973	354	A	B
Cameron St to CR 640	201	661	D	D	572	192	D	D
CR 640 to CR 630	546	163	D	D	458	142	C	C
CR 630 to CR 674[2]	214	168	B	B	168	214	B	B
CR 555:								
SR 60 to CR 640	140	309	B	N/A	287	90	B	N/A
CR 640 to Plant Entrance	42	204	B	N/A	170	31	A	N/A
Plant Entrance to CR 630	46	147	A	N/A	120	40	A	N/A
U.S. 98:								
CR 540A to Manor Dr	931	1,670	B	C	1,844	1,241	D	C
Manor Dr to SR 60A	1,046	1,677	D	B	1,946	1,357	D	C
U.S. 17:								
CR 630 to S.E. 9th Street	416	392	C	B	494	544	C	B
U.S. 17/98:								
SR 60 to CR 640	458	337	A	A	489	477	A	A
CR 640 to CR 630	513	445	A	A	546	506	A	A

TABLE 2.2.7-6
EXISTING PEAK SEASON ROADWAY CONDITIONS

Roadway Segment[1]	A.M. Peak Hour				P.M. Peak Hour			
	Northbound/ Eastbound	Southbound/ Westbound	Polk LOS	FDOT LOS	Northbound/ Eastbound	Southbound/ Westbound	Polk LOS	FDOT LOS
SR 60:								
CR 676 to SR 37	864	692	A	B	722	1,085	A	B
SR 37 to CR 555	944	669	A	A	780	935	A	A
CR 555 to SR 60A	798	621	A	B	996	928	A	B
SR 60A:								
SR 60 to U.S. 98	587	486	B	B	834	664	C	B
U.S. 98 to Wilson Ave	999	1,035	A	B	1,114	1,217	B	B
Wilson Ave to Van Fleet Dr	990	1,131	B	B	1,228	1,244	B	B
CR 640:								
Hillsborough County to SR 37	240	291	B	N/A	243	201	B	N/A
SR 37 to CR 555	108	201	B	N/A	161	122	A	N/A
CR 555 to U.S. 17/98	76	128	A	N/A	131	99	A	N/A
U.S. 17/98 to Pool Branch Rd	69	116	A	N/A	111	68	A	N/A
CR 630:								
SR 37 to CR 555	64	247	B	N/A	167	50	A	N/A
CR 555 to U.S. 17/98	125	210	B	N/A	240	162	B	N/A

Notes: [1] See Figures 2.2.7-21 and 2.2.7-22 for locations.
[2] Volumes estimated from generalized K and D factors.
N/A = Not Available

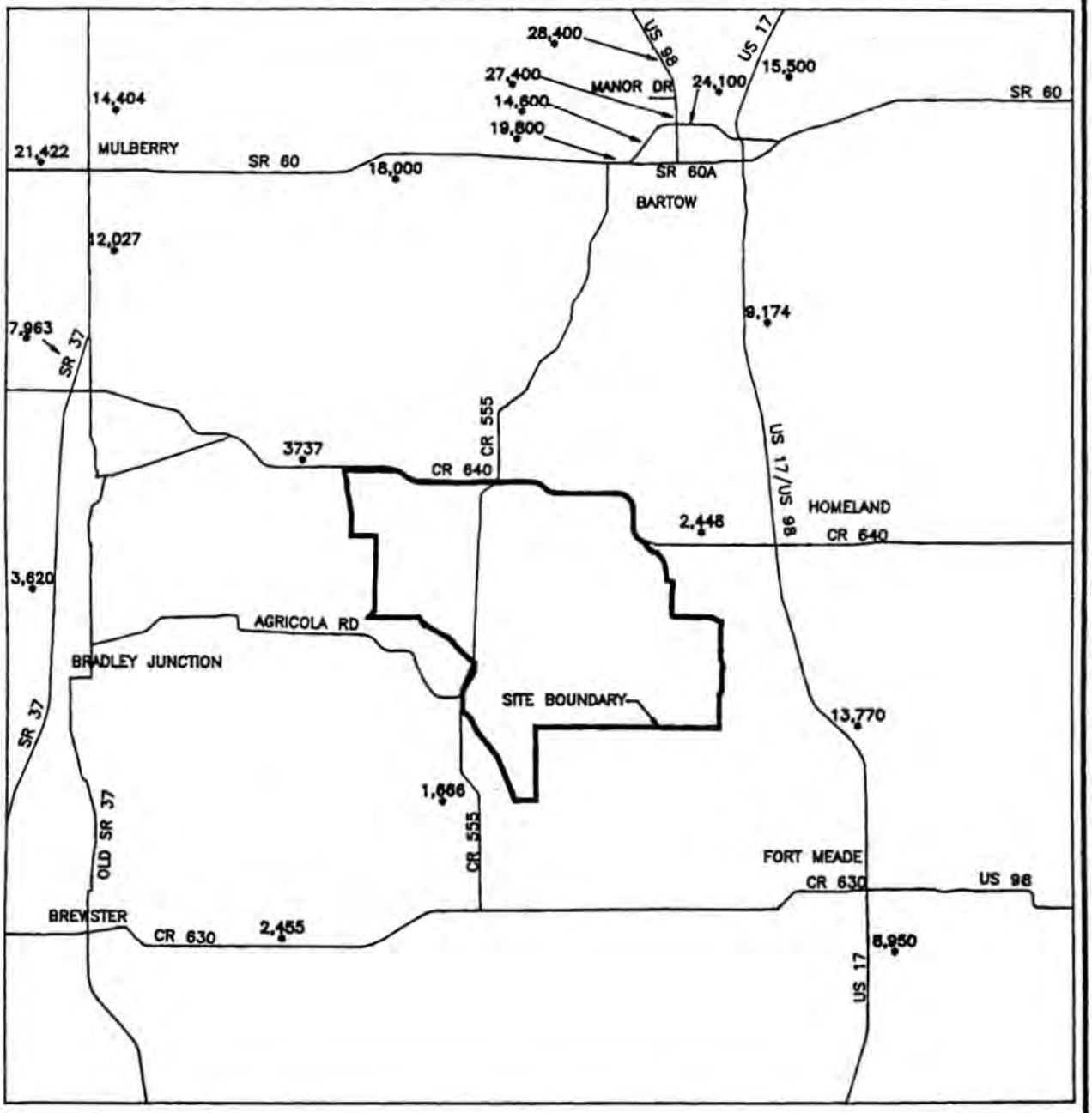
Source: Kimley-Horn, 1992.

TABLE 2.2.7-7
EXISTING INTERSECTION CONDITIONS

Intersection*	Count Source	A.M. LOS	P.M. LOS
SR 37 and SR 60	KHA	C	C
SR 37 and CR 640	KHA	A	B
CR 555 and SR 60	KHA/FDOT	B	B
CR 555 and CR 640	KHA	A	B
CR 555 and CR 630	FDOT	A	A
SR 60 and SR 60A	FDOT	A	C
U.S. 98 and Manor Dr	FDOT	C	C
U.S. 98 and SR 60A	FDOT	D	D
SR 60A and Wilson Ave	FDOT	B	B
U.S. 17/98 and CR 640	KHA	A	A
U.S. 17/98 and CR 630	KHA	C	C

Note: *See Figures 2.2.7-23 and 2.2.7-24 for location.

Sources: KHA = Kimley-Horn & Associates, 1991
FDOT = Florida Department of Transportation, calibrated December 1991 by Kimley-Horn & Associates



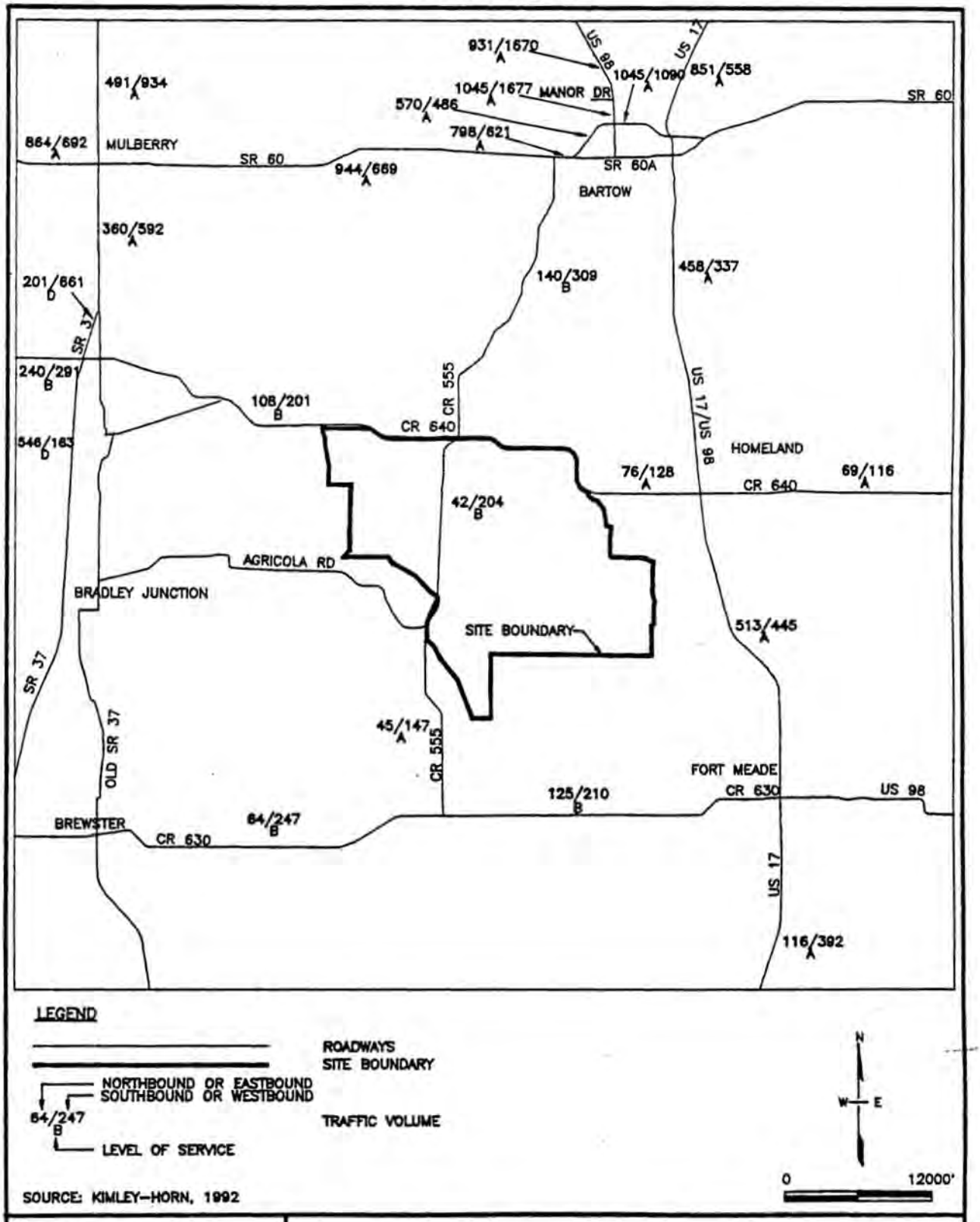
SOURCE: KIMLEY-HORN, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 2.2.7-20

EXISTING DAILY TRAFFIC VOLUMES

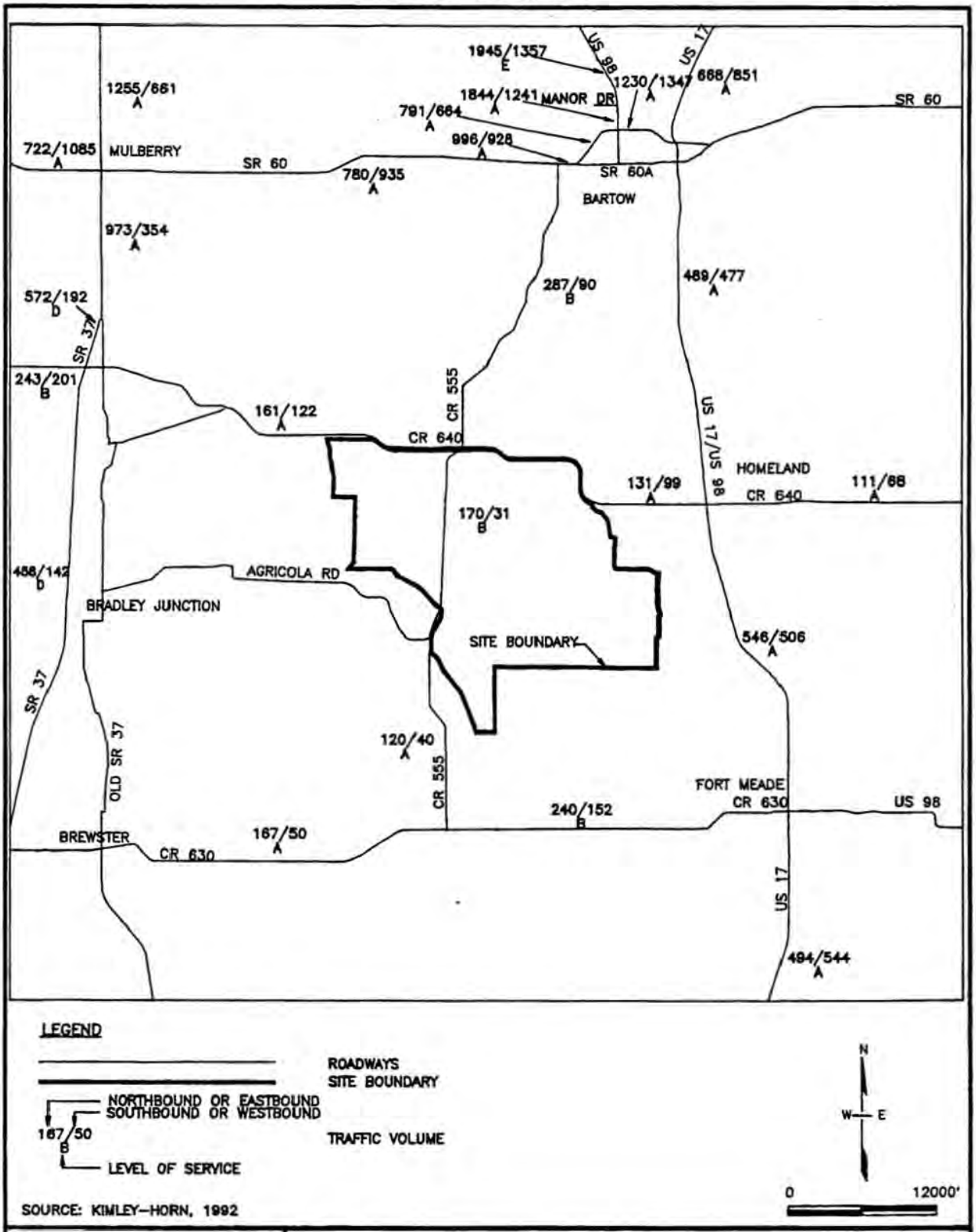


Florida Power CORPORATION

Polk County Site

FIGURE 2.2.7-21

EXISTING PEAK SEASON A.M. PEAK HOUR TRAFFIC VOLUMES

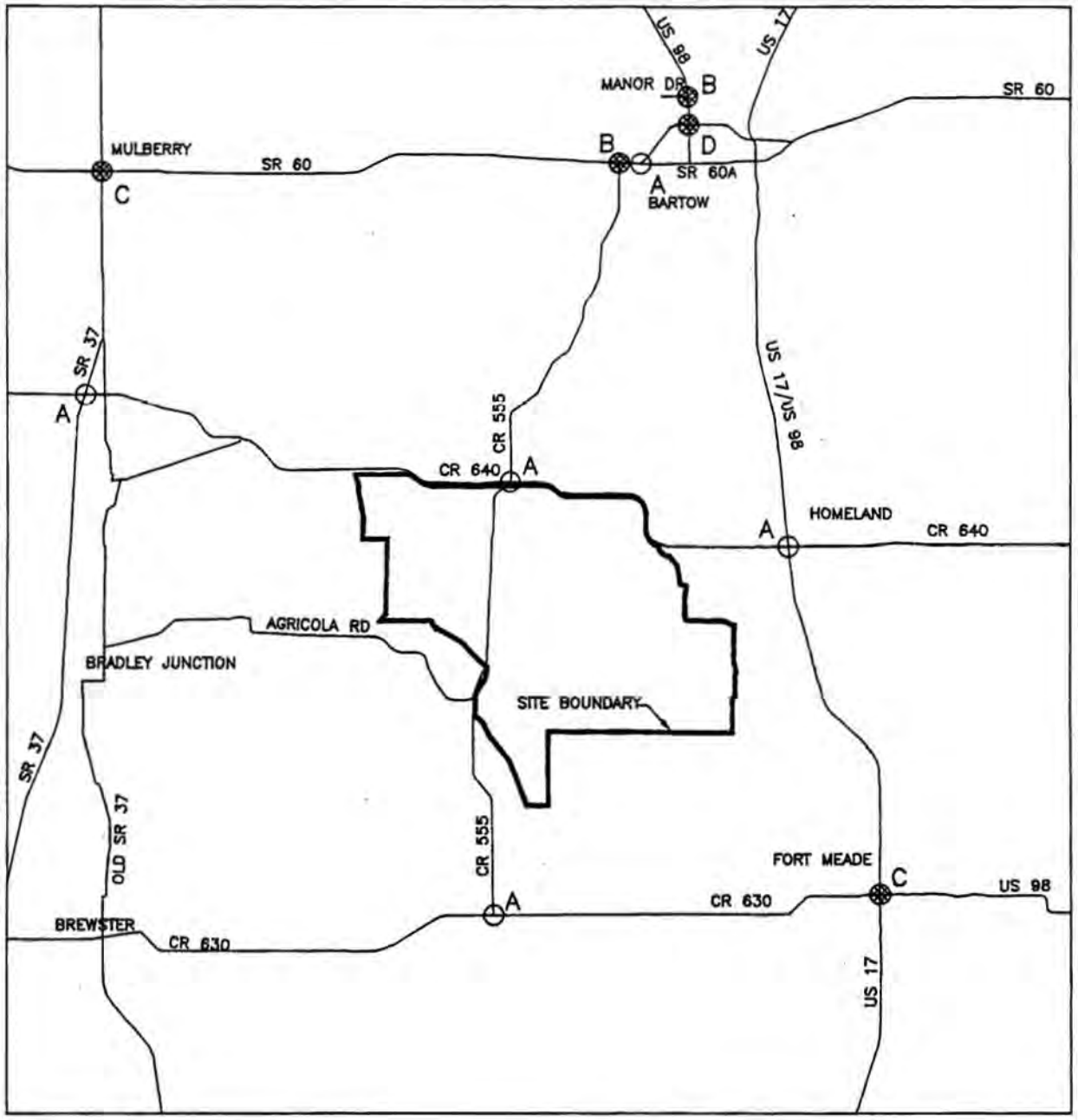


Florida Power CORPORATION

Polk County Site

FIGURE 2.2.7-22

EXISTING PEAK SEASON P.M. PEAK HOUR TRAFFIC VOLUMES

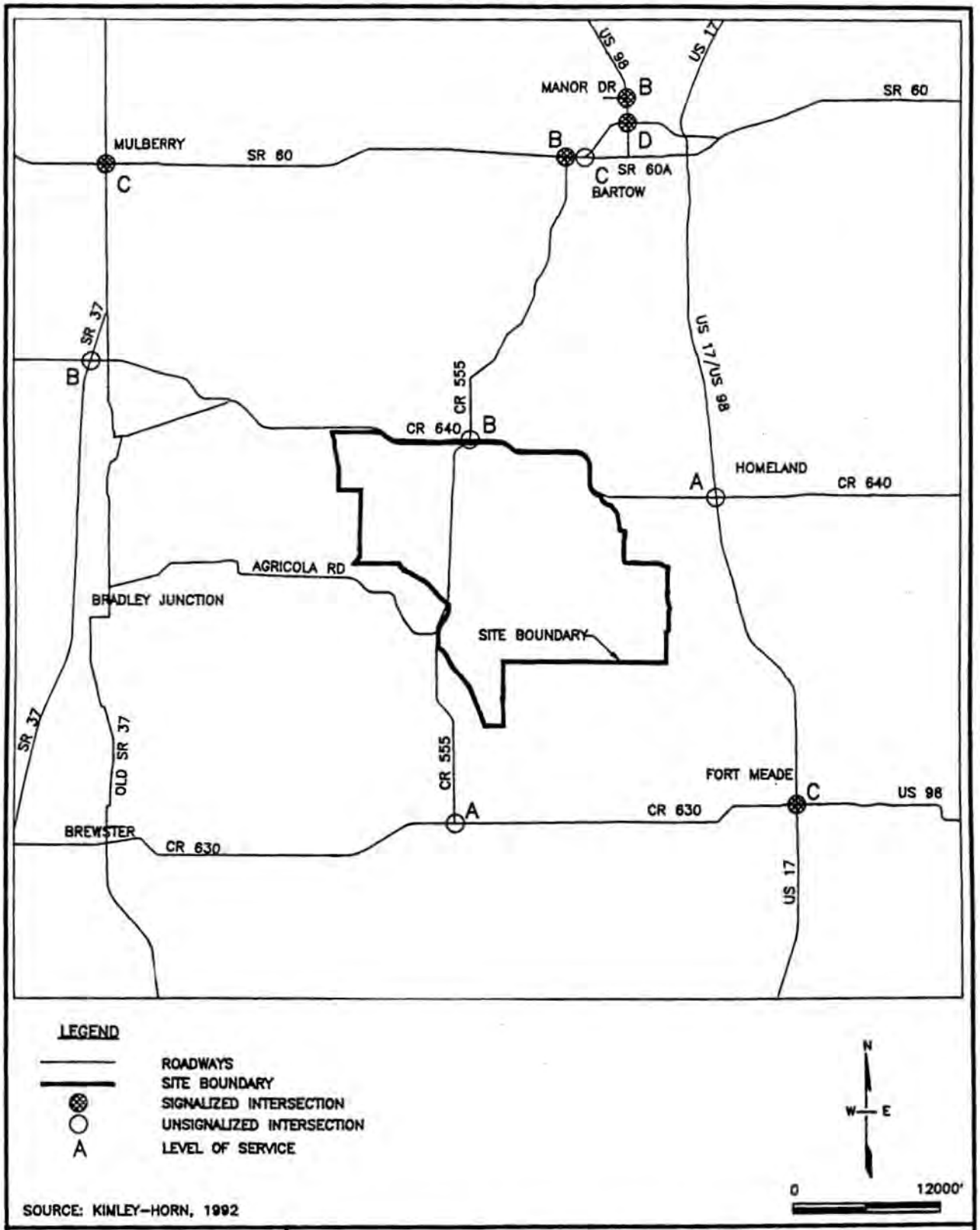


SOURCE: KIMLEY-HORN, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 2.2.7-23
EXISTING PEAK SEASON A.M. PEAK HOUR INTERSECTION CONDITIONS

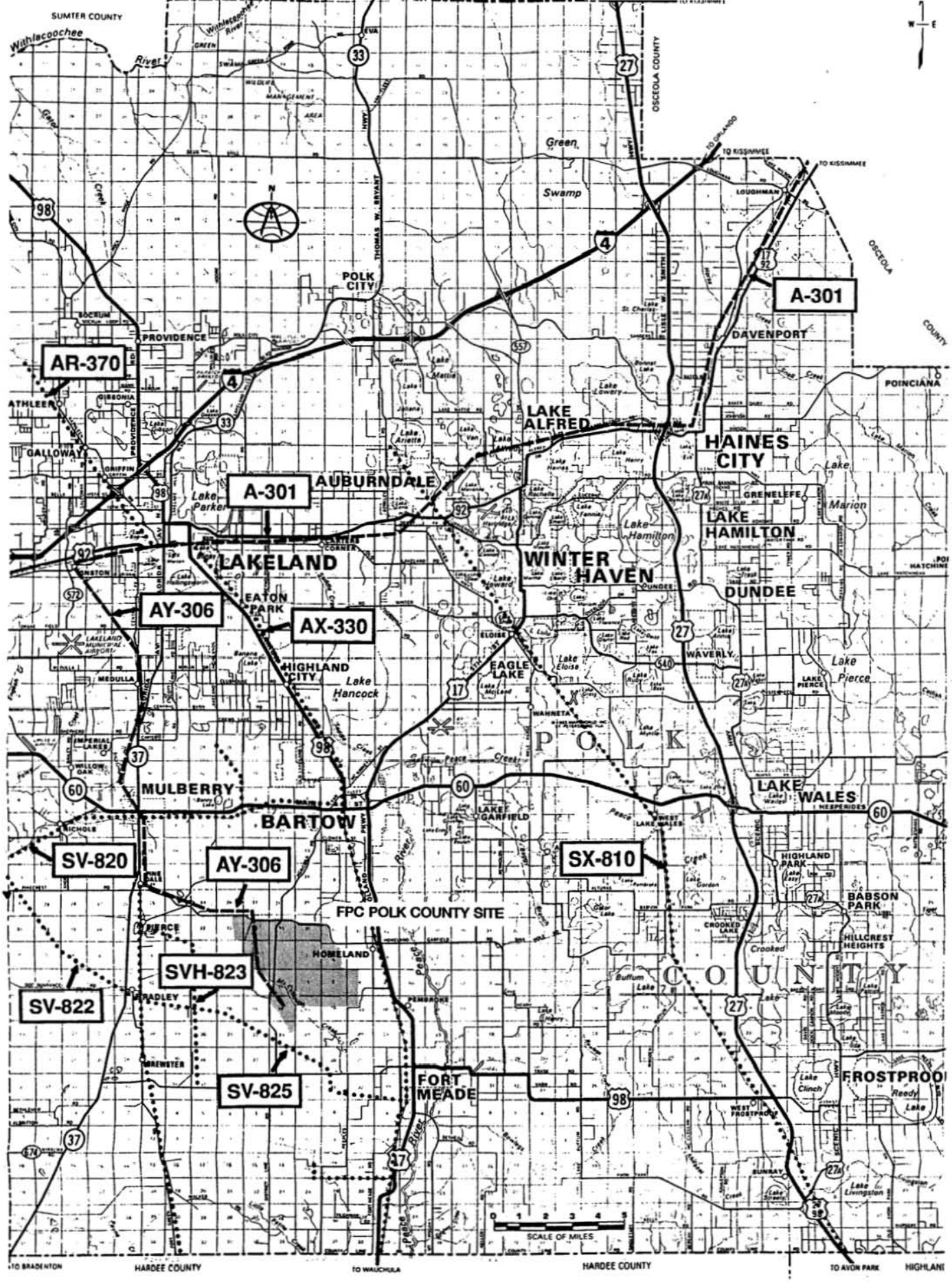


SOURCE: KIMLEY-HORN, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 2.2.7-24
EXISTING PEAK SEASON P.M. PEAK HOUR INTERSECTION CONDITIONS



AX-330 ROUTE NUMBER

PROBABLE RAIL ROUTE FOR FPC SITE

OTHER CSX RAIL ROUTES IN POLK COUNTY

SOURCES: RAND McNALLY, 1986; MOORE/BOWERS, 1992; FDOT, 1987-1988.

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FIGURE 2.2.7-25

RAIL TRANSPORTATION

10.5.1.2

10.5.1.2 Traffic Impact Analysis (Construction)

This section contains the traffic impact analysis which was conducted to quantify the impact of construction activities on the surrounding communities. The analysis was completed in 1992 for full site buildout.

4.6 IMPACT ON HUMAN POPULATIONS

The construction site is located in southwestern Polk County. The City of Fort Meade, which is located approximately 3.5 miles southeast of the plant island, is the largest population center in the vicinity. The unincorporated community of Homeland is approximately 2 miles northeast of the construction site (plant island). Since the entire area around the site has historically been dominated by phosphate mining, operation of heavy machinery and large volumes of truck traffic in the area are common. Therefore, the construction activities on-site are not expected to have a significant impact on these communities.

4.6.1 Construction Traffic Impacts

The employment of construction workers at the power plant site will create traffic impacts on the external roadway network. The magnitude of the traffic impact will be directly related to the number of construction employees. This analysis was prepared based on two different buildout scenarios. The first one assumes that coal-fired generation will commence operation beginning in the year 2002, and the peak construction employment would occur in the year 2002 when 1,200 construction workers are to be employed. In the second buildout scenario, the peak construction impact is expected to occur in the year 2010, again with 1,200 construction workers employed.

The Polk County CUP application included a traffic impact analysis based on the first scenario. Although that is one possible scenario, Section 3.1 of this Site Certification Application (SCA) presents the now anticipated buildout schedule, i.e., the second scenario, reflecting a longer buildout period than that assumed for the Polk County CUP traffic analysis. For purposes of continuity, this Section and Section 5.9.1, dealing with highway traffic during project operation, address the traffic impacts of both the original, shorter buildout schedule and the currently proposed longer buildout schedule. The longer buildout schedule anticipates peak construction employment in the year 2010 and full buildout in the year 2018.

The CUP traffic impact analysis was reviewed by both Polk County and Florida Department of Transportation (FDOT). As a result, a series of improvements was defined and agreed upon in order to mitigate significant project impact on inadequately functioning transportation facilities.

These improvements became the subject of conditions of the Polk County CUP, approved by the Polk County Board of County Commissioners on June 2, 1992. A copy of the CUP is included in Appendix 10.2.4, and the agreed upon traffic conditions are also reiterated in Section 4.6.1.8. In recognition of the fact that the buildout schedule was subject to change, the CUP conditions relate the need for roadway or intersection improvements to a level of employment rather than a specific year and provide for monitoring of employment and traffic conditions to determine the appropriate timing of the improvements. Thus, the Polk County CUP conditions effectively address the need for improvements regardless of changes in the buildout schedule.

4.6.1.1 Study Area

The roadways and intersections to be included in this analysis were identified in a manner consistent with local, regional and state policy. The study area for this analysis was determined to be roadways on which the project contributes 5 percent or more of Level of Service (LOS) C volume. The 5 percent standard was used in compliance with the draft "Polk County Traffic Impact Study Methodology and Procedures." While the new procedures are still in a draft format, it is expected that they will be adopted in the near future. The Central Florida Regional Planning Council (CFRPC) uses a 10 percent standard, so the 5 percent threshold represents a more stringent standard.

The determination of significant impact is based on peak hour peak direction traffic impact of the construction employment. The impact was assessed using both the Polk County LOS standards and those currently used by FDOT. Polk County and FDOT have different level of service volumes adopted for the State roads within the study area. FDOT has recently adopted the 1992 Florida's Level of Service Standards and Guidelines Manual for Planning. As a part of the Comprehensive Plan, Polk County has adopted level of service volumes which are based on the 1989 Florida's Level of Service Standards and Guidelines Manual for Planning. Since Polk County cannot accept the new FDOT volumes until a Comprehensive Plan amendment accepting the new manual has been adopted, two sets of service volumes are applicable to state roadways within the study area. Accordingly, two determinations of project impact were made for state roadways. Similarly, two capacity analyses were performed for each state roadway within the study area. Table 4.6.1-1 summarizes the impact in the area. The assignment of project trips to the roadway network is described in Section 4.6.1.3. The roadway network in the surrounding area was described as a part of the existing conditions analysis in Section 2.2.7.

Based on this analysis, the following roadways were identified as study links:

SR 37: SR 60 to CR 640

CR 555: SR 60 to CR 630

U.S. 98: Manor Dr to SR 60A

U.S. 17: CR 630 to S. 9th St

SR 60: CR 555 to SR 60A

SR 60A: SR 60 to Wilson Ave

CR 640: SR 37 to U.S. 17/98

CR 630: CR 555 to U.S. 17/98

The following intersections were also included in the study:

SR 60 and SR 37

SR 37 and CR 640 (unsignalized)

CR 555 and SR 60

CR 555 and CR 640 (unsignalized)

CR 555 and CR 630 (unsignalized)

SR 60 and SR 60A (unsignalized)

U.S. 98 and Manor Dr

U.S. 98 and SR 60A (Van Fleet Drive)

SR 60A and Wilson Ave

U.S. 17/98 and CR 640 (unsignalized)

U.S. 17/98 and CR 630

4.6.1.2 Year 2002 Non-Project Traffic

A projection of future traffic not associated with the FPC site was made. This projection was based on existing volumes increased with an annual growth rate to the year 2002, the anticipated year of peak power plant construction activities. The growth rate used in this analysis was 2.1 percent, compounded annually. Different sources were reviewed to derive the growth rate. Historic traffic counts in this area of the county were reviewed. Information from 20 FDOT count stations was assembled. The change in volumes over the last 5 years and over approximately the last 20 years was evaluated. The following annualized growth rates were found:

5 years: -1.7 percent per year

20 years: 1.6 percent per year

The recent decline in volumes is possibly the result of the decrease in mining activity in southwest Polk County as the mines move south.

FDOT has recently completed traffic volume projections for SR 60 near Bartow using trend line analysis and model projections. The FDOT study includes the portion of SR 60 which is in the study area. The projections, which are documented in a final Traffic Technical Memorandum Project Traffic Report dated October 1991, were used to derive an alternative annualized growth rate.

Using the five westernmost locations on SR 60 and SR 60A, projected year 2010 volumes were compared to existing 1991 volumes. The five locations in and adjacent to the study area were not affected by contemplated diversions of traffic. The annualized growth rate of the five locations ranged from 0.4 percent to 2.6 percent with a weighted average of 2.1 percent per year, compounded annually.

Reviewing the various growth rates, the rate derived from the FDOT projections appeared to be a conservative prediction of non-project traffic growth. It is distinctly possible that the current trend of declining growth rates in the area will continue. However, the 2.1 percent annual growth rate was chosen for a worst case analysis. Accordingly, the existing volumes in the study area were increased by 2.1 percent per year, compounded annually, from existing volumes to the year 2002 to provide a projection of non-project traffic.

Future roadway volumes not associated with the power plant were projected and analyzed to find the future LOS. The generalized LOS volumes used in the analysis are shown on Tables 2.2.7-3 and 2.2.7-4. Roadways were evaluated using both Polk County and FDOT LOS volumes. Table 4.6.1-2 contains the results of this analysis of non-project volumes. Peak season a.m. and p.m. peak hour volumes are shown in Figures 4.6.1-1 and 4.6.1-2. Based on generalized capacities, all of the study area roadways are expected to function acceptably with future year non-project traffic, with the exception of two roadway sections. Currently, SR 37 in the study area operates unacceptably with existing volumes, and is expected to continue to operate unacceptably with future year non-project traffic. Additionally, U.S. 98 from SR 60A to Manor Drive is projected to operate unacceptably when evaluated with the FDOT capacities.

Intersections were analyzed with the 2002 non-project volumes to determine future operating conditions. The analysis of signalized intersections was conducted using Highway Capacity Manual (HCM) signalized intersection methodology to determine the future level of service. Unsignalized intersections were evaluated to determine if a traffic signal will be warranted using the guidelines set forth in the Manual on Uniform Traffic Control Devices. Level of service was then determined using the same HCM signalized intersection methodology.

Table 4.6.1-3 indicates the operating conditions of the intersections without project traffic. Two of the intersections are anticipated to operate unacceptably in 2002 without the addition of project traffic. Of the five intersections which are currently unsignalized, two are projected to meet traffic signal volume warrants by 2002 without the addition of project traffic:

- SR 37 and CR 640
- SR 60 and SR 60A

Although the SR 60/SR 60A intersection may meet the minimum signal warrants in 2002, signalization does not appear to be needed due to the intersection's unique configuration.

4.6.1.3 Year 2010 Non-Project Traffic

With the alternate longer buildout scenario being analyzed, a second set of non-project volumes was developed. If the power plant construction does peak at a later date than expected, the only difference in analysis traffic volumes will be an increase in the non-project volumes from 2002 levels to those expected in 2010.

Volumes not associated with the project were projected to 2010 levels using the same growth rate methodology described for the 2002 volumes. The 2010 non-project volumes are shown in Table 4.6.1-4, and Figures 4.6.1-3 and 4.6.1-4.

The year 2010 non-project roadway conditions were evaluated using the Polk County and FDOT generalized LOS volume tables. Two roadway sections were found to operate with an unacceptable LOS in 2010 without the addition of project traffic:

- SR 37 from SR 60A to Mulberry
- U.S. 98 from SR 60A to Manor Dr.

Intersections in the study area were also analyzed to determine their expected 2010 non-project operating conditions. Table 4.6.1-5 shows the LOS expected at the study intersections. Three intersections were found to operate unacceptably:

- U.S. 98 and SR 60A
- U.S. 98 and Manor Dr.
- SR 60 and SR 60A

All three of these intersections are included in the SR 60A/U.S. 98 roadway area which is not expected to operate acceptably.

With the 2010 non-project volumes, two intersections meet minimum traffic volume warrants. Although it meets the minimum volume warrants, because of its configuration, the SR 60/SR 60A intersection is not expected to warrant the installation of a traffic signal. The other intersection meeting volume warrants is SR 37 and CR 640. It is expected that this intersection will require the installation of a traffic signal prior to 2010 without the addition of project traffic.

4.6.1.4 Plant Construction Traffic

Trips associated with the peak construction activity at the plant were estimated through a trip generation analysis and then a distribution and assignment process. The projected peak impact of 1,200 employees was evaluated. This peak employment is forecast with both the first and second buildout scenarios. However, in the longer scenario, this peak level of construction employment is not sustained for as long a period as in the shorter buildout scenario. Although it is unknown at this time, it was assumed that the construction employees would all work one shift from 7:00 a.m. to 3:00 p.m. These times correspond to current peaks of traffic on the roadway network.

Transportation Demand Management (TDM) measures have the potential to create a significant reduction in traffic. If the project contractor uses multiple shifts or staggered shift times, the impact of construction traffic could be reduced significantly. For this analysis, the highest impact of a single shift was assumed. However, recognizing the potential benefits that TDM may provide, the Polk County CUP conditions discussed in Section 4.6.1.8 have been structured based on the number of employees arriving or departing with a common shift time.

ACCESS

Two project driveways on CR 555 are to serve as access to the plant island. Sufficient parking areas will be provided on the site to accommodate employee and visitor parking needs. The main project entrance is to have a southbound left-turn lane and a northbound right turn lane leading into the site in accordance with the Polk County Subdivision Regulations. The auxiliary driveway entrance is also to be constructed in accordance with Polk County Subdivision Regulations.

TRIP GENERATION

The greatest number of construction related trips will be generated at the beginning and end of work shifts and will be directly related to the number of employees. In addition to employee traffic during the peak hour, there may be a small amount of truck or other traffic. Truck traffic will be minimal because of the anticipated use of the rail line which serves the site.

The expected trip generation was estimated using information obtained from similar construction projects. Florida Power & Light Company provided information regarding auto occupancy factors in conjunction with construction at their Martin Power Plant. The experience at remote construction sites indicated auto occupancy factors of 2.0 for construction personnel. In order to provide a conservative analysis, an auto occupancy factor of 1.5 was used. A qualitative review of existing employee traffic at Polk County phosphate mines has indicated that auto occupancy factors between 1.5 and 2.0 persons per vehicle are already occurring. This is reflective of the employee related traffic as well as truck or other traffic.

Following is the expected trip generation during the 1 year of peak construction activity.

Employees:	1,200
Daily:	2,150
A.M. Peak:	
Enter	800
Exit	60
Total	860
P.M. Peak:	
Enter	60
Exit	800
Total	860

DISTRIBUTION AND ASSIGNMENT

Trips were distributed and assigned to the roadway network using the computerized transportation planning model for Polk County consistent with local, regional, and state policy. The model, Florida Standard Urban Transportation Modelling Structure (FSUTMS), was used to provide an objective distribution and assignment.

A new zone was created in the FSUTMS data for the project area with a single centroid connector tying into the network on CR 555 midway between CR 640 and CR 630, in order to simulate the proposed access to the power plant. The zone was loaded with industrial employment only. After a run of total traffic, project traffic was isolated on the network using TRANPLAN select zone program language, as recommended by FDOT. A plot of the resulting project traffic assignment is included in Appendix 10.5.2.

The majority of the trips were oriented to the north in the Lakeland, Winter Haven, and Bartow areas. While it is possible that more traffic may be oriented towards southeastern Hillsborough County than was shown, the model assignment provides a realistic, conservative assignment. Most of the trips are oriented to the major Polk County population centers. The distribution and assignment of project trips was reviewed and approved by Polk County and FDOT staff.

Using the percentage assignment derived from FSUTMS and the expected trip generation, the expected project trips were assigned to the roadway network. From this assignment, the study area was defined, as shown previously in Table 4.6.1-1. At study intersections, peak hour project traffic turning movements were determined. Figures 4.6.1-5 and 4.6.1-6 illustrate the construction traffic volumes on the study roadways during the a.m. and p.m. peak hours. Volumes are also included in Tables 4.6.1-6, 4.6.1-7, 4.6.1-9, and 4.6.1-10.

4.6.1.5 2002 Roadway Capacity Analysis

The 2002 non-project volumes and construction traffic volumes were combined to provide a projection of 2002 total traffic. The total traffic volumes on study roadways and intersections were analyzed to determine the anticipated operating conditions. Figures 4.6.1-7 and 4.6.1-8 illustrate the 2002 total roadway volumes.

The roadways were initially evaluated using the generalized LOS volumes listed in Section 2.2.7.2. Tables 4.6.1-6 and 4.6.1-7 summarize the volumes and generalized LOS for the a.m. and p.m. peak hours, respectively. SR 37 and U.S. 98 are projected to operate unacceptably. As Table 4.6.1-2 indicates, this capacity deficiency will exist with or without the addition of construction traffic.

A detailed analysis of SR 37 within the study area was conducted. An arterial analysis was performed on this roadway using the HCM arterial analysis methodology. The arterial analysis indicated that the LOS on SR 37 will be LOS A. The analysis was conducted assuming a traffic signal will be installed at the SR 37 and CR 640 intersection.

The scheduled FDOT improvement creating a Bartow bypass will include the adverse section of U.S. 98 and SR 60A, assuring that the roadway section will have an acceptable LOS in the future.

4.6.1.6 2002 Intersection Capacity Analyses

Intersections in the study area were analyzed with the 2002 total traffic volumes. With this project, one additional intersection is anticipated to meet the minimum volume warrants for signal installation: CR 555 and CR 640. The total traffic conditions of the intersections are shown in Table 4.6.1-7.

The U.S. 98/SR 60A, U.S. 98/Manor Drive, and SR 60/SR 60A intersections were projected to operate unacceptably in the year 2002. However, operation of these intersections will be improved by an FDOT roadway project currently in the planning stages.

Adding a second westbound left-turn lane at the U.S. 98/SR 60A intersection by restriping the existing pavement will add to the existing capacity and mitigate the effect of construction traffic. Improvements for the CR 555/SR 60 intersection were determined to maintain acceptable levels of service. The necessary improvements, which were developed during the Polk County CUP process with FDOT input, are as follows:

> U.S. 98/SR 60A - Add a second westbound left-turn lane by restriping the existing pavement. FDOT has indicated that the existing pavement in the turn lane must be milled up and replaced with new pavement of the same type to remove existing markings and allow the new markings to be clearly understood.
>
> CR 555 and SR 60 - Add a signal phase for westbound left-turns which operates as protected/permissive. This addition will require some new signal heads and possibly controller modifications. FDOT has indicated that this installation would require new strain poles to be placed to adequately support the additional equipment weight. The necessary intersection design, including new strain poles, must be performed and submitted to FDOT for design review prior to implementation.

The effect of these intersection improvements, which were made the subject of Polk County CUP conditions (Appendix 10.2.4) is shown in Table 4.6.1-8.

4.6.1.7 2010 Roadway Capacity Analysis

The total traffic resulting from the extended buildout scenario was evaluated for the 2010 peak construction impact conditions. The 2010 non-project volumes were combined with projections of project traffic (Figures 4.6.1-9 and 4.6.1-10). Total traffic on the study roadways was evaluated using both the Polk County LOS volumes and those adopted by FDOT.

Total traffic volumes in 2010 and the resulting levels of service are shown in Tables 4.6.1-9 and 4.6.1-10 for the a.m. and p.m. peak hour, respectively. Except for three roadway sections found to have an unacceptable LOS, all of the study area roadways were found to operate acceptably.

A detailed analysis of SR 37 was conducted using the HCM arterial analysis methodology. The detailed analysis indicated that the roadway will operate at LOS A. Analysis worksheets are included in Appendix 10.8.

The sections of U.S. 98, SR 60, and SR 60A which were shown to have an adverse LOS are included in the scheduled FDOT improvement at Bartow. With the improvement, the long range LOS will meet the adopted standards.

4.6.1.8 2010 Intersection Capacity Analysis

Intersections in the study area were analyzed with total 2010 traffic volumes. Seven of the intersections were found to operate acceptably, as shown in Table 4.6.1-11. Of the four remaining study intersections, three will be included in the scheduled FDOT improvement. With the improvement, the intersections will operate at an acceptable LOS.

The SR 60/CR 555 intersection, in its current state will not operate acceptably with 2010 total traffic volumes. The improvement identified to alleviate the capacity deficiency is as follows:

> *CR 555 and SR 60* - Prior to the time that the number of employees reporting to the site at the same shift time exceeds 150, FPC shall add a signal phase for westbound left-turns which operates as protected/permissive at the intersection of CR 555 and SR 60. Modifications to the transportation system must conform to the requirements of the Florida Department of Transportation.

The addition of project traffic to the 2010 non-project volumes added one intersection which may meet traffic signal volume warrants. It is expected that the CR 555/CR 640 intersection will warrant the installation of a traffic signal with the addition of project volumes.

4.6.1.9 Recommendations

Improvements to the external roadway network were found to be needed to accommodate the traffic impacts from construction traffic at the FPC power plant. The impacts were based on

a peak employment of 1,200. Analyses were conducted for one scenario that anticipates a peak construction impact in the year 2002 and for another scenario that provides for a peak construction impact in the year 2010. The improvements identified below have been recommended for implementation concurrent with the need, and are the subject of conditions of the Polk County CUP.

Using the number of employees rather than a specific year is the most appropriate measure of the need for improvements. Following is a plan which bases the improvements and monitoring conditions at the four intersections on the number of employees. Recognizing that staggered starting times may be implemented, reducing the traffic impacts, the number of employees described below reflects the number of employees reporting to the site for the same shift starting time. Monitoring of intersections for the need to install a traffic signal will consist of conducting turning movement counts and a signal warrant analysis.

U.S. 98/SR 60A - Prior to the time the number of employees reporting to the site at the same shift time exceeds 700, FPC shall add a second westbound left-turn lane by restripping the existing pavement at the intersection of US 98 and SR 60A. Modifications to the transportation system must conform to the requirements of the Florida Department of Transportation.

SR 37 AND CR 640 - When the number of employees reporting to the site at the same shift exceeds 350, FPC shall begin a traffic monitoring program at the intersection of SR 37 and CR 640 for the need to install a traffic signal or to make geometric improvements. Intersection monitoring shall consist of conducting turning movement counts and a signal warrant analysis. The monitoring shall be conducted once per year in January, February, or March, until the number of employees has peaked, a signal is installed, or other necessary improvements are made.

CR 555 AND CR 640 - When the number of employees reporting to the site at the same shift time exceeds 350, FPC shall begin a traffic monitoring program at the intersection of CR 555 and CR 640 for the need to install a traffic signal or to make geometric improvements. Intersection monitoring shall consist of conducting turning movement counts and a signal warrant analysis. The monitoring shall be conducted once per year in January, February, or March, until the number of employees has peaked, a signal is installed, or other necessary intersection improvements are made.

4.6.2 Socioeconomic Impacts

The construction workforce will vary depending upon the generation technology being constructed. This analysis is based on a 25-year construction period. Construction is scheduled to begin in 1994 and end by 2018. If all natural gas units are constructed, the construction workforce is expected to range between 60 and 500, with the peak occurring in 1998 and completion occurring in 2018 (Figure 4.6.2-1). If coal units are constructed, the construction workforce would be larger. The workforce for construction of coal units would range between 60 and 1,200 with the peak occurring in 2010 and construction ending in 2018. The construction workforce is not expected to have a significant impact on Polk County's public services or housing market.

Based on experience with other power plants being built in the vicinity and on labor market data provided by the Job Service of Florida, the majority of the construction workforce is expected to commute on a daily basis from the surrounding area. In order to assess the availability of construction workers for the project, a list of trades was sent to the Job Service office in Lakeland. Most of the trades were available in sufficient quantity for the project based on staffing estimates derived from a report on power plant construction (EPRI, 1982). However, there are a few trades which are not well represented in the Job Service registrations. No ironworkers are registered within a daily commuting distance (Polk County, Hillsborough County, Highlands County, Hardee County, and Orlando). In addition, there is a lack of boilermakers and insulators. Due to the amount of power plant construction occurring in the Polk County area, though, it is possible that construction workers who have relocated to work on other projects will remain in the area and work on this project. This would depend on the overlap of the construction schedules between the other power plants and the FPC project. There is also the possibility that these trades are available in the area even though they are not registered with Job Service.

A study on the socioeconomic impacts of power plant construction was conducted by the Electric Power Research Institute (EPRI) in 1982. The study looked at 12 power plants (9 of which were coal-fired plants) built in a variety of urban and rural settings. The study was designed to provide an understanding of the nature of the socioeconomic impacts of constructing a power plant. One of the findings in the study was that construction workers are likely to relocate to larger cities and commute to the construction site daily rather than relocate to a small town nearer to the site. Therefore, it is anticipated that those construction workers from outside the

area who temporarily relocate are likely to relocate to a large metropolitan area like Tampa or Lakeland and then commute on a daily basis. Since there are only a few trades which are not available within commuting distance, the number of workers who may relocate to these metropolitan areas is likely to be small. The EPRI study showed that construction workers are most likely to rent mobile homes, recreational vehicles, motel rooms, and apartments or houses. Polk County had over 6,000 hotel and motel units available in 1991, as well as 47 rooming houses and 88 transient apartment buildings.

The City Manager of Fort Meade has stated that Fort Meade's business community is interested in providing housing for any construction workers who plan to reside temporarily in the area. Although Fort Meade currently does not have a large inventory of rental units, land has been zoned for multi-family uses, and the utilities are installed and ready. The City Manager has stated that the city is interested in working together with property owners and business people in the community to make rental units available to the construction workforce and to capture as much of the construction workforce temporary housing market as possible.

4.6.3 Construction Noise Impacts

The construction of a power plant can be divided into five distinct phases for purposes of assessing potential noise impacts (Barnes et al., 1976). These include:

- Site preparation, including grading and excavation
- Concrete pouring
- Steel erection
- Machinery installation
- Site cleanup and plant start-up.

During the initial site preparation and foundation excavation phase, heavy diesel-powered earth moving equipment is the major source of noise. This equipment includes bulldozers, graders, sheepsfoot roller compactors, dump trucks, backhoes, and front-end loaders. Table 4.6.3-1 presents the typical noise levels such equipment produces.

Equipment used during the concrete pouring stage includes concrete trucks, cranes, and some earth moving equipment for backfilling foundations. A pile driver may be used in the rotary coal unloader area and at the cooling pond intake structure. The steel erection phase requires the use of cranes in varying sizes, air compressors, welders, material delivery trucks, concrete trucks, and front-end loaders. The machinery installation phase requires the same types of equipment as the steel erection phase.

The final phase, consisting generally of site cleanup and plant start-up activities, is typically about 10 decibels quieter than the other phases (Barnes et al., 1976), except during the short periods of time when the steam lines are being cleaned. High pressure steam is blown through the lines to remove scale or welding debris to prevent such material from passing through the turbines, where they could damage the turbine blades. The steam is vented directly to the atmosphere through a temporary bypass line constructed specifically for that purpose. Cleaning of the steam lines for each of the HRSGs will require approximately 25 blows of 1 to 15 minutes per blow. A peak sound pressure level at 50 feet of approximately 129 dBA will be produced. In setting the steam safety valves, steam will be released for about 6 minutes with a corresponding sound pressure level at 50 feet of approximately 121 dBA.

The temporary steam line blow out activity will produce noise levels as high as 69 dBA at the nearest residences. This impact is not considered significant because it will occur only during the day, the duration is very short, the frequency of occurrence is low and the sound level produced is about the same as noise from a truck passing by on the highway.

Noise impacts have been assessed for the two loudest phases of construction which are the site preparation and steel erection stages. Because of the large separation between the plant site and the nearest residences (about 2.8 miles), the construction noise levels will be reduced to approximately 30 dBA at the residences. This level is significantly below the existing 24-hr equivalent noise level of about 57 dBA measured at Location 1 near the residences (see Section 2.3.8). Consequently, normal construction activities of the plant structures will have no impact on the noise environment at residences around the plant.

Construction associated with the cooling pond dams in the northeast portion of the site within about 6,000 feet of the community of Homeland will involve land clearing and earth moving activities only. Intermittent noise levels of 45 to 50 dBA will occasionally occur at the nearest Homeland residences due to bulldozers and earthmovers working on dams in this area. These

levels are at or below the existing ambient level of 50 dBA in the area. Consequently, the noise impact from construction associated with the cooling pond dams will not be significant.

The construction work force and material delivery vehicular traffic levels and, consequently, the traffic noise impact levels, will vary in relation to the size of the work force. The peak work force stage of the maximum impact scenario is expected to occur when approximately 1,200 construction workers will be on-site. Traffic count information contained in Appendix 10.5.1.3 indicates that the greatest increase in traffic during construction will occur on CR 555 during the afternoon shift change. The projected 178 percent increase in traffic volume is expected to result in an increase in traffic noise level of about 4.4 dBA on CR 555 between CR 630 and CR 640. Increases on other area roads will be significantly lower. Generally, increases of this low level are only slightly noticeable and they are particularly insignificant in this case since there are no noise receptors on this portion of the road. Sunday services at the two small churches on CR 555 near CR 630 will not be impacted because construction activities are not normally expected to take place on Sundays. The majority of construction is expected to take place from 7 a.m. to 3 p.m., 5 to 6 days/week for the entire construction period although work at reduced levels could occur at any time. Consequently, because of the mostly day-time schedule, the expected low increase in traffic noise levels, and a lack of receptors, no significant noise impact is anticipated.

4.6.4 References

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TABLE 4.6.1-1
CONSTRUCTION TRAFFIC STUDY AREA

Roadway	Polk LOS C	FDOT LOS C	Project Traffic	Polk Impact[1]	FDOT Impact[1]
SR 37:					
Carter Rd to SR 60	1,790	1,650	40	2.2%	2.4%
SR 60 to Cameron St	1,680	1,650	88	5.2%	5.3%
Cameron St to CR 640	540	460	88	16.3%	19.1%
CR 640 to CR 630	540	460	0	0.0%	0.0%
CR 630 to CR 674	540	460	16	3.0%	3.5%
CR 555:					
SR 60 to CR 640	540	N/A	320	59.3%	N/A
CR 640 to Plant Entrance	540	N/A	528	97.8%	N/A
Plant Entrance to CR 630	540	N/A	224	41.5%	N/A
U.S. 98:					
CR 540A to Manor Dr	1,790	2,190	72	4.0%	3.3%
Manor Dr to SR 60A	1,660	2,330	104	6.3%	4.5%
U.S. 17:					
CR 630 to S. 9th St	1,090	1,540	88	8.1%	5.7%
S. 9th St to Sand Mountain Rd	2,280	2,190	16	0.7%	0.7%
U.S. 17/98:					
SR 60 to CR 640	2,280	2,190	32	1.4%	1.5%
CR 640 to CR 630	2,280	2,190	0	0.0%	0.0%
SR 60:					
CR 676 to SR 37	2,280	1,900	40	1.8%	2.1%
SR 37 to CR 555	2,280	2,190	8	0.4%	0.4%
CR 555 to SR 60A	2,280	1,540	264	11.6%	17.1%
SR 60A:					
SR 60 to U.S. 98	830	1,540	192	23.1%	12.5%
U.S. 98 to Wilson Ave	1,680	1,540	88	5.2%	5.7%
Wilson Ave to Van Fleet Dr	1,680	1,540	75	4.5%	4.9%
CR 640:					
Hillsborough Co to SR 37	540	N/A	8	1.5%	N/A
SR 37 to CR 555	540	N/A	104	19.3%	N/A
CR 555 to U.S. 17/98	540	N/A	48	8.9%	N/A
U.S. 17/98 to CR 559	540	N/A	20	3.7%	N/A
CR 630:					
SR 37 to CR 555	540	N/A	24	4.4%	N/A
CR 555 to U.S. 17/98	540	N/A	192	35.6%	N/A

[1] These values are the percent of roadway capacity represented by project traffic. Both Polk County and FDOT have established roadway capacities for the links shown; however they do not always agree. For purposes of establishing the study area, whichever "impact" value represented the worst case was chosen.

Source: Kimley-Horn, 1992

TABLE 4.6.1-2
PEAK SEASON PEAK HOUR
2002 NON-PROJECT ROADWAY CONDITIONS

Roadway	LOS Standard		A.M. Volume		Polk LOS	FDOT LOS	P.M. Volume		Polk LOS	FDOT LOS	Detailed Analysis
	Polk County	FDOT	Northbound/ Eastbound	Southbound/ Westbound			Northbound/ Eastbound	Southbound/ Westbound			
SR 37											
SR 60 to Cameron St	D	D	452	744	A	B	1,223	445	B	B	A
Cameron St to CR 640	C	C	253	830	D	E	719	242	D	D	A
CR 555											
SR 60 to CR 640	D	N/A	175	388	C	N/A	361	113	C	N/A	N/A
CR 640 to Agricola Rd	D	N/A	53	256	B	N/A	214	39	B	N/A	N/A
Agricola Rd to CR 630	D	N/A	57	185	B	N/A	152	50	A	N/A	N/A
U.S. 98											
SR 60 to Manor Dr	D	C	1,315	2,107	D	C	2,446	1,706	D	D	N/A
U.S. 17											
CR 630 to S. 9th St	D	C	523	492	C	B	621	684	C	B	N/A
SR 60											
CR 555 to SR 60A	D	C	1,003	780	A	B	1,251	1,166	B	B	N/A
SR 60A											
SR 60 to U.S. 98	D	C	738	611	A	B	1,048	834	A	B	N/A
U.S. 98 to Wilson Ave	D	C	1,255	1,301	B	B	1,400	1,530	B	B	N/A
CR 640											
SR 37 to CR 555	D	C	136	254	B	N/A	202	153	B	N/A	N/A
CR 555 to U.S. 17/98	D	C	96	161	A	N/A	165	124	A	N/A	N/A
CR 630											
CR 555 to U.S. 17/98	D	C	158	263	B	N/A	302	204	B	N/A	N/A

Note: Detailed analysis performed using 1985 HCM Arterial Analysis.
FDOT LOS based on section volumes, as required in 1992 FDOT LOS manual:
Source: Kimley-Horn, 1992

TABLE 4.6.1-3
2002 NON-PROJECT PEAK HOUR INTERSECTION CONDITIONS

Intersection	A.M. LOS	P.M. LOS
SR 37 and SR 60 (s)	C	D
SR 37 and CR 640 (u)	A	B
CR 555 and SR 60 (s)	B	B
CR 555 and CR 640 (u)	A	B
CR 555 and CR 630 (u)	A	A
SR 60 and SR 60A (u)	B	F
US 98 and SR 60A (s)	F	F
US 98 and Manor Dr (s)	F	D
SR 60A and Wilson Ave (s)	B	B
US 17/98 and CR 640 (u)	A	A
US 17/98 and CR 630 (s)	C	C

Note: u - unsignalized intersection
s - signalized intersection
Source: Kimley-Horn, 1992

TABLE 4.6.1-4
PEAK SEASON PEAK HOUR
2010 NON-PROJECT ROADWAY CONDITIONS

Roadway	LOS Standard		A.M. Volume		Polk LOS	FDOT LOS	P.M. Volume		Polk LOS	FDOT LOS
	Polk County	FDOT	Northbound/ Eastbound	Southbound/ Westbound			Northbound/ Eastbound	Southbound/ Westbound		
SR 37										
SR 60 to Cameron St	D	D	534	879	A	B	1,444	525	B	C
Cameron St to CR 640	C	C	299	981	E	E	849	285	D	E
CR 555										
SR 60 to CR 640	D	N/A	206	458	C	N/A	427	133	C	N/A
CR 640 to Agricola Rd	D	N/A	62	303	B	N/A	252	46	B	N/A
Agricola Rd to CR 630	D	N/A	68	218	B	N/A	178	59	B	N/A
U.S. 98										
SR 60 to Manor Dr	D	C	1,553	2,489	D	D	2,888	2,015	F	F
U.S. 17										
CR 630 to S. 9th St	D	C	617	582	C	B	734	807	C	B
SR 60										
CR 555 to SR 60A	D	C	1,185	921	B	B	1,478	1,377	B	C
SR 60A										
SR 60 to U.S. 98	D	C	871	721	A	B	1,238	985	B	C
U.S. 98 to Wilson Ave	D	C	1,483	1,536	B	B	1,653	1,807	E	C
CR 640										
SR 37 to CR 555	D	N/A	160	299	B	N/A	239	180	B	N/A
CR 555 to U.S. 17/98	D	N/A	112	190	B	N/A	195	146	B	N/A
CR 630										
CR 555 to U.S. 17/98	D	N/A	186	312	B	N/A	357	241	C	N/A

Source: Kimley-Horn, 1992

TABLE 4.6.1-5
2010 NON-PROJECT PEAK HOUR INTERSECTION CONDITIONS

Intersection	A.M. LOS	P.M. LOS
SR 37 and SR 60 (s)	D	D
SR 37 and CR 640 (u)	B	B
CR 555 and SR 60 (s)	C	B
CR 555 and CR 640 (u)	A	B
CR 555 and CR 630 (u)	B	A
SR 60 and SR 60A (u)	B	F
US 98 and SR 60A (s)	F	F
US 98 and Manor Dr (s)	F	F
SR 60A and Wilson Ave (s)	B	C
US 17/98 and CR 640 (u)	A	A
US 17/98 and CR 630 (s)	C	C

Note: u - unsignalized intersection
s - signalized intersection
Source: Kimley-Horn, 1992

TABLE 4.6.1-6
PEAK SEASON A.M. PEAK HOUR
2002 TOTAL ROADWAY CONDITIONS

Roadway	LOS Standard		Construction Volume		Total Volume		Polk LOS	FDOT LOS	Detailed Analysis
	Polk County	FDOT	Northbound/ Eastbound	Southbound/ Westbound	Northbound/ Eastbound	Southbound/ Westbound			
SR 37:									
SR 60 to Cameron St	D	D	7	88	459	832	A	B	A
Cameron St to SR 640	C	C	7	88	260	918	E	E	A
CR 555:									
SR 60 to CR 640	D	N/A	25	320	200	708	D	N/A	N/A
C.R. 640 to Agricola Rd	D	N/A	40	528	93	784	D	N/A	N/A
Agricola to CR 630	D	N/A	224	17	281	202	B	N/A	N/A
U.S. 98:									
SR 60 to Manor Dr	D	C	7	104	1,322	2,221	D	C	N/A
U.S. 17:									
CR 630 to S. 9th St	D	C	96	7	619	499	C	B	N/A
SR 60:									
CR 555 to SR 60A	D	C	19	256	1,022	1,036	A	B	N/A
SR 60A:									
SR 60 to U.S. 98	D	C	14	192	752	803	A	B	N/A
U.S. 98 to Wilson Ave	D	C	7	86	1,262	1,387	B	B	N/A
CR 640:									
SR 37 to CR 555	D	N/A	100	8	236	262	B	N/A	N/A
CR 555 to U.S. 17/98	D	N/A	4	48	99	209	B	N/A	N/A
CR 630:									
CR 555 to U.S. 17/98	D	N/A	14	188	172	451	C	N/A	N/A

Note: Detailed analysis performed using 1985 HCM arterial analysis.
FDOT LOS based on section volumes as required in 1992 FDOT LOS manual.
Source: Kimley-Horn, 1992

TABLE 4.6.1-7
PEAK SEASON P.M. PEAK HOUR
2002 TOTAL ROADWAY CONDITIONS

Roadway	LOS Standard		Construction Volume		Total Volume		Polk LOS	FDOT LOS	Detailed Analysis
	Polk County	FDOT	Northbound/ Eastbound	Southbound/ Westbound	Northbound/ Eastbound	Southbound/ Westbound			
SR 37:									
SR 60 to Cameron St	D	D	88	7	1,311	452	B	B	A
Cameron St to SR 640	C	C	88	7	807	249	D	E	A
CR 555:									
SR 60 to CR 640	D	N/A	320	25	681	139	D	N/A	N/A
C.R. 640 to Agricola Rd	D	N/A	528	40	742	79	D	N/A	N/A
Agricola Rd to CR 630	D	N/A	17	224	169	273	B	N/A	N/A
U.S. 98:									
SR 60 to Manor Dr	D	C	104	7	2,550	1,714	E	F	N/A
U.S. 17:									
CR 630 to S. 9th St	D	C	7	96	628	780	C	B	N/A
SR 60:									
CR 555 to SR 60A	D	C	256	19	1,507	1,185	B	C	N/A
SR 60A:									
SR 60 to U.S. 98	D	C	192	14	1,240	849	B	C	N/A
U.S. 98 to Wilson Ave	D	C	86	7	1,486	1,537	B	C	N/A
CR 640:									
SR 37 to CR 555	D	N/A	8	100	210	253	B	N/A	N/A
CR 555 to U.S. 17/98	D	N/A	48	4	213	128	B	N/A	N/A
CR 630:									
CR 555 to U.S. 17/98	D	N/A	188	14	490	218	C	N/A	N/A

Note: Detailed analysis performed using 1985 HCM arterial analysis.
FDOT LOS based on section volumes, as required in 1992 FDOT LOS manual.
Source: Kimley-Horn, 1992

TABLE 4.6.1-8
2002 TOTAL PEAK HOUR TRAFFIC
INTERSECTION CONDITIONS

Intersection	Existing Geometry A.M. LOS	Existing Geometry P.M LOS	With Improvements A.M. LOS	With Improvements P.M. LOS
SR 37 and SR 60 (s)	C	D	N/A	N/A
SR 37 and CR 640 (u)	B	B	N/A	N/A
CR 555 and SR 60 (s)	F	C	C	C
CR 555 and CR 640 (u)	B	B	N/A	N/A
CR 555 and CR 630 (u)	B	B	N/A	N/A
SR 60 and SR 60A (u)	B	F	B	C*
US 98 and SR 60A (s)	F	F	C*	C*
US 98 and Manor Dr (s)	F	D	C*	C*
SR 60A and Wilson Ave (s)	B	B	N/A	N/A
US 17/98 and CR 640 (u)	A	A	N/A	N/A
US 17/98 and CR 630 (s)	C	C	N/A	N/A

Note: N/A - No improvement recommended
* Improvements to be identified and implemented by FDOT
Source: Kimley-Horn, 1992

TABLE 4.6.1-9
PEAK SEASON A.M. PEAK HOUR
2010 TOTAL ROADWAY CONDITIONS

Roadway	LOS Standard		Construction Volume		Total Volume		Polk LOS	FDOT LOS	Detailed Analysis
	Polk County	FDOT	Northbound/ Eastbound	Southbound/ Westbound	Northbound/ Eastbound	Southbound/ Westbound			
SR 37:									
SR 60 to Cameron St	D	D	7	88	541	967	A	B	A
Cameron St to SR 640	C	C	7	88	306	1,069	E	E	A
CR 555:									
SR 60 to CR 640	D	N/A	25	320	231	778	D	N/A	N/A
C.R. 640 to Agricola Rd	D	N/A	40	528	102	831	D	N/A	N/A
Agricola Rd to CR 630	D	N/A	224	17	292	235	B	N/A	N/A
U.S. 98:									
SR 60 to Manor Dr	D	C	7	104	1,560	2,593	E	F	N/A
U.S. 17:									
CR 630 to S 9th St	D	C	96	7	713	589	C	B	N/A
SR 60:									
CR 555 to SR 60A	D	C	19	256	1,204	1,177	B	B	N/A
SR 60A:									
SR 60 to U.S. 98	D	C	14	192	885	913	A	B	N/A
U.S. 98 to Wilson Ave	D	C	7	86	1,490	1,622	C	B	N/A
CR 640:									
SR 37 to CR 555	D	N/A	100	8	260	307	B	N/A	N/A
CR 555 to U.S. 17/98	D	N/A	4	48	116	238	B	N/A	N/A
CR 630:									
CR 555 to U.S. 17/98	D	N/A	14	188	200	500	C	N/A	N/A

Note: Detailed analysis performed using 1985 HCM arterial analysis.
FDOT LOS based on section volumes, as required in 1992 FDOT LOS manual.
Source: Kimley-Horn, 1992

TABLE 4.6.1-10
PEAK SEASON P.M. PEAK HOUR
2010 TOTAL ROADWAY CONDITIONS

Roadway	LOS Standard		Construction Volume		Total Volume		Polk LOS	FDOT LOS	Detailed Analysis
	Polk County	FDOT	Northbound/ Eastbound	Southbound/ Westbound	Northbound/ Eastbound	Southbound/ Westbound			
SR 37:									
SR 60 to Cameron St	D	D	88	7	1,532	532	B	C	A
Cameron St to SR 640	C	C	88	7	937	292	E	E	A
CR 555:									
SR 60 to CR 640	D	N/A	320	25	747	158	D	N/A	N/A
C.R. 640 to Agricola Rd	D	N/A	528	40	780	86	D	N/A	N/A
Agricola Rd to CR 630	D	N/A	17	224	195	283	B	N/A	N/A
U.S. 98:									
SR 60 to Manor Dr	D	C	104	7	2,992	2,022	F	F	N/A
U.S. 17:									
CR 630 to S 9th St	D	C	7	96	741	903	C	B	N/A
SR 60:									
CR 555 to SR 60A	D	C	256	19	1,734	1,396	C	D	N/A
SR 60A:									
SR 60 to U.S. 98	D	C	192	14	1,434	999	B	D	N/A
U.S. 98 to Wilson Ave	D	C	86	7	1,739	1,814	E	D	N/A
CR 640:									
SR 37 to CR 555	D	N/A	8	100	247	280	B	N/A	N/A
CR 555 to U.S. 17/98	D	N/A	48	4	243	150	B	N/A	N/A
CR 630:									
CR 555 to U.S. 17/98	D	N/A	188	14	545	255	D	N/A	N/A

Note: Detailed analysis performed using 1985 HCM arterial analysis.
FDOT LOS based on section volumes, as required in 1992 FDOT LOS manual.
Source: Kimley-Horn, 1992

TABLE 4.6.1-11
2010 TOTAL PEAK HOUR TRAFFIC
INTERSECTION CONDITIONS

Intersection	Existing Geometry A.M. LOS	Existing Geometry P.M LOS	With Improvements A.M. LOS	With Improvements P.M. LOS
SR 37 and SR 60 (s)	D	D	N/A	N/A
SR 37 and CR 640 (u)	B	B	N/A	N/A
CR 555 and SR 60 (s)	F	F	D	C
CR 555 and CR 640 (u)	B	B	N/A	N/A
CR 555 and CR 630 (u)	B	B	N/A	N/A
SR 60 and SR 60A (u)	B	F	B	C*
US 98 and SR 60A (s)	F	F	C*	C*
US 98 and Manor Dr (s)	F	F	C*	C*
SR 60A and Wilson Ave (s)	B	C	N/A	N/A
US 17/98 and CR 640 (u)	A	A	N/A	N/A
US 17/98 and CR 630 (s)	C	C	N/A	N/A

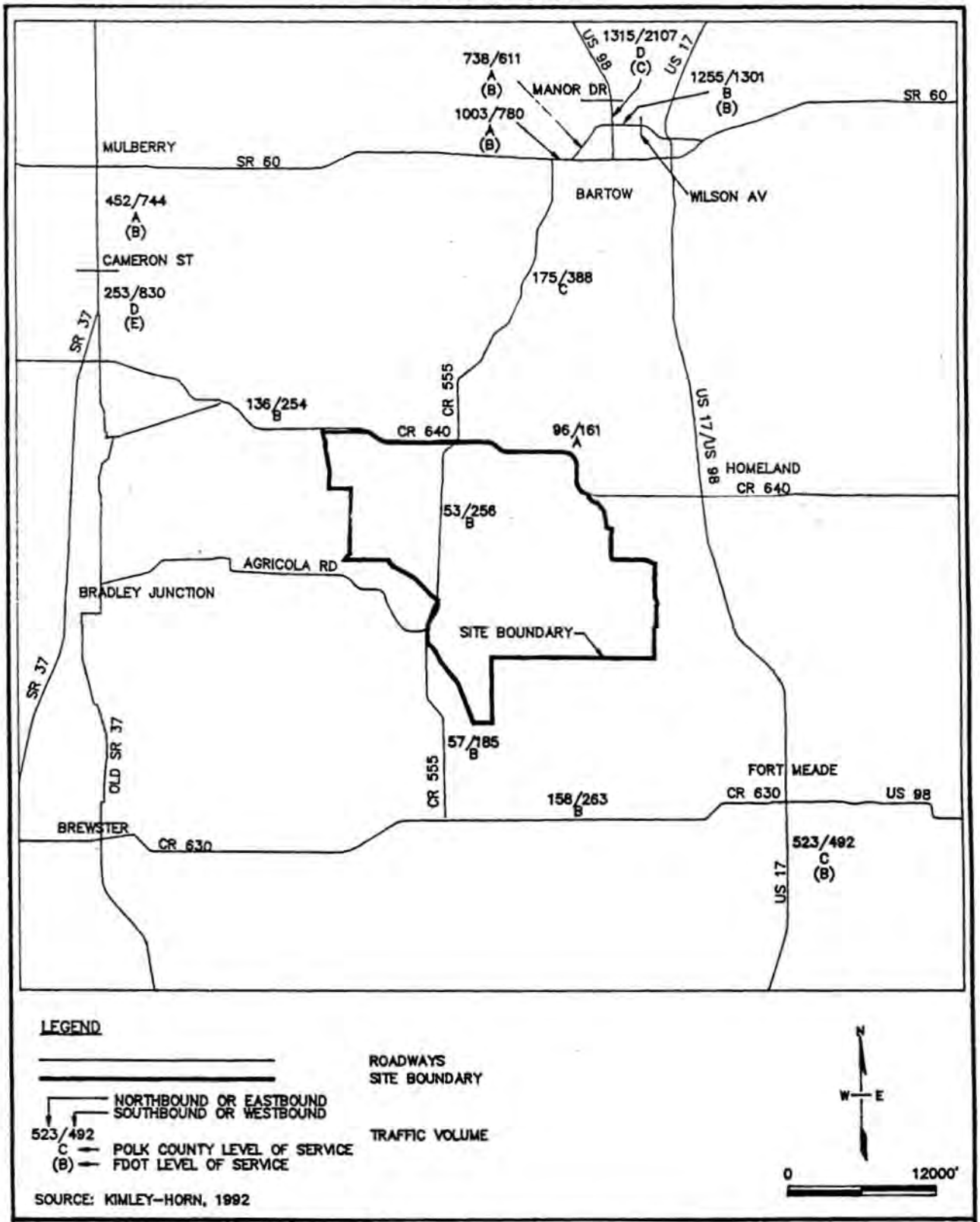
Note: N/A - No improvement recommended
* Improvements to be identified and implemented by FDOT
Source: Kimley-Horn, 1992

TABLE 4.6.3-1
MAJOR NOISE SOURCES
DURING PLANT CONSTRUCTION

Equipment	Minimum and Maximum Number	Usage Factor[1]	Average Sound Level at 50 Feet (dBA)
Pile Driver	0-1	0.04	101
Crawler Crane	2-16	0.16	83
Cherry Picker	2-24	0.16	79
Bulldozer	1-3	0.40	80
Gradall	0-2	0.08	85
Compactor	0-5	0.10	74
Front-End Loader	1-6	0.40	79
Backhoe	1-9	0.16	85
Dump Truck	2-12	0.40	91
Flat Bed Truck	2-20	0.10	91
Concrete Truck	0-6	0.40	85
Tractor Trailers	0-4	0.10	91
Pickup Truck	4-40	0.40	58
Man Lift	0-17	0.16	79
Air Compressor	1-11	1.00	81
Welder	0-7	1.00	78

(1) Fraction of time equipment is operating during shift.

Source: U.S. EPA, 1971 (for usage factors and sound levels).

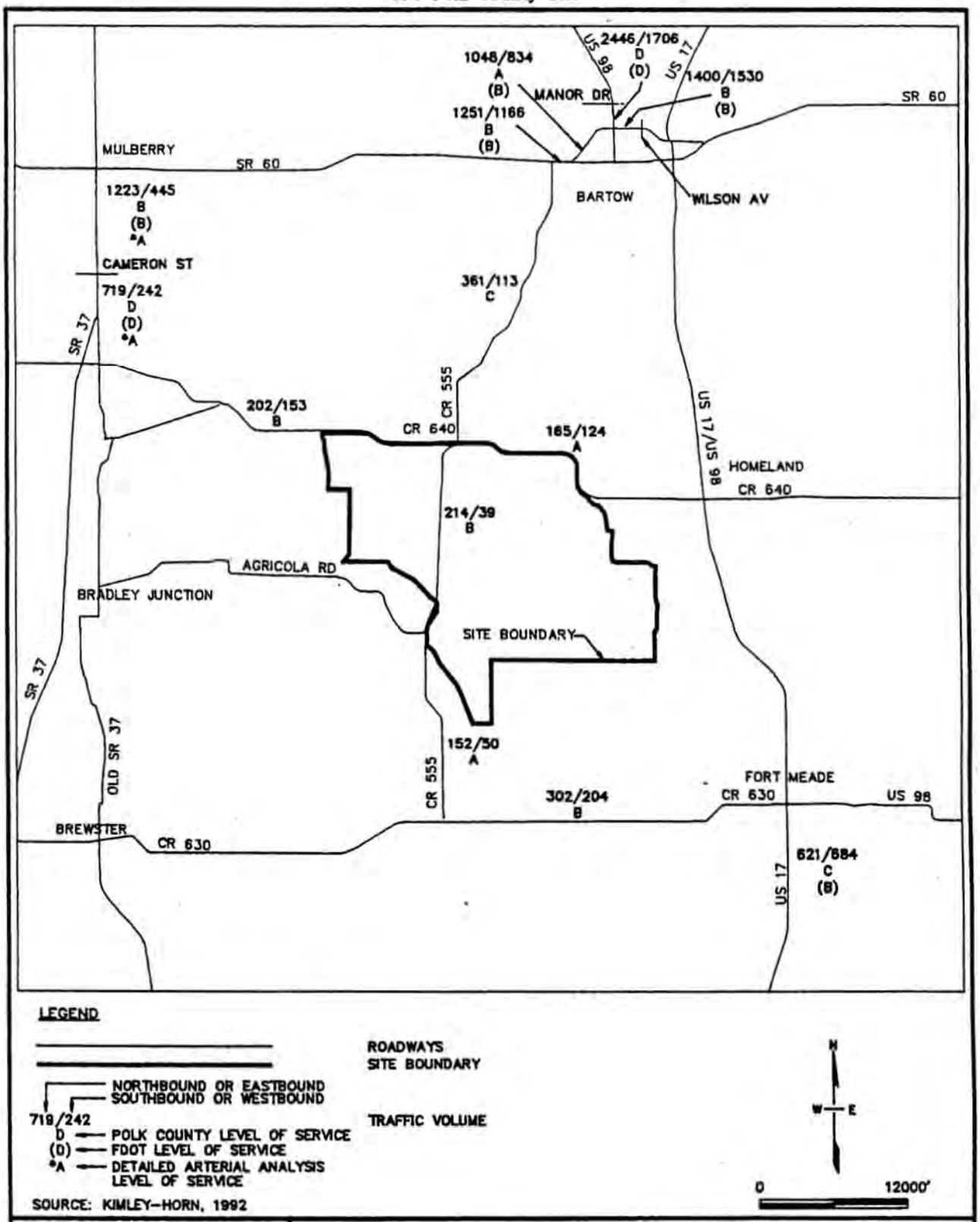


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FIGURE 4.6.1-1

2002 PEAK SEASON
A.M. PEAK HOUR NON-PROJECT TRAFFIC

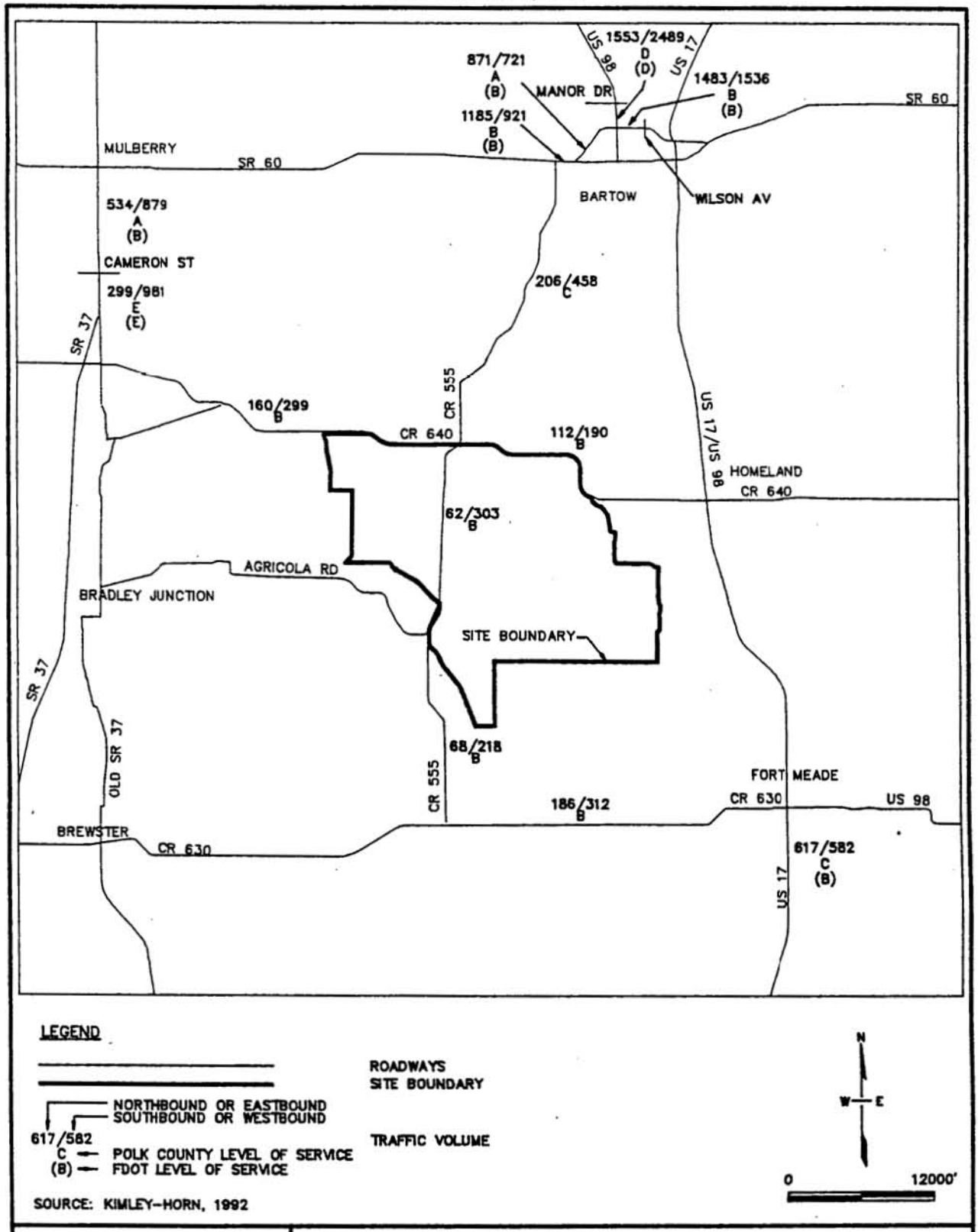


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FIGURE 4.6.1-2

2002 PEAK SEASON P.M. PEAK HOUR NON-PROJECT TRAFFIC

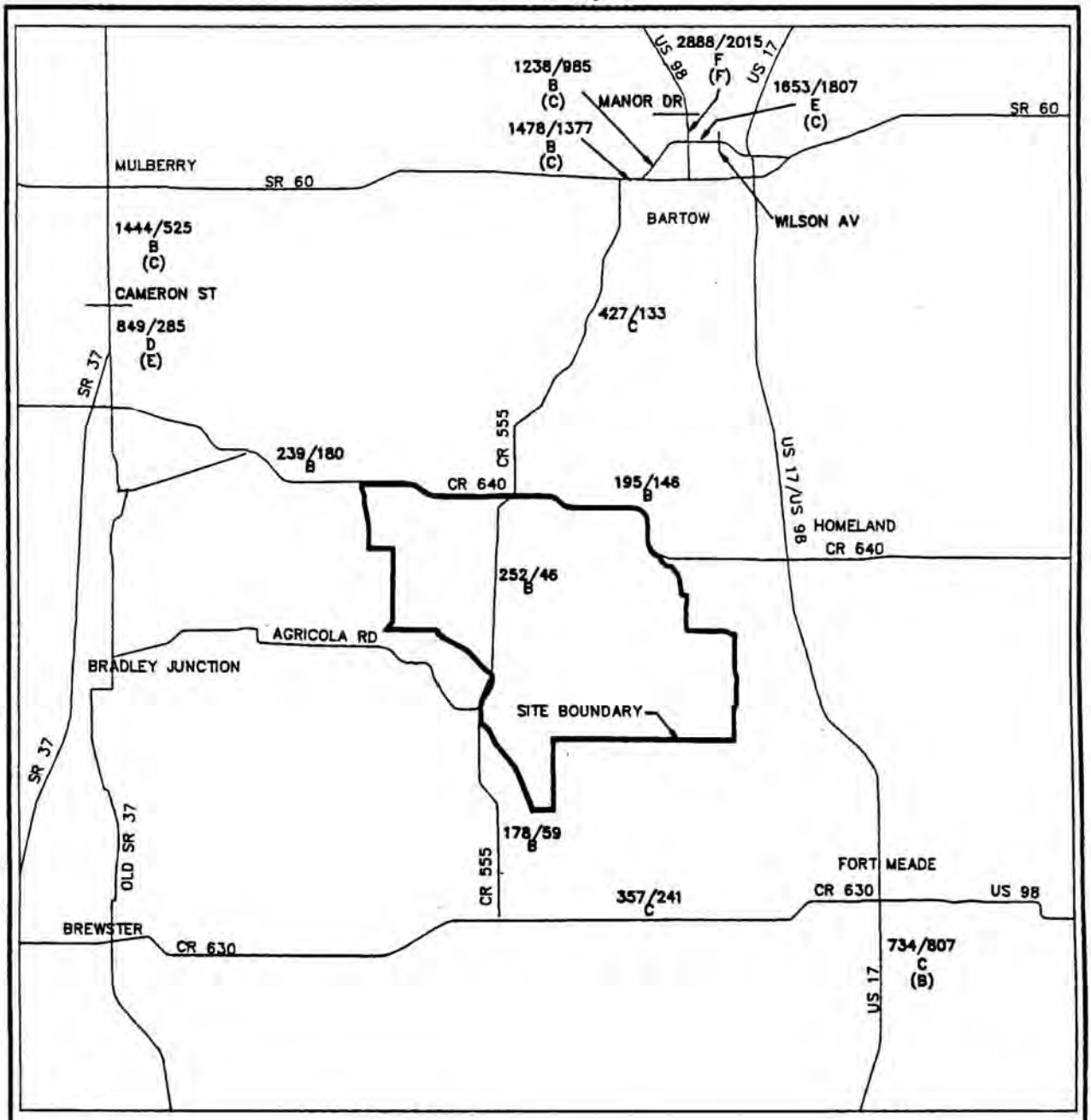


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FIGURE 4.6.1-3

2010 PEAK SEASON
A.M. PEAK HOUR NON-PROJECT TRAFFIC



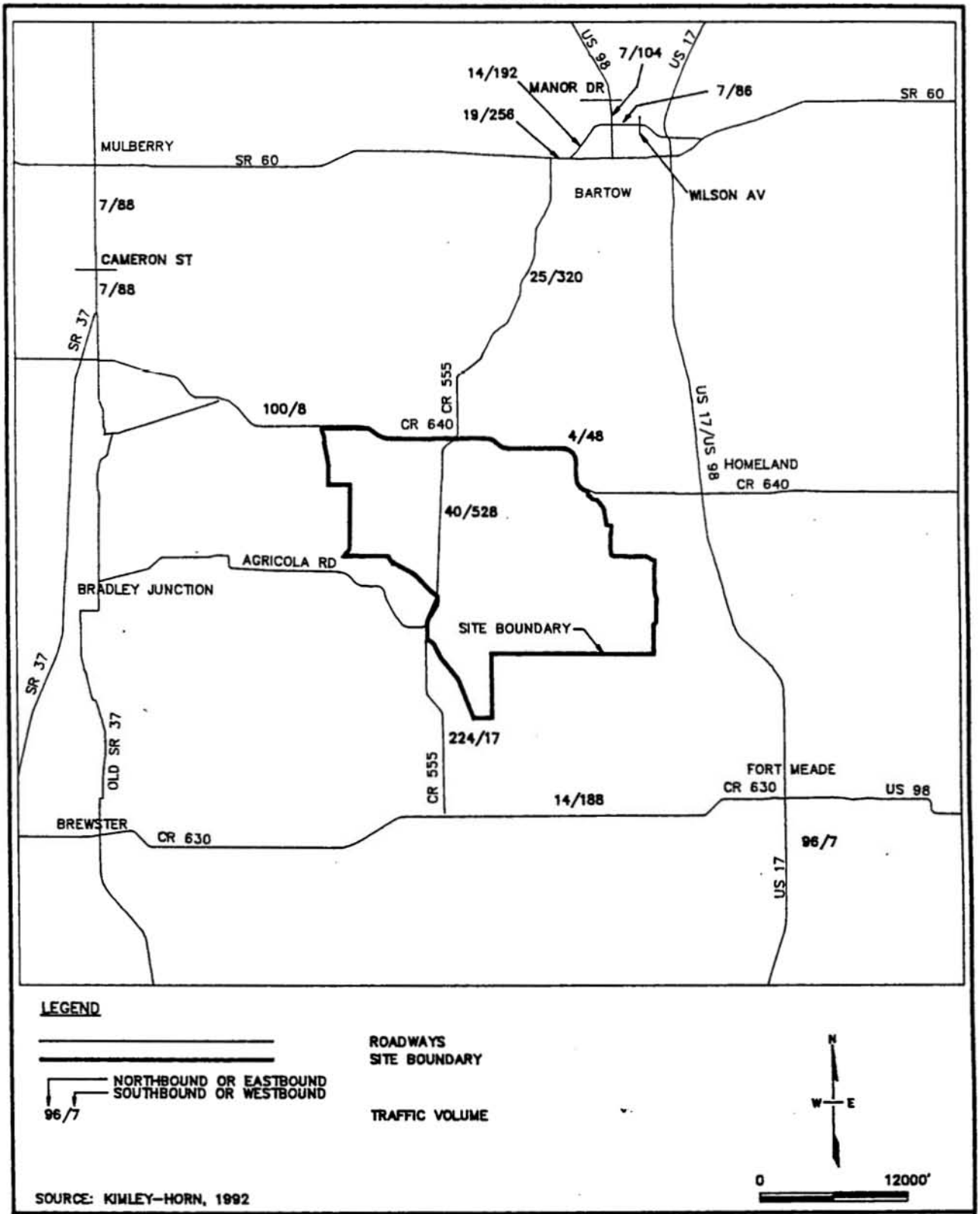
SOURCE: KIMLEY-HORN, 1992

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FIGURE 4.6.1-4

2010 PEAK SEASON
P.M. PEAK HOUR NON-PROJECT TRAFFIC

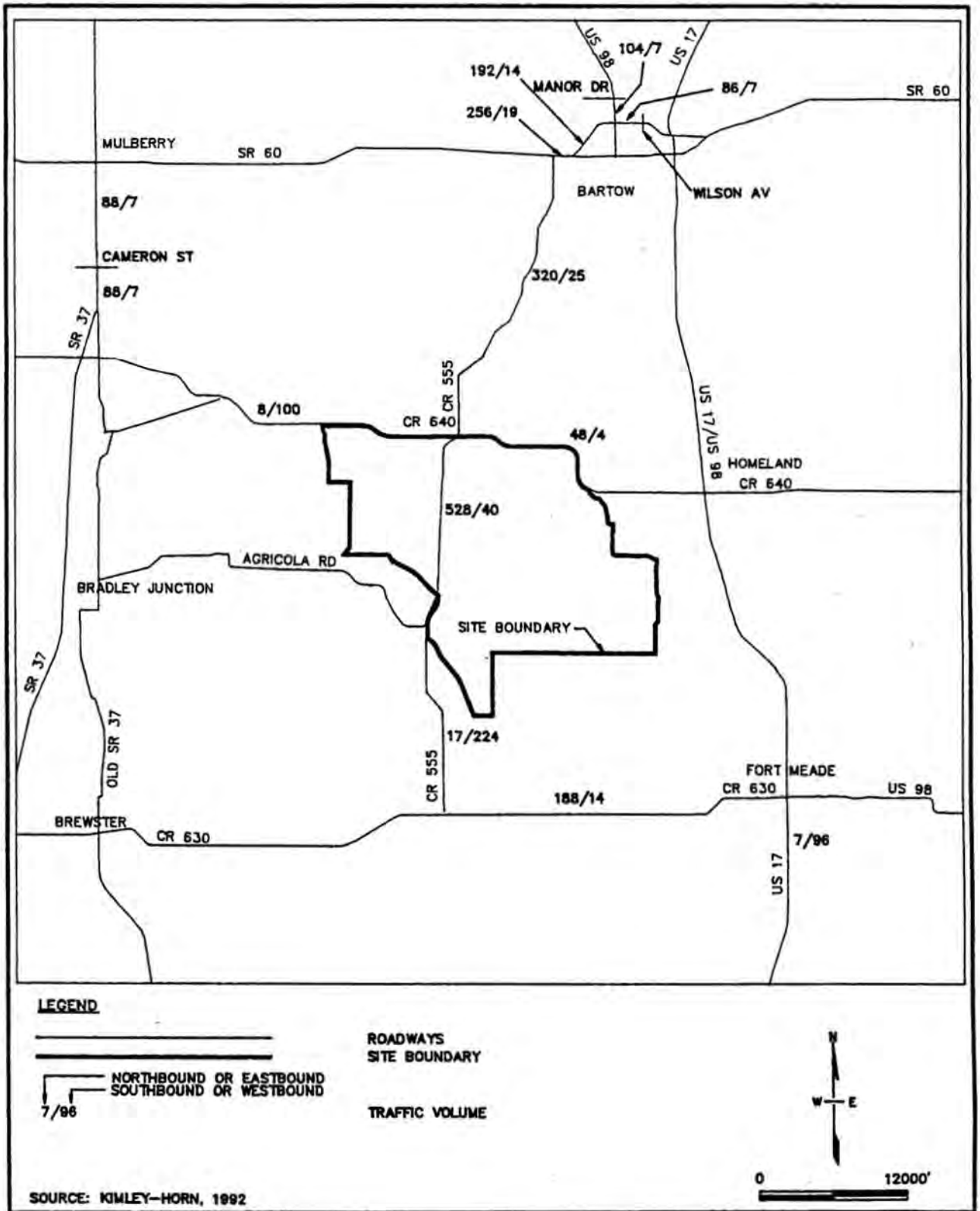


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FIGURE 4.6.1-5

CONSTRUCTION PROJECT TRIPS A.M. PEAK HOUR

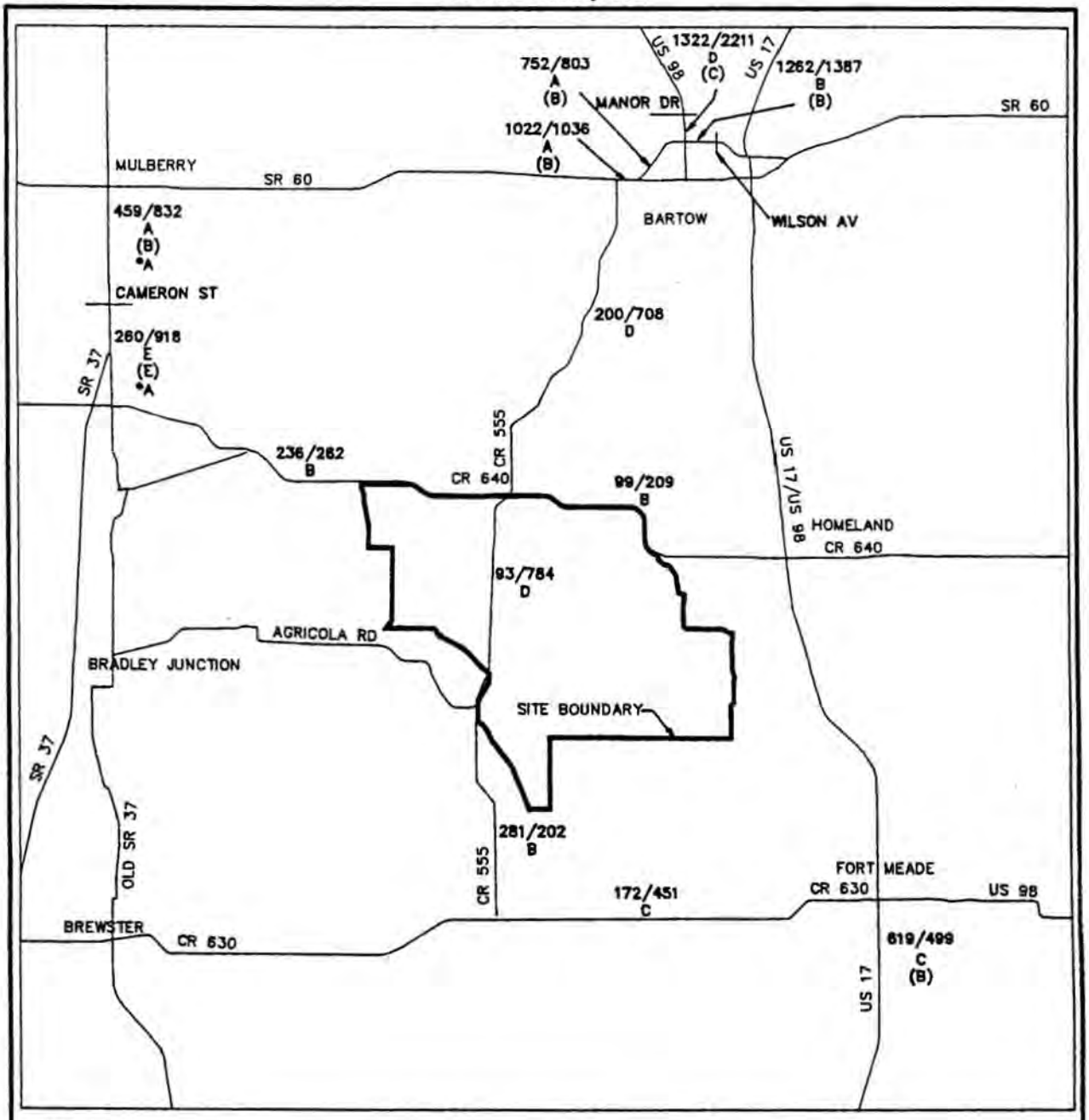


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FIGURE 4.6.1-6

CONSTRUCTION PROJECT TRIPS P.M. PEAK HOUR

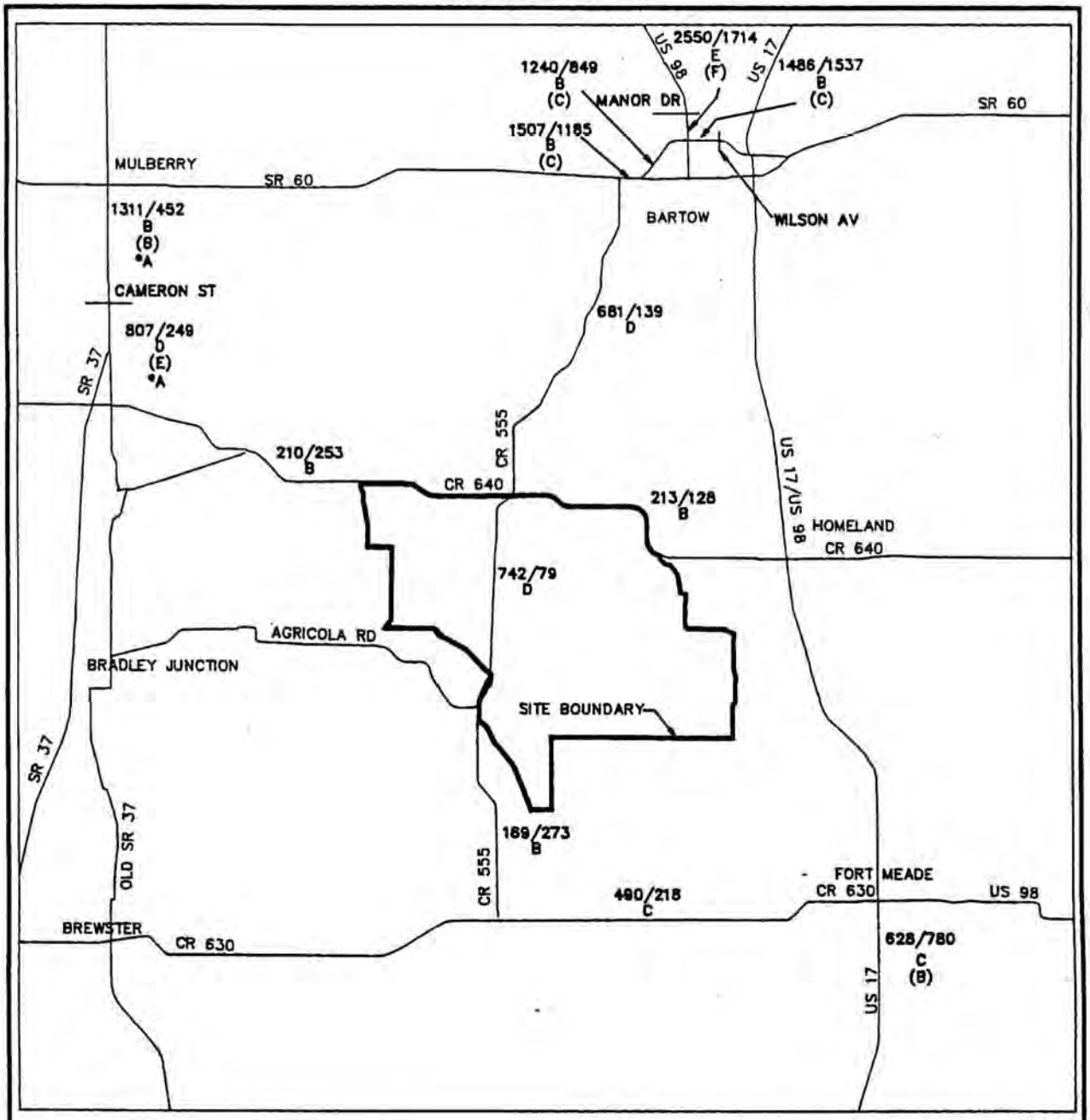


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FIGURE 4.6.1-7

2002 PEAK SEASON
A.M. PEAK HOUR TOTAL TRAFFIC

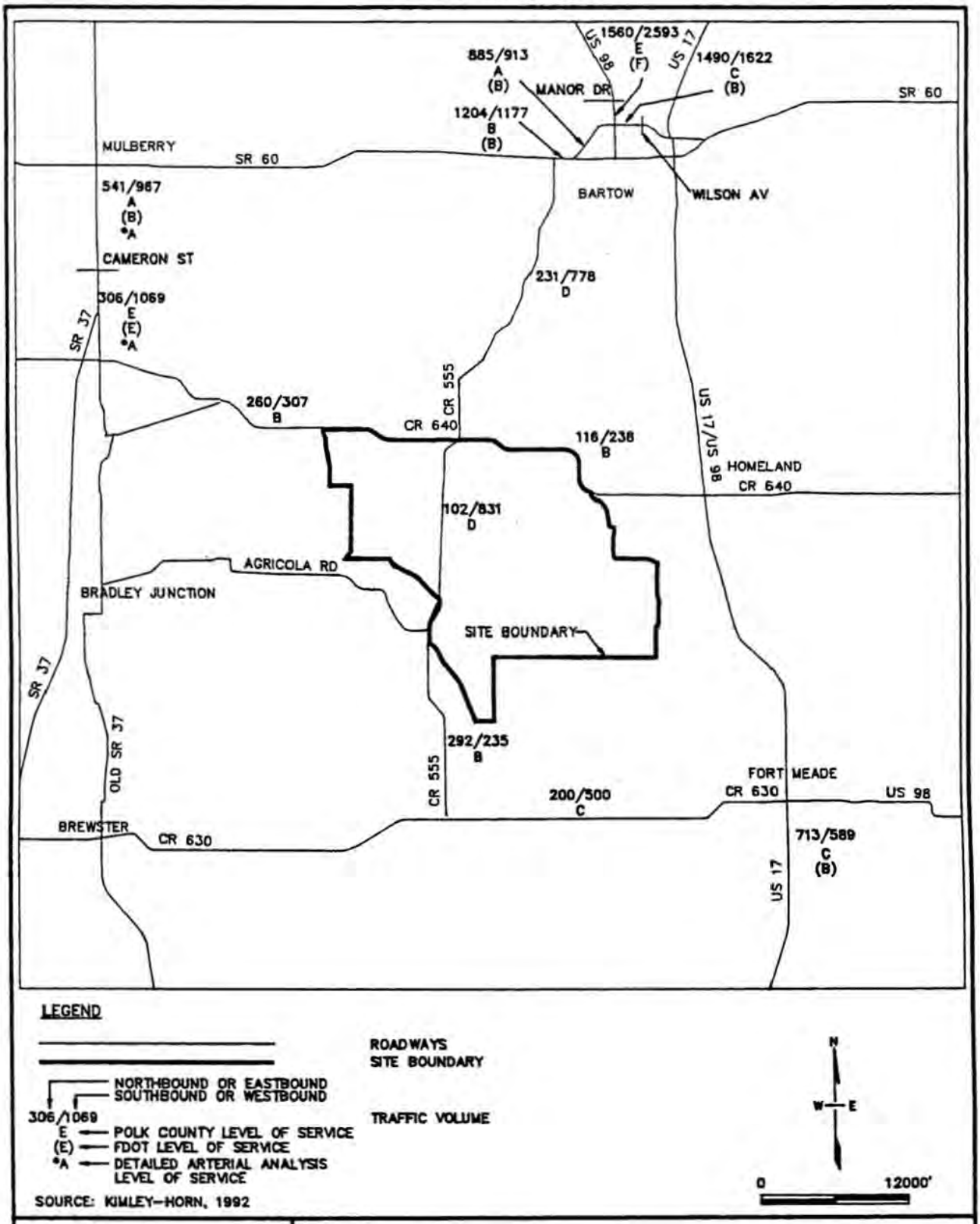


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FIGURE 4.6.1-8

2002 PEAK SEASON P.M. PEAK HOUR TOTAL TRAFFIC

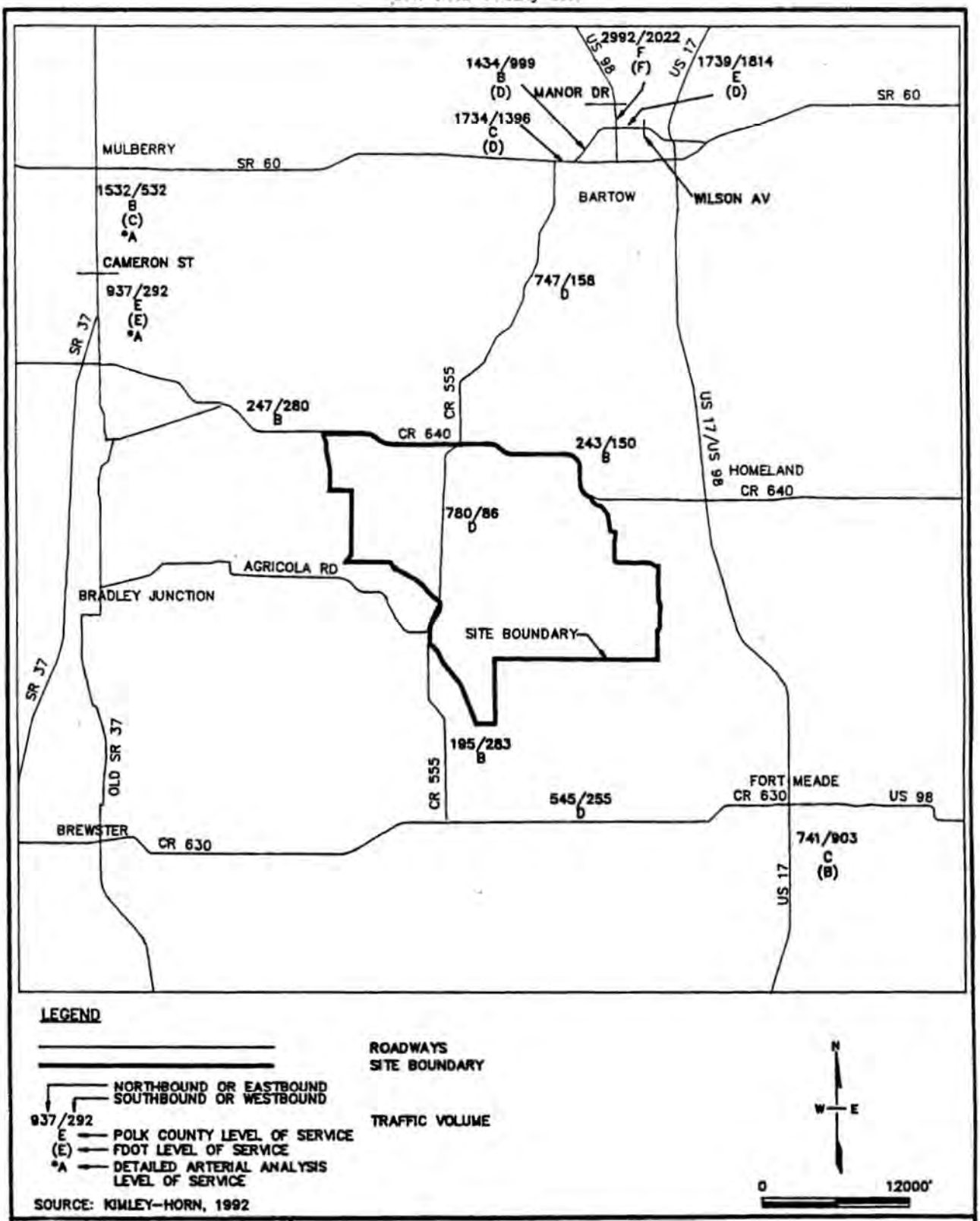


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FIGURE 4.6.1-9

2010 PEAK SEASON
A.M. PEAK HOUR TOTAL TRAFFIC

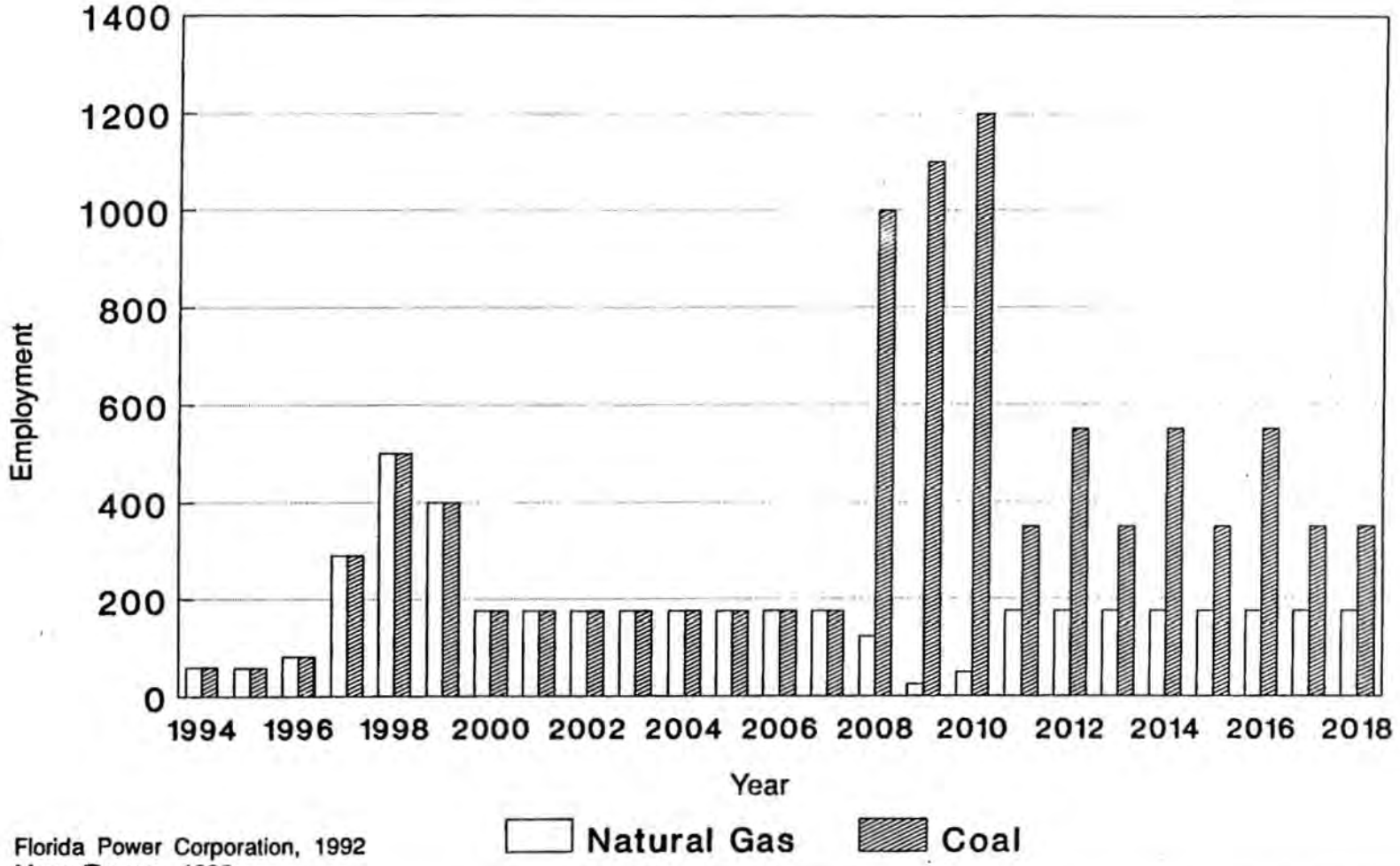


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FIGURE 4.6.1-10

2010 PEAK SEASON P.M. PEAK HOUR TOTAL TRAFFIC



Sources: Florida Power Corporation, 1992
Moore/Bowers, 1992

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Polk County Site

FIGURE 4.6.2-1
CONSTRUCTION EMPLOYMENT ESTIMATES

10.5.1.3

10.5.1.3 Traffic Impact Analysis (Operation of Power Plant)

This section contains the analysis of traffic associated with the operation of the Hines Energy Complex Power Blocks through site buildout. The analysis was completed in 1992.

5.9 OTHER PLANT OPERATION EFFECTS

Traffic impacts associated with plant operation are discussed below. All other effects of plant operation are discussed in the appropriate sections of the Site Certification Application (SCA). No additional discussion is needed to describe environmental effects of plant operation.

5.9.1 Highway Traffic

Traffic associated with the operation of the power plant represents a long term impact to Polk County roadways. While these impacts are much less than those of the peak construction activity, they are more significant since they will be recurring from buildout into the future. Traffic impacts will be directly related to the number of employees, since materials for plant operations will arrive primarily by rail and/or pipeline. A total of 554 operations workers will be needed for ultimate site development. This employment projection was the basis of the traffic analysis.

This traffic impact analysis was prepared based on two different scenarios, one that assumes buildout in 2008 and another that assumes buildout in 2018. The Polk County Conditional Use Permit (CUP) application included a traffic impact analysis based on the first scenario. Although that is one possible scenario, Section 3.1 of this SCA presents the now anticipated buildout schedule, i.e., the second scenario, reflecting a longer buildout period than that assumed for the Polk County CUP traffic analysis. For purposes of continuity, this section addresses the traffic impacts of both the original, shorter, buildout schedule and the currently proposed, longer, buildout schedule.

The CUP traffic impact analysis was reviewed by both Polk County and the Florida Department of Transportation (FDOT). Recommendations for improvements were developed with input from both agencies. These improvements became the subject of conditions of the Polk County CUP, approved by the Polk County Board of County Commissioners on June 2, 1992. A copy of the CUP is included in Appendix 10.2.4, and the traffic condition relevant to project operation is also reiterated in Section 5.9.1.7. In recognition of the fact that the buildout schedule was subject to change, the CUP condition relates the need for roadway or intersection improvements to a level of employment rather than a specific year and provide for monitoring of employment and traffic conditions to determine the appropriate

timing of the improvements. Thus, the Polk County CUP condition effectively addresses the need for improvements regardless of changes in the buildout schedule.

5.9.1.1 Study Area

The study area for this analysis was determined to be roadways on which the project contributes 5 percent or more of Level of Service (LOS) C. The determination of significant impact is based on peak-hour peak-direction traffic volumes generated from plant operations compared to the generalized LOS C volumes adopted by Polk County and FDOT. The roadway capacities were shown in Tables 2.2.7-3 and 2.2.7-4 in Section 2.2.7.2. Table 5.9.1-1 summarizes the impact on the area roadways.

Based on this analysis, the following roadways were included as study links:

- CR 555: SR 60 to CR 630, and
- CR 630: CR 555 to U.S. 17/98.

The following intersections were also included in the study:

- CR 555 and SR 60,
- CR 555 and CR 640 (unsignalized),
- CR 555 and CR 630 (unsignalized), and
- U.S. 17/98 and CR 630.

Since all of the study roadways are Polk County roadways, no FDOT generalized LOS volumes are applicable for the analysis of operations traffic.

5.9.1.2 Year 2008 Non-Project Traffic

A projection of future traffic not associated with the FPC site has been made based on existing volumes increased with an annual growth rate of 2.1 percent, compounded annually, to the year 2008. Roadway volumes were increased to 2008 levels as shown in Figures 5.9.1-1 and 5.9.1-2. These volumes were analyzed with generalized roadway LOS volume

tables. Table 5.9.1-2 shows the volumes and their corresponding LOS. All of the roadway segments are anticipated to operate acceptably.

Intersection volumes were similarly derived for 2008 conditions. Two of the study intersections are currently unsignalized. All of the intersections are expected to operate acceptably in 2008 without the addition of project volumes. All of the study intersections were analyzed using the Highway Capacity Manual (HCM) signalized intersection methodology. Table 5.9.1-3 summarizes the results of the analysis. The worksheets are included in Appendix 10.5.2.

5.9.1.3 Year 2018 Non-Project Traffic

The longer buildout scenario provides for an additional 10 years before the buildout of the power plant. During this additional 10 years, it is assumed that non-project volumes will continue to increase at 2.1 percent per year, compounded annually. As shown in Table 5.9.1-4 and on Figures 5.9.1-3 and 5.9.1-4, non-project volumes were increased to 2018 levels.

The roadway volumes were analyzed using the Polk County adopted generalized roadway service volumes as shown in Table 2.2.7-3. The roadways, as shown in Table 5.9.1-4, are all expected to operate acceptably.

Intersections were evaluated using HCM signalized intersection methodology. The analysis indicated that three of the four intersections are expected to operate acceptably. Without improvements, the CR 555 and SR 60 intersection will operate at LOS F. Improvements to alleviate this deficiency are recommended as a part of the total traffic analysis. Table 5.9.1-5 summarizes the intersection conditions. This unsignalized intersection is not expected to warrant the installation of a traffic signal without the addition of project traffic.

5.9.1.4 Plant Operations Traffic

Trips associated with the operation of the power plant were estimated through a trip generation analysis and then a distribution and assignment process. The plant operations are anticipated to be conducted with three shifts. It is planned to operate the plant with 65 percent of the employees working during the day shift. The remaining 35 percent of the

employees will work during the two other shifts. The following is the projected employment by shift:

Day Shift	360 employees
Evening Shift	97 employees
Night Shift	97 employees

TRIP GENERATION

Trip generation expected from a power plant has been related to the number of employees. A trip generation study of a similar type of power plant was conducted by Kimley-Horn in 1990. The study was conducted at the Florida Power & Light Company Martin Plant in Martin County. At the time of the study, the operating plant had 204 employees. The trip generation rates found in the study are shown in Table 5.9.1-6. The rates and equations in the Institute of Transportation Engineers (ITE) Trip Generation were also reviewed as a comparison. Land Use Code 130: Heavy Industrial is the category which most closely approximates a power plant. Using Heavy Industrial trip generation, rates similar to those observed at the Martin plant were found. In 1974, FDOT conducted a study of a FPC power plant in Pinellas County. Though peak hour information was not available from the FDOT study, the daily rate corresponded well with the Martin Plant data.

Table 5.9.1-6 summarizes the trip generation rates per employee as obtained from the data sources consulted. The data from the Martin Plant were used in trip generation for this analysis because they are the most recent data available and are project specific. Table 5.9.1-7 presents anticipated generation of new trips.

DISTRIBUTION AND ASSIGNMENT

Trips were distributed and assigned to the roadway network using the FSUTMS assignment discussed in conjunction with construction traffic (Section 4.6.1.4). Using the percentage assignment derived from FSUTMS, the expected project trips were assigned to the roadway network. From this assignment, the study area was defined, as shown previously in Table 5.9.1-1. At study intersections, peak hour project traffic turning movements were determined. Figures 5.9.1-5 and 5.9.1-6 illustrate the operations traffic volumes on the study

roadways during the a.m. and p.m. peak hours. The volumes are also included in Tables 5.9.1-8, 5.9.1-9, 5.9.1-11, and 5.9.1-12.

5.9.1.5 2008 Total Traffic Capacity Analysis

The 2008 non-project volumes and operations traffic volumes were combined to provide a projection of 2008 total traffic. The total traffic volumes on study roadways and intersections were analyzed to determine the anticipated operating conditions. Figures 5.9.1-7 and 5.9.1-8 illustrate the 2008 a.m. and p.m. peak hour roadway volumes respectively.

The roadways were evaluated using the Polk County generalized LOS volumes. Tables 5.9.1-8 and 5.9.1-9 summarize the volumes and generalized LOS. All of the roadways are anticipated to operate acceptably at project buildout.

The study intersections were analyzed for buildout traffic conditions. Neither of the two unsignalized intersections is expected to warrant the installation of a traffic signal at project buildout. The study intersections were analyzed using HCM signalized intersection methodology. Table 5.9.1-10 indicates the operational conditions of the intersections with project traffic. The SR 60 and CR 555 intersection is projected to operate unacceptably in 2008. The improvement recommended in conjunction with 2002 construction traffic will alleviate the capacity deficiency. This improvement is to add a westbound left-turn phase to the signal operations. The other intersections are anticipated to operate acceptably without any improvements.

5.9.1-6 2018 Total Traffic Capacity Analysis

The buildout year volumes for the longer scenario were derived and analyzed. Traffic from plant operations was combined with 2018 non-project traffic. Figures 5.9.1-9 and 5.9.1-10 illustrate the 2018 peak season a.m. and p.m. peak hour total traffic volumes, respectively.

The roadways were evaluated using the Polk County generalized service volumes. As Tables 5.9.1-11 and 5.9.1-12 indicate, all of the study roadways are expected to operate acceptably.

The study intersections were analyzed for the 2018 buildout scenario. Intersections were analyzed using 1985 HCM signalized intersection methodology. As Table 5.9.1-13 indicates,

three of the four study intersections are anticipated to operate acceptably without any improvements.

The CR 555 and SR 60 intersection is expected to operate unacceptably in 2018 without improvements. The improvement recommended in conjunction with the 2010 construction traffic will alleviate the capacity deficiency. This improvement is the addition of a westbound left-turn phase to the signal operations.

Neither of the two unsignalized intersections is expected to meet minimum traffic signal volume warrants at project buildout.

5.9.1.7 Recommendations

The traffic conditions associated with power plant operations were determined using the maximum projected operations employment of 554 people. The improvement necessary to accommodate operations traffic is also recommended as a part of the construction traffic analysis (Section 4.6.1.8). No other improvements are required to accommodate the traffic impacts from operation traffic at the FPC power plant site at buildout.

Using the number of employees rather than a specific year is the most appropriate measure of the need for improvement. Following is a plan, already incorporated into the Polk County CUP conditions, which bases the improvements and monitoring conditions at the intersection on the number of employees. The number of employees described below reflects the number of employees reporting to the site for the same shift starting time (i.e., starting times within 1 hour).

CR 555 and SR 60

Prior to the time that the number of employees reporting to the site at the same shift time exceeds 150, FPC shall add a signal phase for westbound left-turns which operates as protected/permissive at the intersection of CR 555 and SR 60. Modifications to the transportation system must conform to the requirements of the FDOT.

5.9.2 Rail Traffic

5.9.2.1 Introduction

FPC anticipates using coal as a fuel source for generating capacity at the Polk County Site. It is probable that coal will be delivered directly from mines to the plant by railroad. The following traffic impact analysis is based on trains transporting coal to the Polk County Site for an overland route from the Appalachia coal region.

For purposes of this investigation, it was necessary to make a number of assumptions. Because no agreements have been reached for coal purchase or coal transportation, the route, coal sources, and mode of transportation will be subject to future contract negotiations.

Figure 5.9.2-1 depicts the Florida portion of the most probable railway route for transport of coal from Appalachia. The overland CSX route was chosen as the most probable route on the basis of economies of scale, labor economics in terms of crew schedules, and density of traffic on the lines. Table 5.9.2-1 presents an inventory, by county, of the number of at-grade crossings and presents the average rail-highway crossing per mile on each segment. The number of at-grade rail-highway crossings were identified using the latest available railroad crossing locator maps obtained from the FDOT district offices. The at-grade rail-highway crossings were also divided into urban (incorporated) crossings and rural (unincorporated) crossings.

5.9.2.2 Methodology

Two criteria were used to evaluate the traffic impact of railroad transportation:

- Magnitude of existing and proposed train traffic
- Additional traffic delay caused by coal trains at railroad grade crossings.

TRAIN VOLUME INCREASE

It is anticipated that at full operation of the FPC Polk County Site, an average of three to four 100-car trains daily would bring coal to the plant. Information available from railroad companies indicates that existing train lengths generally range from 25 to 150 cars. The

existing daily train volume on the probable railroad line and the projected train volume based on eight coal train trips per day are included in Table 5.9.2-2.

TRAFFIC DELAY INCREASE

The following calculation for delay was performed for the probable coal transportation scenario with existing train volumes and proposed train volumes. This information was used to estimate the magnitude of the increase in delay caused by the proposed project:

$$D = NC * ANT * ACT * AWT$$

where

D = Total delay for the railroad line in vehicle-hour per day

NC = Total number of at-grade crossings on the railroad line

ANT = Average daily train volume

ACT = Average traffic on crossing roadways per crossing event

AWT = Average waiting time for the traffic stopped by the train

The components of the equation are described as follows:

- Total number of at-grade crossings (NC) - Latest available railroad crossing locator maps were obtained from the FDOT district offices to identify the number of at-grade crossings along the probable railroad line. Table 5.9.2-1 shows the summary of crossing numbers. Only those active crossings with crossing numbers were counted.

- Average daily train volume (ANT) - The average daily train volume as reflected in Table 5.9.2-2 was used for the analysis.

- Average traffic on crossing roadways per crossing event (ACT) - For each railroad line, 20 sample crossings were selected from both an urban (incorporated) area and a rural (unincorporated) area. The samples for urban area crossings were selected from Polk County and Orange County. The samples for rural area crossings were selected from Polk County and Volusia County. Average daily traffic for selected samples was obtained from the Rail-Highway Crossing Inventory by Transportation Statistics Office of the FDOT. For the

purpose of choosing our samples, urban and rural area designations were consistent with those classified on the FDOT railroad crossing locator maps. The average daily traffic on crossing roadways is divided by the average waiting periods available during one day to obtain the traffic for an average crossing event. Delay was calculated separately for urban areas and rural areas, using the average daily traffic from selected samples.

- Average waiting time for the traffic stopped by the train (AWT) - Due to the limited information available at the time this study was undertaken, the average waiting time was defined as half of the average gate-closing time. This assumes a uniform distribution of the vehicles arriving during a train crossing event. The average gate-closing time is calculated as follows:

  Average Gate-Closing Time = Advanced warning time (30 seconds) plus average train crossing time plus a lag time (10 seconds)

  Average Train-Crossing Time = (number of cars x length of each car) divided by average running speed.

For the purpose of calculating average train-crossing time, a review of all travel speed information was made. Based on available data, average travel speeds of 35 mph in urban areas and 45 mph for rural areas were chosen.

The existing and proposed highway traffic delays caused by train crossing events were calculated in the following forms:

- Projected total highway traffic delayed at crossings throughout the overland railway route
- Projected average highway vehicle delay at each crossing
- Projected total highway vehicle delay at crossings throughout the overland railway route
- Projected average highway traffic delay at each crossing per vehicle

The resultant highway traffic delays for the existing and proposed rail traffic conditions are also summarized in Table 5.9.2-2.

Trains in urban areas typically travel at an average speed of 35 mph while trains in rural areas average 45 mph. At these speeds and allowing time for advance gate closures plus opening of gates when the train has passed, an urban crossing will typically be closed for 2.5 minutes and a rural crossing for 2.0 minutes for one of FPC's 100-car coal delivery trains. Since traffic usually arrives at the crossing in random fashion, vehicles will wait from 0 to 2.5 or 2.0 minutes for urban and rural crossings, respectively. Therefore, the average vehicle waiting time at an urban crossing will be 1.25 minutes and 1.0 minute at a rural crossing.

As shown in Table 5.9.2-2, the additional eight train trips per day incurred by the FPC coal transportation will increase the average highway vehicle delay by 1.1 seconds per vehicle at each crossing in urban areas and 0.65 second per vehicle at each crossing in rural areas, based on total daily traffic volumes at the railroad crossings. Additionally, 25,520 vehicles per day are projected to be delayed throughout the probable railroad route in urban areas which is equivalent to a total daily vehicle delay of 532 vehicle-hours. In rural areas, the additional delay projected throughout the probable railroad route is 3,200 vehicles per day or 53 vehicle-hours per day. In other words, the projected additional delay is 119 vehicle-minutes (1.98 vehicle-hours) per crossing per day in urban areas and 15 vehicle-minutes (0.25 vehicle-hours) per crossing per day in rural areas.

The signalized intersection LOS analysis methodology published in the 1985 Highway Capacity Manual, which is commonly used in LOS analysis for highway systems, was used to determine the project impact on the LOS at the railroad crossings.

At a signalized intersection, the traffic on crossing streets shares the right-of-way of the intersection through green time allocations. A railroad crossing operates similarly to an actuated signalized intersection since the highway traffic shares the right-of-way of the railroad crossings with the trains and the trains have the privilege to use the right-of-way over the highway traffic. In the 1985 HCM, LOS for signalized intersections is defined in terms of delay. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Specifically, LOS criteria are stated in terms of average stopped delay per vehicle. The criteria are given in Table 5.9.2-3. A signalized intersection is considered operating at LOS A when the average stopped delay per vehicle at the intersection is 5 seconds or less. Using this criteria, and the average highway vehicle delay at crossings shown in Table 5.9.2-2, it was found that the overall railroad crossings through the overland CSX route operate at LOS A without the project impact and will still operate at LOS A with the project impact.

5.9.3 Benefits to On-Site Wetlands

Section 4.4 presents a discussion of the enhancement plan and associated benefits for Tiger Bay wetlands. This enhancement will progress from the construction period through the operation of the power plant.

5.9.4 References

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TABLE 5.9.1-1
OPERATIONS STUDY AREA

Roadway	Polk LOS C	FDOT LOS C	Project Traffic	Polk Impact	FDOT Impact
CR 555					
SR 60 to CR 640	540	--	81	15.0%	--
CR 640 to Plant Entrance	540	--	133	24.6%	--
Plant Entrance to CR 630	540	--	57	10.6%	--
U.S. 17					
CR 630 to S. 9th St	1090	1540	22	2.0%	1.4%
SR 60					
SR 37 to CR 555	2,280	2190	2	0.1%	0.1%
CR 555 to SR 60A	2,280	1540	61	2.7%	4.0%
CR 640					
SR 37 to CR 555	540	--	26	4.8%	--
CR 555 to U.S. 17/98	540	--	12	2.2%	--
CR 630					
SR 37 to CR 555	540	--	6	1.1%	--
CR 555 to U.S. 17/98	540	--	48	8.9%	--

Source: Kimley-Horn, 1992

TABLE 5.9.1-2
PEAK SEASON PEAK HOUR PEAK DIRECTION
2008 NON-PROJECT ROADWAY CONDITIONS

Roadway	LOS Standard	A.M. Volume		LOS	P.M. Volume		LOS
		Northbound/ Eastbound	Southbound/ Westbound		Northbound/ Eastbound	Southbound/ Westbound	
CR 555							
SR 60 to CR 640	D	199	439	C	409	128	C
CR 640 to Agricola Rd	D	60	290	B	241	45	B
Agricola Rd to CR 630	D	66	210	B	171	56	B
CR 630							
CR 555 to U.S. 17/98	D	178	299	B	342	231	C

Source: Kimley-Horn, 1992

TABLE 5.9.1-3
2008 NON-PROJECT PEAK HOUR
INTERSECTION CONDITIONS

Intersection	A.M. LOS	P.M. LOS
CR 555 and SR 60	B	B
CR 555 and CR 640	A	B
CR 555 and CR 630	A	A
U.S. 17/98 and CR 630	C	C

Source: Kimley-Horn, 1992

TABLE 5.9.1-4
PEAK SEASON PEAK HOUR PEAK DIRECTION
2018 NON-PROJECT ROADWAY CONDITIONS

Roadway	LOS Standard	A.M. Volume		LOS	P.M. Volume		LOS
		Northbound/ Eastbound	Southbound/ Westbound		Northbound/ Eastbound	Southbound/ Westbound	
CR 555							
SR 60 to CR 640	D	245	541	D	504	158	C
CR 640 to Agricola Rd	D	74	358	C	299	55	B
Agricola Rd to CR 630	D	81	258	B	209	70	B
CR 630							
CR 555 to U.S. 17/98	D	220	368	C	421	285	C

Source: Kimley-Horn, 1992

TABLE 5.9.1-5
2018 NON-PROJECT PEAK HOUR
INTERSECTION CONDITIONS

Intersection	Existing Geometry		With Improvements	
	A.M. LOS	P.M. LOS	A.M. LOS	P.M. LOS
CR 555 and SR 60	F	F	C	B
CR 555 and CR 640	B	B	N/A	N/A
CR 555 and CR 630	B	A	N/A	N/A
U.S. 17/98 and CR 630	C	C	N/A	N/A

N/A = Not Applicable
Source: Kimley-Horn, 1992

TABLE 5.9.1-6
COMPARISON OF POWER PLANT TRIP
GENERATION RATES PER EMPLOYEE

Time	FPL Martin Plant	ITE: Heavy Industrial	FDOT 1974 Power Plant
Daily	2.35	2.05	2.2
A.M. Peak	0.62	0.51	N/A
P.M. Peak	0.41	0.88	N/A

N/A = Not Available.
Source: Kimley-Horn, 1992

TABLE 5.9.1-7
OPERATIONS TRIP GENERATION

Time	Rate x Employees	Trip Ends
Daily	2.35 T.E./EMPL. x 554 EMPL.	1,302
A.M. Peak		
Enter		202
Exit		61
Total	0.62 T.E./EMPL. x 360 EMPL. 0.41 T.E./EMPL. x 97 EMPL.	263
P.M. Peak		
Enter		95
Exit		113
Total	0.41 T.E./EMPL. x 360 EMPL. 0.62 T.E./EMPL. x 97 EMPL.	208

Note: Rate = T.E./EMPL. x EMPL.
where T.E. = trip ends
EMPL. = employees

Source: Kimley-Horn, 1992

TABLE 5.9.1-8
PEAK SEASON A.M. PEAK HOUR
2008 TOTAL ROADWAY CONDITIONS

Roadway	LOS Standard	Operations Volume		Total Volume		Polk LOS
		Northbound/ Eastbound	Southbound/ Westbound	Northbound/ Eastbound	Southbound/ Westbound	
CR 555						
SR 60 to CR 640	D	25	81	224	520	C
CR 640 to Plant Entrance	D	40	133	100	423	C
Plant Entrance to CR 630	D	56	18	122	228	B
CR 630						
CR 555 to U.S. 17/98	D	15	47	193	346	C

Source: Kimley-Horn, 1992

TABLE 5.9.1-9
PEAK SEASON P.M. PEAK HOUR
2008 TOTAL ROADWAY CONDITIONS

Roadway	LOS Standard	Operations Volume		Total Volume		Polk LOS
		Northbound/ Eastbound	Southbound/ Westbound	Northbound/ Eastbound	Southbound/ Westbound	
CR 555						
SR 60 to CR 640	D	45	38	454	166	C
CR 640 to Plant Entrance	D	75	63	316	108	B
Plant Entrance to CR 630	D	27	31	198	87	B
CR 630						
CR 555 to U.S. 17/98	D	26	22	368	253	C

Source: Kimley-Horn, 1992

TABLE 5.9.1-10
2008 TOTAL PEAK HOUR TRAFFIC
INTERSECTION CONDITIONS

Intersection	Existing Geometry A.M. LOS	Existing Geometry P.M. LOS	With Improvements A.M. LOS	With Improvements P.M. LOS
CR 555 and SR 60	F	B	B	B
CR 555 and CR 640	A	B	N/A	N/A
CR 555 and CR 630	B	A	N/A	N/A
U.S. 17/98 and CR 630	C	C	N/A	N/A

Note: N/A - Not applicable
Source: Kimley-Horn, 1992

TABLE 5.9.1-11
PEAK SEASON A.M. PEAK HOUR
2018 TOTAL ROADWAY CONDITIONS

Roadway	LOS Standard	Operations Volume		Total Volume		Polk LOS
		Northbound/ Eastbound	Southbound/ Westbound	Northbound/ Eastbound	Southbound/ Westbound	
CR 555						
SR 60 to CR 640	D	25	81	270	622	D
CR 640 to Plant Entrance	D	40	133	114	491	C
Plant Entrance to CR 630	D	56	18	137	276	B
CR 630						
CR 555 to U.S. 17/98	D	15	47	235	415	C

Source: Kimley-Horn, 1992

TABLE 5.9.1-12
PEAK SEASON P.M. PEAK HOUR
2018 TOTAL ROADWAY CONDITIONS

Roadway	LOS Standard	Operations Volume		Total Volume		Polk LOS
		Northbound/ Eastbound	Southbound/ Westbound	Northbound/ Eastbound	Southbound/ Westbound	
CR 555						
SR 60 to CR 640	D	45	38	549	196	D
CR 640 to Plant Entrance	D	75	63	374	118	C
Plant Entrance to CR 630	D	27	31	236	101	B
CR 630						
CR 555 to U.S. 17/98	D	26	22	447	307	C

Source: Kimley-Horn, 1992

TABLE 5.9.1-13
2018 TOTAL PEAK HOUR TRAFFIC
INTERSECTION CONDITIONS

Intersection	Existing Geometry A.M. LOS	Existing Geometry P.M. LOS	With Improvements A.M. LOS	With Improvements P.M. LOS
CR 555 and SR 60	F	F	C	C
CR 555 and CR 640	B	B	N/A	N/A
CR 555 and CR 630	B	A	N/A	N/A
U.S. 17/98 and CR 630	C	C	N/A	N/A

Note: N/A - No improvement recommended
Source: Kimley-Horn, 1992

TABLE 5.9.2-1
INVENTORY OF AT-GRADE RAIL-HIGHWAY CROSSINGS

County	Total Number of Crossings	Number of Rural Crossings	Number of Urban Crossings	Average Number of Crossings Per Mile
Polk	86	18	68	1.43
Osceola	33	13	20	2.36
Orange	87	4	83	3.95
Seminole	21	15	6	1.31
Volusia	51	45	6	1.28
Putnam	57	45	12	1.46
Clay	38	38	0	1.36
Duval	82	9	73	2.73
Nassau	36	36	0	2.77
Total	491	223	268	1.87

Note: Crossing inventory based on Florida portion of most probable railway route, using overland CSX route from the Appalachia coal region.

Source: Kimley-Horn, 1992
Florida Department of Transportation

TABLE 5.9.2-2
SUMMARY OF TRAIN TRAFFIC IMPACT AT RAIL-HIGHWAY CROSSINGS

Scenario	Existing Conditions		Existing & Proposed Conditions		Project Impact	
	Urban	Rural	Urban	Rural	Urban	Rural
Total Number of At-Grade Railroad-Highway Crossings	268	223	268	223	0	0
Daily Train Traffic (Trains Per Day)	24*	13*	32	21	8	8
Average Daily Highway Traffic at each Crossing (Vehicles per Day)	6,855	1,292	6,855	1,292	0	0
Total Daily Highway Traffic Delayed at Crossings (Vehicles per Day)	76,550	5,210	102,070	8,410	25,520	3,200
Average Daily Highway Vehicle Delay per Crossing (Vehicle-Minutes)	357	23	476	38	119	15
Total Daily Highway Vehicle Delay at Crossings (Vehicle-Hours)	1,595	87	2,127	140	532	53
Average Highway Vehicle Delay at Crossings (Seconds per Vehicle)	3.1	1.1	4.2	1.75	1.1	0.65

*Provided for portion of track with highest train traffic.

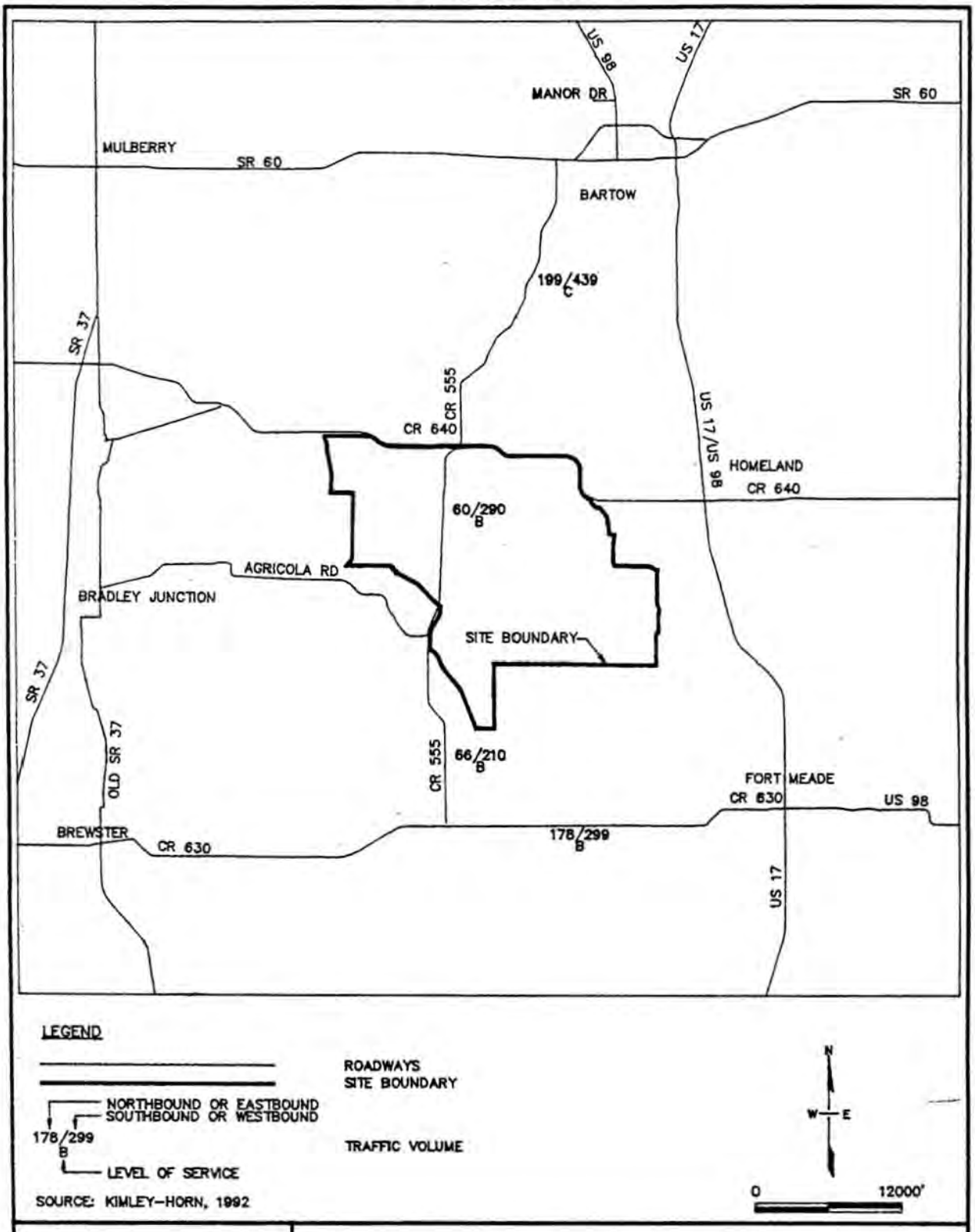
Note: Impacts based on use of overland CSX route.

Source: Kimley-Horn, 1992
Florida Department of Transportation

TABLE 5.9.2-3
LEVEL-OF-SERVICE CRITERIA
FOR SIGNALIZED INTERSECTIONS

Level of Service	Stopped Delay Per Vehicle (Sec.)
A	5
B	5.1 to 15.0
C	15.1 to 25.0
D	25.1 to 40.1
E	40.1 to 60.0
F	>60.0

Source: Transportation Research Board, 1985
Kimley-Horn, 1992

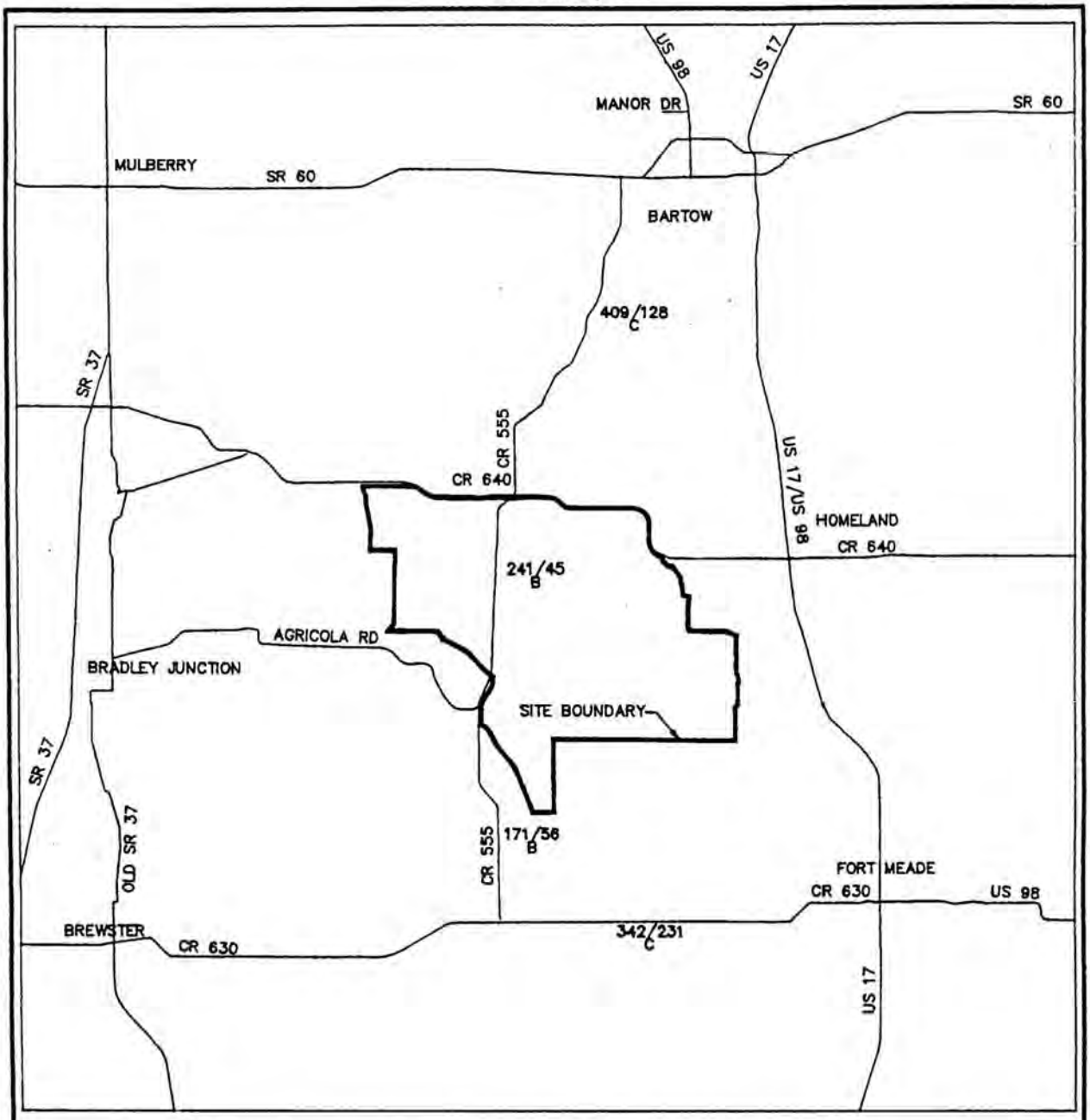


Florida Power CORPORATION

Polk County Site

FIGURE 5.9.1-1

2008 PEAK SEASON
A.M. PEAK HOUR NON-PROJECT TRAFFIC

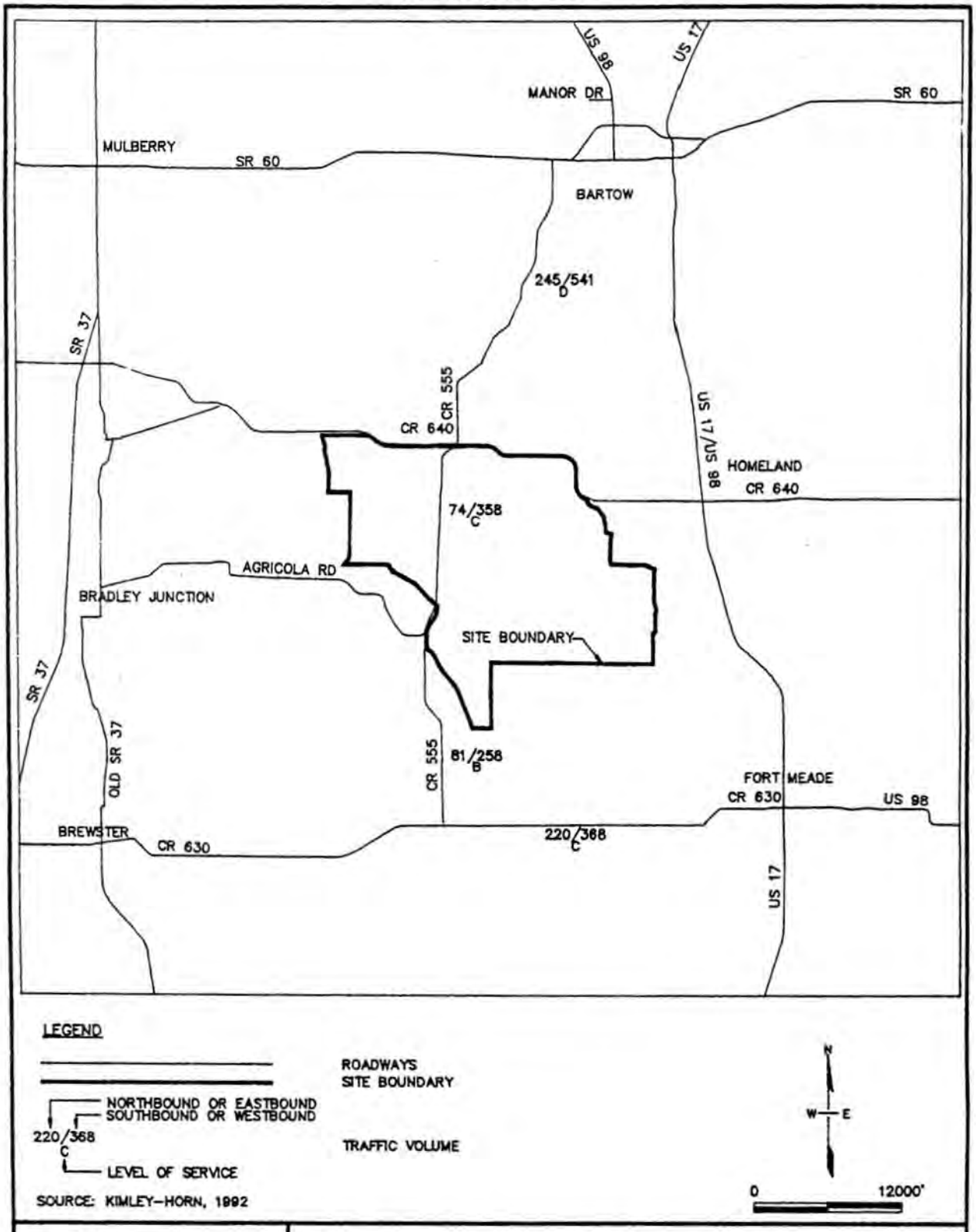


Florida Power CORPORATION

Polk County Site

FIGURE 5.9.1-2

2008 PEAK SEASON P.M. PEAK HOUR NON-PROJECT TRAFFIC

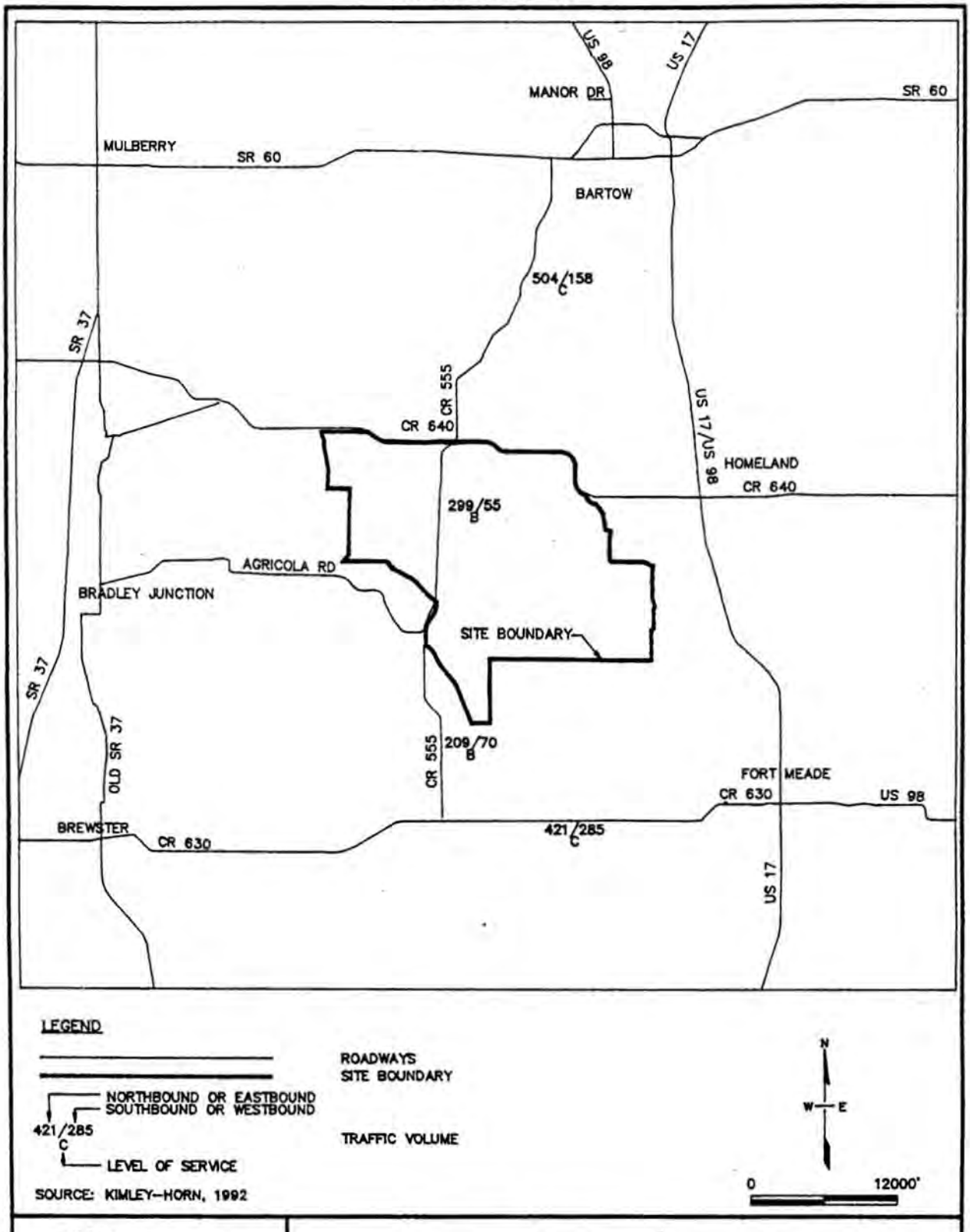


Florida Power CORPORATION

Polk County Site

FIGURE 5.9.1-3

2018 PEAK SEASON A.M. PEAK HOUR NON-PROJECT TRAFFIC

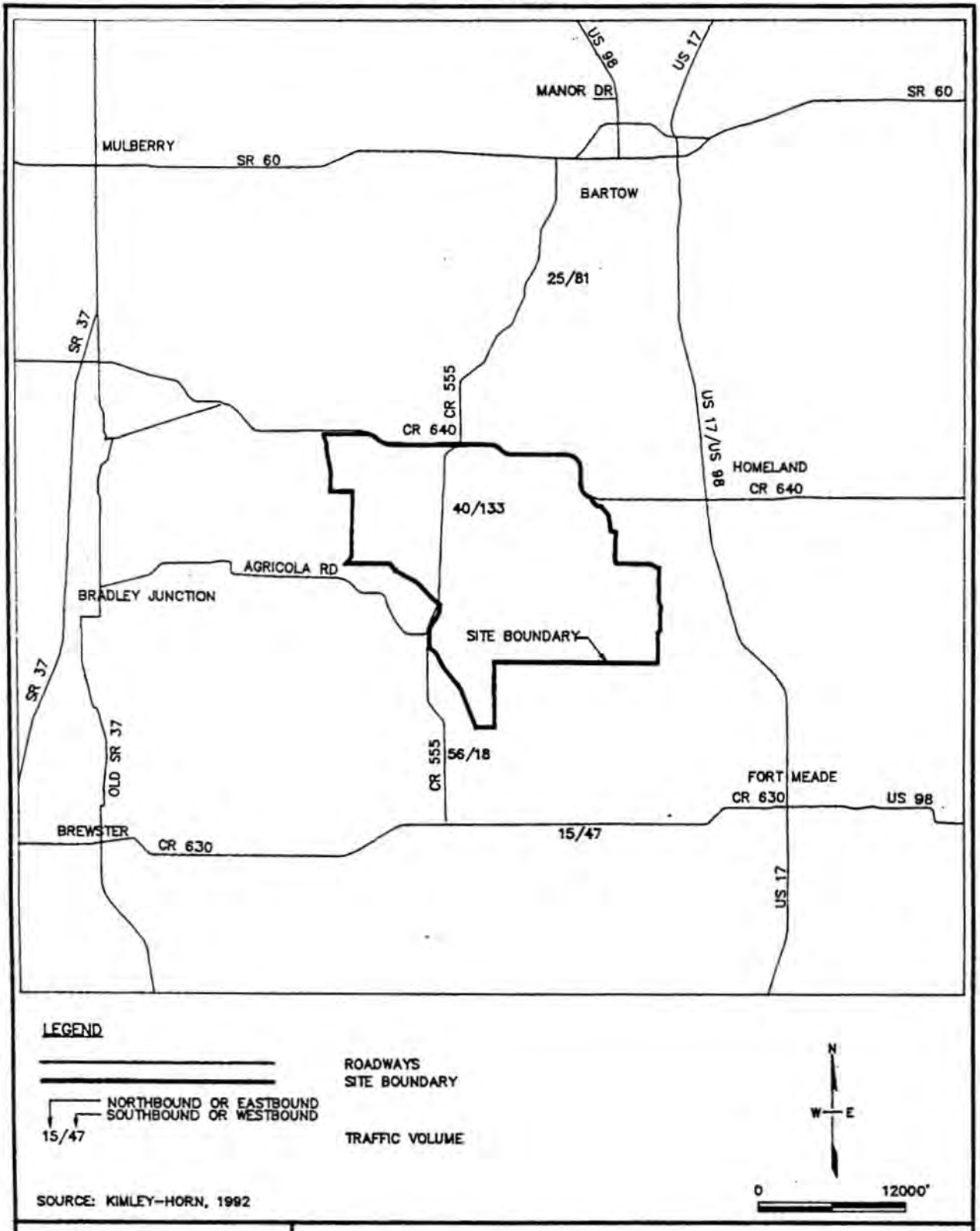


Florida Power CORPORATION

Polk County Site

FIGURE 5.9.1-4

2018 PEAK SEASON P.M. PEAK HOUR NON-PROJECT TRAFFIC

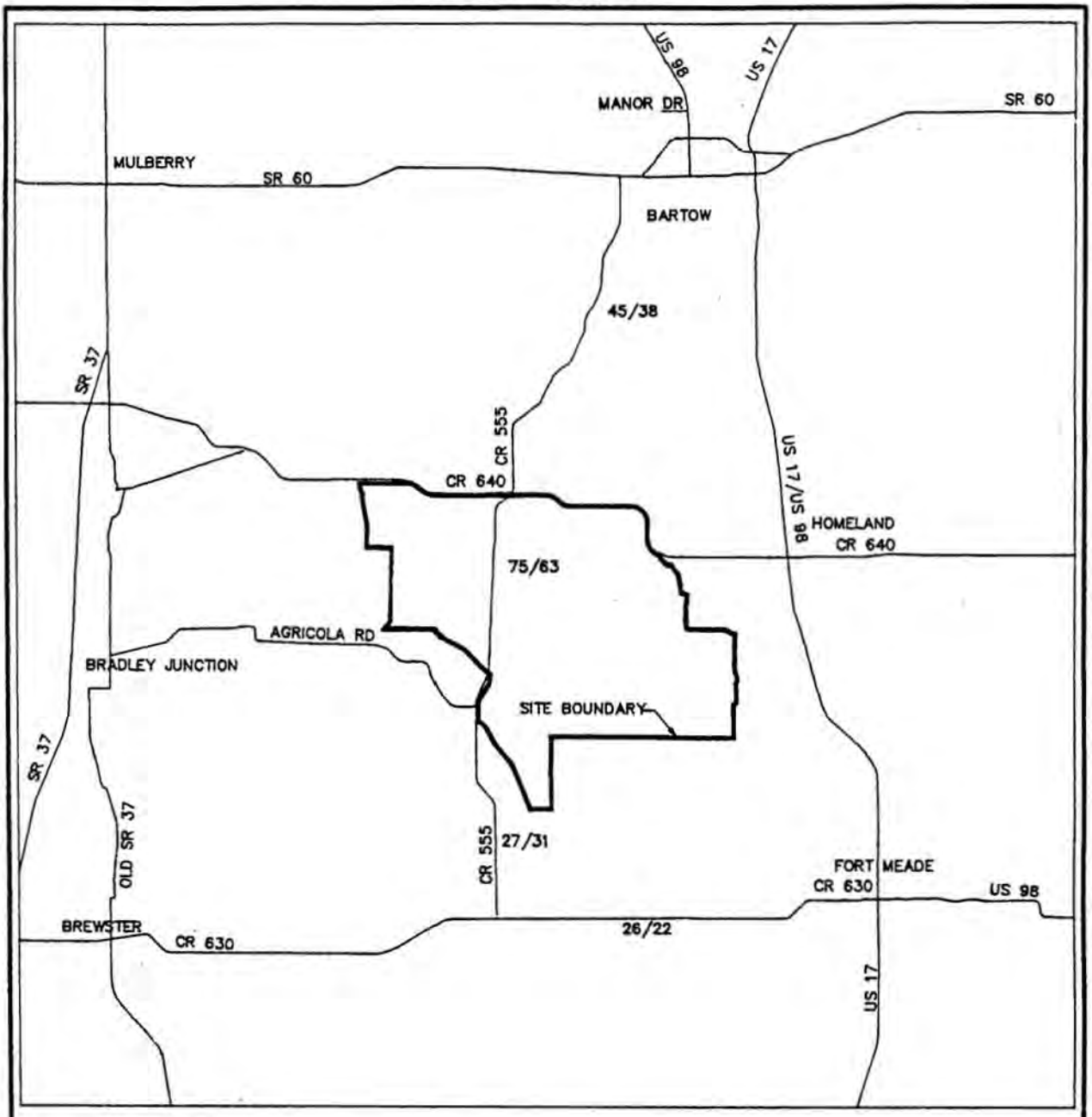


Florida Power CORPORATION

Polk County Site

FIGURE 5.9.1-5

OPERATION PROJECT TRIPS A.M. PEAK HOUR

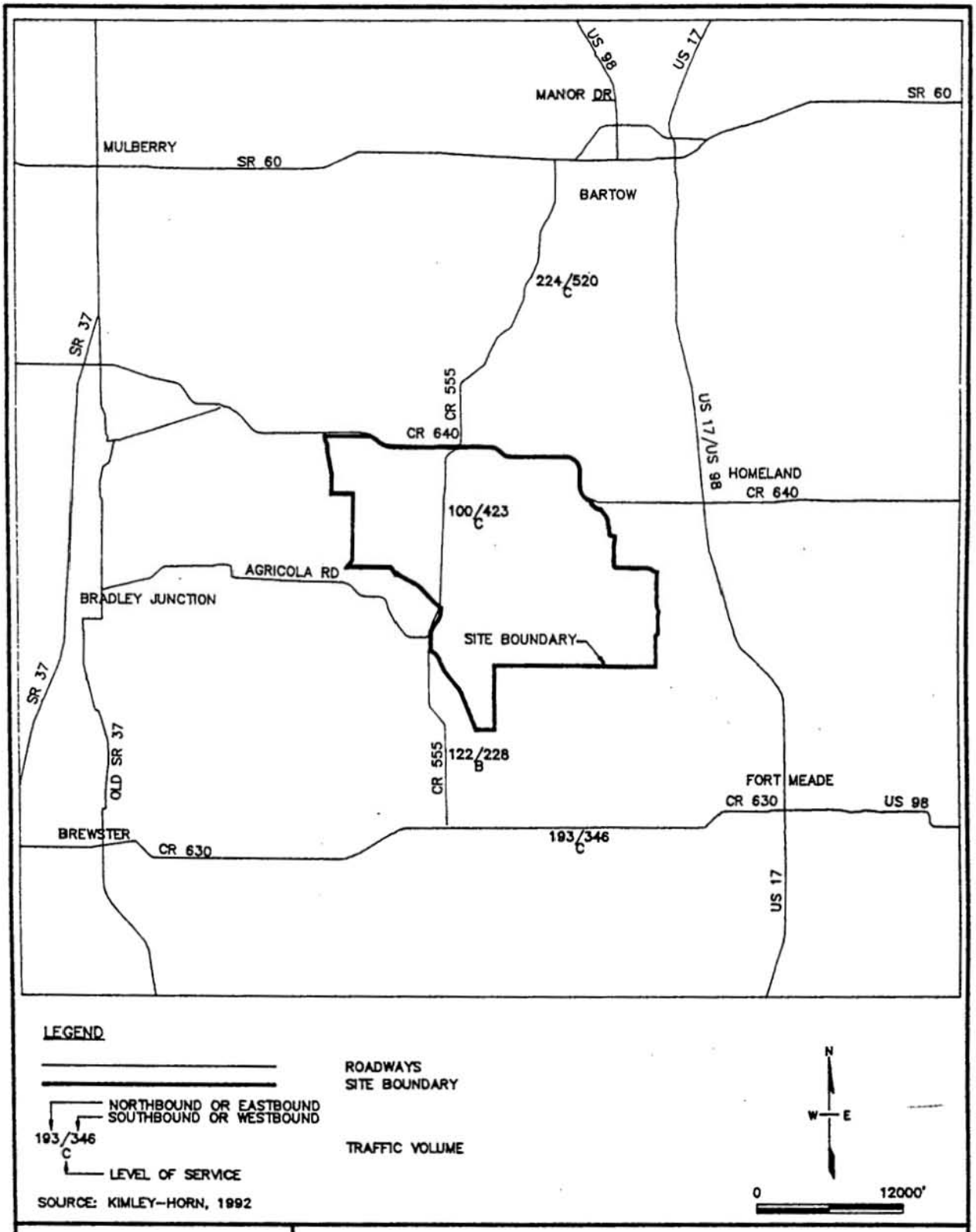


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FIGURE 5.9.1-6

OPERATION PROJECT TRIPS P.M. PEAK HOUR

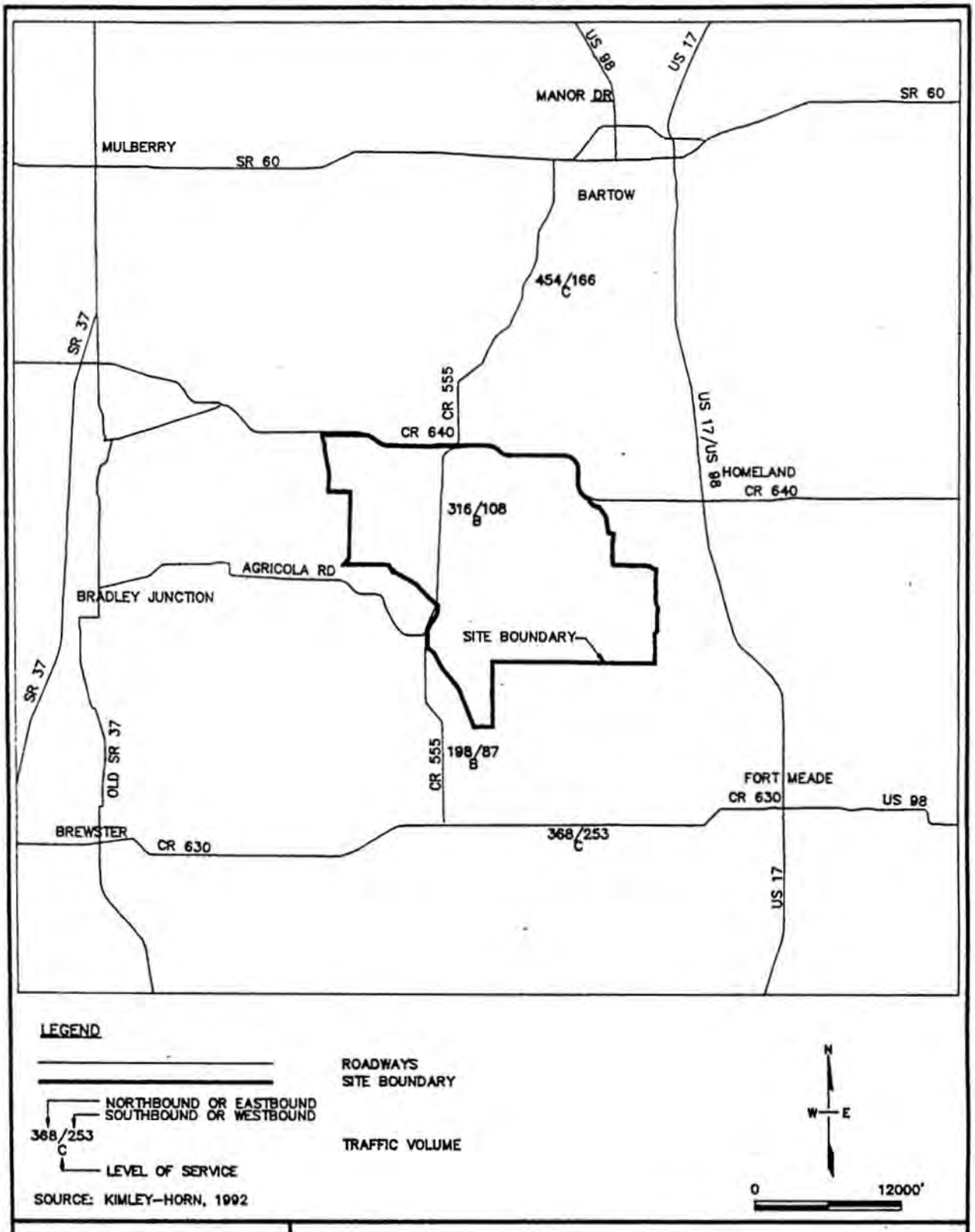


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FIGURE 5.9.1-7

2008 PEAK SEASON
A.M. PEAK HOUR TOTAL TRAFFIC

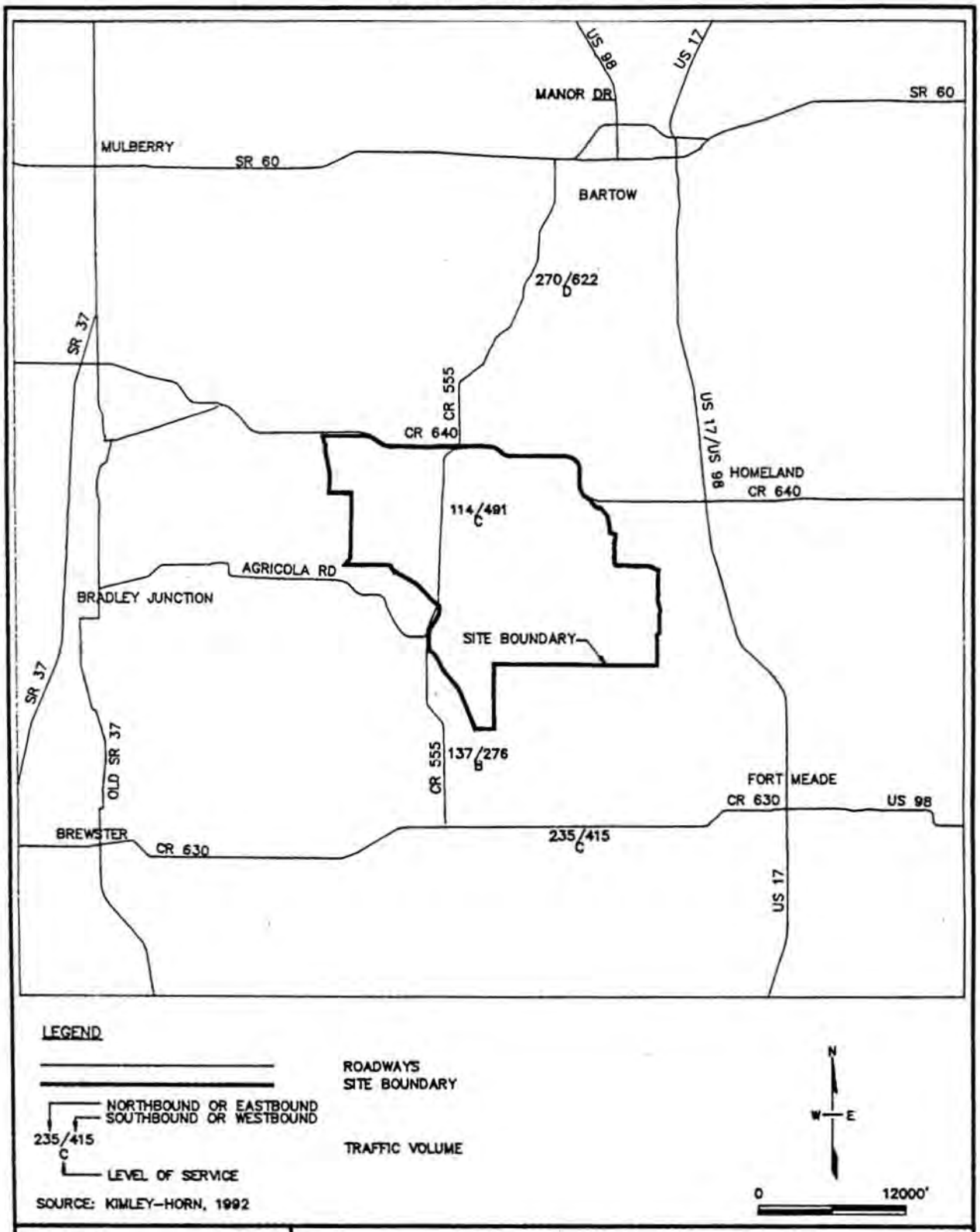


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FIGURE 5.9.1-8

2008 PEAK SEASON P.M. PEAK HOUR TOTAL TRAFFIC

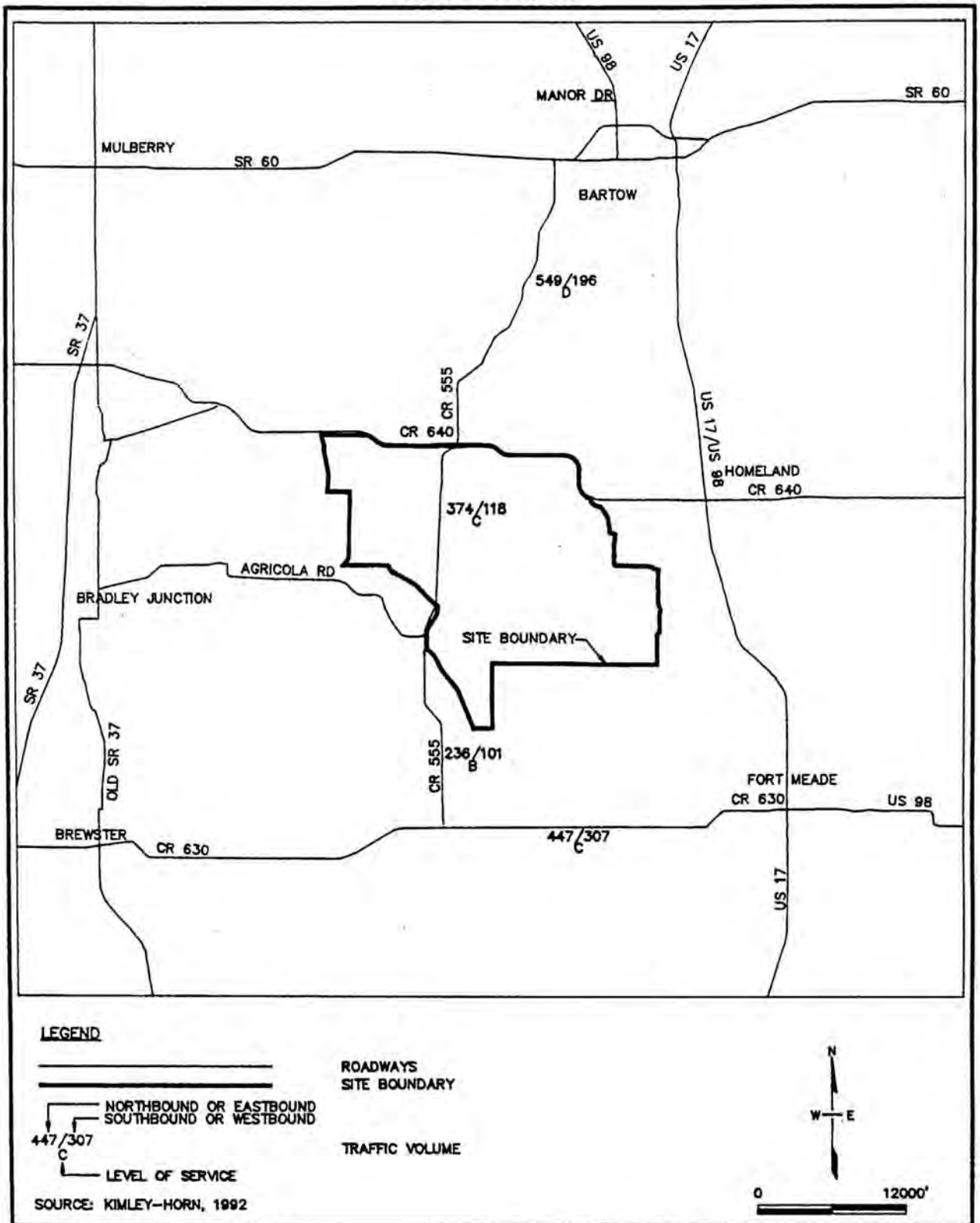


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FIGURE 5.9.1-9

2018 PEAK SEASON
A.M. PEAK HOUR TOTAL TRAFFIC



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Polk County Site

FIGURE 5.9.1-10

2018 PEAK SEASON
P.M. PEAK HOUR TOTAL TRAFFIC



SOURCE: KIMLEY – HORN, 1992

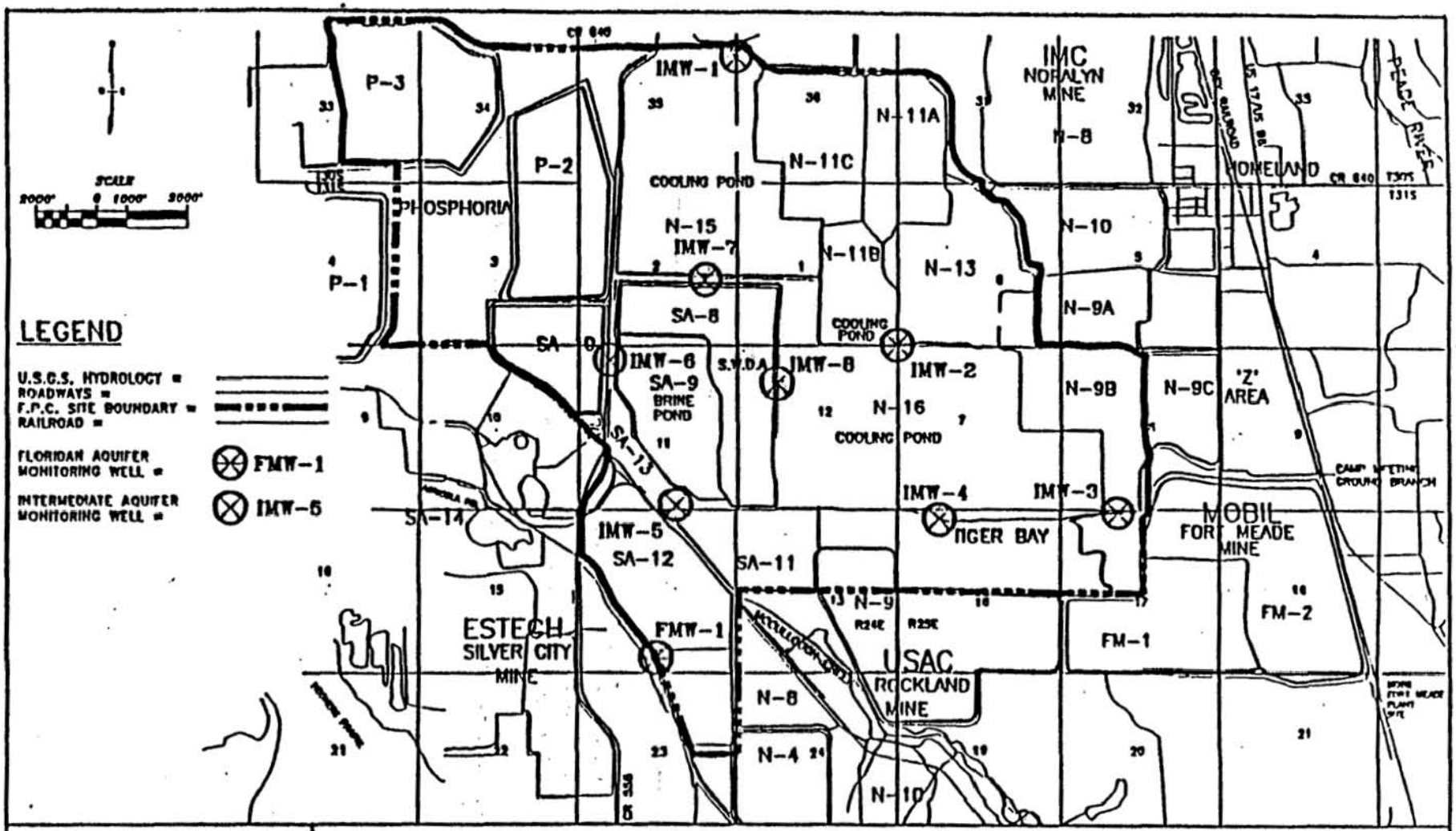
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FIGURE 5.9.2–1
PROBABLE RAILWAY TRANSPORTATION ROUTES

10.5.2 Water Quality Monitoring

This section contains surface and groundwater quality data.



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FIGURE 1
MONITORING WELL LOCATIONS

MWLOC DWG
REV. 10/93

10.5.2.1 Groundwater Monitoring Locations and Water Quality Results

This section contains well designations and results for Surficial aquifer groundwater level monitoring data conducted as required in Condition XXVI.A.24.e in 15 upper Surficial aquifer monitor wells and 6 lower Surficial aquifer monitor wells.

Florida Power
CORPORATION

October 27, 1998

Ms. Judy Richtar
Florida Department of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619-8318

Dear Ms. Richtar:

Re: Florida Power Corporation - Hines Energy Complex
Quarterly Groundwater Monitoring

As required by Condition XVIII.A.9. of Certification PA 92-33, attached are quarterly groundwater monitoring results for the above facility. This is the first operational report for this facility, following the baseline (background) results which were previously submitted to your office.

If you have any questions concerning this submittal, please do not hesitate to contact Randy Melton at (727) 826-4290.

Sincerely,

Kent D. Hedrick, P.E.
Manager, Water Programs

Attachment

cc: Mr. Hamilton Oven

ONE POWER PLAZA • 263 - 13th Avenue South • St. Petersburg, FL 33701-5511
P.O. Box 14042 • St. Petersburg, FL 33733-4042 • (727) 866-5151
A Florida Progress Company

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FLORIDA 34677 813-855-1844

Florida Power Corporation
Central Chemical Lab - CN77
15760 W. Powerline Street
Crystal River, Florida 34428-6708

October 15, 1998
Project No. 14647

LABORATORY REPORT

Project Description: Hines Energy Complex – Groundwater Analyses
Sample Description: 01 - Water, IMW-1, sampled 9/23/98, 1510
02 - Water, IMW-2, sampled 9/23/98, 1300
03 - Water, IMW-3, sampled 9/23/98, 1315
Date Received: 9/24/98, 0715

Parameter	Units	(01) IMW-1	(02) IMW-2	(03) IMW-3
Primary Drinking Water Standards				
Arsenic	mg/l	0.0020	0.001 U	0.001 U
Barium	mg/l	0.03	0.02	0.01 U
Cadmium	mg/l	0.002 U	0.002 U	0.002 U
Chromium	mg/l	0.02 U	0.02 U	0.02 U
Cyanide	mg/l	0.005 U	0.005 U	0.005 U
Fluoride	mg/l	1.2	0.87	0.50
Lead	mg/l	0.001 U	0.001 U	0.001 U
Mercury	mg/l	0.0002 U	0.0002 U	0.0002 U
Nickel	mg/l	0.02 U	0.02 U	0.02 U
Nitrate Nitrogen	mg/l N	0.01 U	0.01 U	0.01 U
Nitrite Nitrogen	mg/l N	0.01 U	0.01 U	0.01 U
Selenium	mg/l	0.002 U	0.002 U	0.002 U
Sodium	mg/l	27	16	15
Antimony	mg/l	0.001 U	0.001 U	0.001 U
Beryllium	mg/l	0.002 U	0.002 U	0.002 U
Thallium	mg/l	0.001 U	0.001 U	0.001 U

U - Analyte was not detected; indicated concentration is method detection limit.

FHRS Environmental Lab No. E84129
FHRS Drinking Water Lab No. 84269
Comprehensive QA Plan No. 870317

Francis I. Daniels
Laboratory Director

Florida Power Corporation
Central Chemical Lab - CN77
15760 W. Powerline Street
Crystal River, Florida 34428-6708

LABORATORY REPORT

Project Description: Hines Energy Complex – Groundwater Analyses
Sample Description: 01 - Water, IMW-1, sampled 9/23/98, 1510
02 - Water, IMW-2, sampled 9/23/98, 1300
03 - Water, IMW-3, sampled 9/23/98, 1315
Date Received: 9/24/98, 0715

Parameter	Units	(01) IMW-1	(02) IMW-2	(03) IMW-3
Primary Drinking Water Standards - Volatile Organic Compounds				
1,2,4-Trichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	µg/l	0.2 U	0.2 U	0.2 U
Xylenes (Total)	µg/l	0.5 U	0.5 U	0.5 U
Dichloromethane	µg/l	0.5 U	0.5 U	0.5 U
o-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
p-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
Vinyl chloride	µg/l	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	µg/l	0.5 U	0.5 U	0.5 U
trans-1,2-Dichloroethene	µg/l	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	µg/l	0.2 U	0.2 U	0.2 U
1,1,1-Trichloroethane	µg/l	0.3 U	0.3 U	0.3 U
Carbon tetrachloride	µg/l	0.3 U	0.3 U	0.3 U
1,2-Dichloropropane	µg/l	0.3 U	0.3 U	0.3 U
Trichloroethene	µg/l	0.2 U	0.2 U	0.2 U
1,1,2-Trichloroethane	µg/l	0.3 U	0.3 U	0.3 U
Tetrachloroethene	µg/l	0.2 U	0.2 U	0.2 U
Monochlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
Benzene	µg/l	0.5 U	0.5 U	0.5 U
Toluene	µg/l	0.5 U	0.5 U	0.5 U
Ethylbenzene	µg/l	0.5 U	0.5 U	0.5 U
Styrene	µg/l	0.5 U	0.5 U	0.5 U

U - Analyte was not detected; indicated concentration is method detection limit.

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03 - Water, IMW-3, sampled 9/23/98, 1315
Date Received: 9/24/98, 0715

Parameter	Units	(01) IMW-1	(02) IMW-2	(03) IMW-3
Secondary Drinking Water Parameters				
Aluminum	mg/l	0.64	0.58	0.1 U
Chloride	mg/l	15	21	16
Copper	mg/l	0.01 U	0.01 U	0.01 U
Fluoride	mg/l	1.2	0.87	0.50
Iron	mg/l	2.4	1.0	0.31
Manganese	mg/l	0.07	0.07	0.02
Silver	mg/l	0.01 U	0.01 U	0.01 U
Sulfate	mg/l	2 U	3	2 U
Zinc	mg/l	0.01 U	0.01 U	0.01 U
Color	PCU	5	5	5 U
Total Dissolved Solids	mg/l	370	432	336
Foaming Agents	mg/l	0.05 U	0.05 U	0.05 U

U - Analyte was not detected; indicated concentration is method detection limit.

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03 - Water, IMW-3, sampled 9/23/98, 1315
Date Received: 9/24/98, 0715

Parameter	Units	(01) IMW-1	(02) IMW-2	(03) IMW-3
Turbidity	NTU	45	65	4.5
Fecal Coliforms	Ct/100 ml	10 K_1	10 K_1	1 U
TOC	mg/l	6.7	8.4	8.0
Dissolved Oxygen	mg/l	2.4	2.0	2.9
Ammonia	mg/l N	0.27	0.01	0.02
Ammonium	mg/l NH_4	0.35	0.01	0.03
Vanadium	mg/l	0.01 U	0.01 U	0.01 U
Calcium	mg/l	76	85	63
Magnesium	mg/l	40	56	37
Potassium	mg/l	0.79	0.66	1.7
Bicarbonate	mg/l as $CaCO_3$	380	410	310

U - Analyte was not detected; indicated concentration is method detection limit.

K - Analyte was less than indicated concentration; indicated concentration is method detection limit multiplied by sample dilution factor.
[1]Elevated detection limit due to interference from sediment and/or non-coliform bacteria in sample.

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03 - Water, IMW-3, sampled 9/23/98, 1315
Date Received: 9/24/98, 0715

Parameter	Units	(01) IMW-1	(02) IMW-2	(03) IMW-3
Purgeable Halocarbons – EPA Method 601				
Bromodichloromethane	µg/l	0.3 U	0.3 U	0.3 U
Bromoform	µg/l	0.5 U	0.5 U	0.5 U
Bromomethane	µg/l	0.5 U	0.5 U	0.5 U
Carbon tetrachloride	µg/l	0.3 U	0.3 U	0.3 U
Chlorobenzene	µg/l	0.3 U	0.3 U	0.3 U
Chloroethane	µg/l	0.5 U	0.5 U	0.5 U
2-Chloroethylvinyl ether	µg/l	0.5 U	0.5 U	0.5 U
Chloroform	µg/l	0.2 U	0.2 U	0.2 U
Chloromethane	µg/l	0.5 U	0.5 U	0.5 U
Dibromochloromethane	µg/l	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
1,3-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
1,4-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane	µg/l	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	µg/l	0.3 U	0.3 U	0.3 U
1,2-Dichloroethane	µg/l	0.2 U	0.2 U	0.2 U
1,1-Dichloroethene	µg/l	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	µg/l	0.5 U	0.5 U	0.5 U
trans-1,2-Dichloroethene	µg/l	0.5 U	0.5 U	0.5 U
1,2-Dichloropropane	µg/l	0.3 U	0.3 U	0.3 U
cis-1,3-Dichloropropene	µg/l	0.3 U	0.3 U	0.3 U
trans-1,3-Dichloropropene	µg/l	0.3 U	0.3 U	0.3 U
Methylene chloride	µg/l	0.5 U	0.5 U	0.5 U
1,1,2,2,-Tetrachloroethane	µg/l	0.3 U	0.3 U	0.3 U
Tetrachloroethene	µg/l	0.2 U	0.2 U	0.2 U
1,1,1-Trichloroethane	µg/l	0.3 U	0.3 U	0.3 U
1,1,2-Trichloroethane	µg/l	0.3 U	0.3 U	0.3 U
Trichloroethene	µg/l	0.2 U	0.2 U	0.2 U
Trichlorofluoromethane	µg/l	0.5 U	0.5 U	0.5 U
Vinyl chloride	µg/l	0.5 U	0.5 U	0.5 U

U - Analyte was not detected; indicated concentration is method detection limit.

Francis I. Daniels
Laboratory Director

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Crystal River, Florida 34428-6708

LABORATORY REPORT

Project Description: Hines Energy Complex – Groundwater Analyses
Sample Description: 01 - Water, IMW-1, sampled 9/23/98, 1510
02 - Water, IMW-2, sampled 9/23/98, 1300
03 - Water, IMW-3, sampled 9/23/98, 1315
Date Received: 9/24/98, 0715

Parameter	Units	(01) IMW-1	(02) IMW-2	(03) IMW-3
Purgeable Aromatics – EPA 602				
Benzene	µg/l	0.5 U	0.5 U	0.5 U
Chlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
1,3-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
1,4-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
Ethyibenzene	µg/l	0.5 U	0.5 U	0.5 U
Toluene	µg/l	0.5 U	0.5 U	0.5 U
Xylenes	µg/l	0.5 U	0.5 U	0.5 U
Methyl-t-butyl ether	µg/l	0.5 U	0.5 U	0.5 U

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Francis I. Daniels
Laboratory Director

Florida Power Corporation
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15760 W. Powerline Street
Crystal River, Florida 34428-6708

LABORATORY REPORT

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Sample Description: 01 - Water, IMW-1, sampled 9/23/98, 1510
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03 - Water, IMW-3, sampled 9/23/98, 1315
Date Received: 9/24/98, 0715

Parameter	Units	(01) IMW-1	(02) IMW-2	(03) IMW-3
Phenols - EPA Method 604				
4-Chloro-3-methylphenol	µg/l	10 U	10 U	10 U
2-Chlorophenol	µg/l	5 U	5 U	5 U
2,4-Dichlorophenol	µg/l	10 U	10 U	10 U
2,4-Dimethylphenol	µg/l	5 U	5 U	5 U
2,4-Dinitrophenol	µg/l	20 U	20 U	20 U
2-Methyl-4,6-dinitrophenol	µg/l	20 U	20 U	20 U
2-Nitrophenol	µg/l	10 U	10 U	10 U
4-Nitrophenol	µg/l	20 U	20 U	20 U
Pentachlorophenol	µg/l	20 U	20 U	20 U
Phenol	µg/l	5 U	5 U	5 U
2,4,6-Trichlorophenol	µg/l	10 U	10 U	10 U

U - Analyte was not detected; indicated concentration is method detection limit.

Francis I. Daniels
Laboratory Director

Florida Power Corporation
Central Chemical Lab - CN77
15760 W. Powerline Street
Crystal River, Florida 34428-6708

LABORATORY REPORT

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02 - Water, IMW-2, sampled 9/23/98, 1300
03 - Water, IMW-3, sampled 9/23/98, 1315
Date Received: 9/24/98, 0715

Parameter	Units	(01) IMW-1	(02) IMW-2	(03) IMW-3
Phthalate Esters - EPA Method 606				
Bis(2-ethylhexyl)phthalate	µg/l	1 U	1 U	1 U
Butyl benzyl phthalate	µg/l	1 U	1 U	1 U
Di-n-butyl phthalate	µg/l	1 U	1 U	1 U
Diethyl phthalate	µg/l	1 U	1 U	1 U
Dimethyl phthalate	µg/l	1 U	1 U	1 U
Di-n-octyl phthalate	µg/l	1 U	1 U	1 U

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Francis I. Daniels
Laboratory Director

Florida Power Corporation
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15760 W. Powerline Street
Crystal River, Florida 34428-6708

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Sample Description: 01 - Water, IMW-1, sampled 9/23/98, 1510
02 - Water, IMW-2, sampled 9/23/98, 1300
03 - Water, IMW-3, sampled 9/23/98, 1315
Date Received: 9/24/98, 0715

Parameter	Units	(01) IMW-1	(02) IMW-2	(03) IMW-3
PCBs – EPA Method 608				
PCB-1016	µg/l	0.05 U	0.05 U	0.05 U
PCB-1221	µg/l	0.05 U	0.05 U	0.05 U
PCB-1232	µg/l	0.05 U	0.05 U	0.05 U
PCB-1242	µg/l	0.05 U	0.05 U	0.05 U
PCB-1248	µg/l	0.05 U	0.05 U	0.05 U
PCB-1254	µg/l	0.05 U	0.05 U	0.05 U
PCB-1260	µg/l	0.05 U	0.05 U	0.05 U

U - Analyte was not detected; indicated concentration is method detection limit.

Francis I. Daniels
Laboratory Director

Southern Analytical Laboratories, Inc.

Florida Power Corporation
Central Chemical Lab - CN77
15760 W. Powerline Street
Crystal River, Florida 34428-6708

LABORATORY REPORT

Project Description: Hines Energy Complex – Groundwater Analyses
Sample Description: 01 - Water, IMW-1, sampled 9/23/98, 1510
02 - Water, IMW-2, sampled 9/23/98, 1300
03 - Water, IMW-3, sampled 9/23/98, 1315
Date Received: 9/24/98, 0715

Parameter	Units	(01) IMW-1	(02) IMW-2	(03) IMW-3
Field Parameters				
Distance to Water (from TOC)	Ft.	34.62	18.66	16.32
pH (Field)	Units	7.1	7.6	6.9
Specific Conductance	umhos/cm	721	705	821
Temperature	°C	26.7	26.7	26.7

U - Analyte was not detected; indicated concentration is method detection limit.

Francis I. Daniels
Laboratory Director

Florida Power Corporation
Central Chemical Lab - CN77
15760 W. Powerline Street
Crystal River, Florida 34428-6708

LABORATORY REPORT

Project Description: Hines Energy Complex – Groundwater Analyses
Sample Description: 04 - Water, IMW-4, sampled 9/23/98, 1415
05 - Water, IMW-5, sampled 9/23/98, 1010
06 - Water, IMW-6, sampled 9/23/98, 1130
Date Received: 9/24/98, 0715

Parameter	Units	(04) IMW-4	(05) IMW-5	(06) IMW-6
Primary Drinking Water Standards - Inorganics				
Arsenic	mg/l	0.001 U	0.001 U	0.001 U
Barium	mg/l	0.01 U	0.05	0.01 U
Cadmium	mg/l	0.002 U	0.002 U	0.002 U
Chromium	mg/l	0.02 U	0.02 U	0.02 U
Cyanide	mg/l	0.005 U	0.005 U	0.005 U
Fluoride	mg/l	0.59	1.3	0.43
Lead	mg/l	0.001 U	0.0019	0.001 U
Mercury	mg/l	0.0002 U	0.0002 U	0.0002 U
Nickel	mg/l	0.02 U	0.02 U	0.02 U
Nitrate Nitrogen	mg/l N	0.01 U	0.01 U	0.01 U
Nitrite Nitrogen	mg/l N	0.01 U	0.01 U	0.01 U
Selenium	mg/l	0.002 U	0.002 U	0.002 U
Sodium	mg/l	11	24	22
Antimony	mg/l	0.001 U	0.001 U	0.001 U
Beryllium	mg/l	0.002 U	0.002 U	0.002 U
Thallium	mg/l	0.001 U	0.001 U	0.001 U

U - Analyte was not detected; indicated concentration is method detection limit.

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Laboratory Director

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Crystal River, Florida 34428-6708

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05 - Water, IMW-5, sampled 9/23/98, 1010
06 - Water, IMW-6, sampled 9/23/98, 1130
Date Received: 9/24/98, 0715

Parameter	Units	(04) IMW-4	(05) IMW-5	(06) IMW-6
Primary Drinking Water Standards - Volatile Organic Compounds				
1,2,4-Trichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	µg/l	0.2 U	0.2 U	**1.3**
Xylenes (Total)	µg/l	0.5 U	0.5 U	0.5 U
Dichloromethane	µg/l	0.5 U	0.5 U	0.5 U
o-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
p-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
Vinyl chloride	µg/l	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	µg/l	0.5 U	0.5 U	0.5 U
trans-1,2-Dichloroethene	µg/l	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	µg/l	0.2 U	0.2 U	0.2 U
1,1,1-Trichloroethane	µg/l	0.3 U	0.3 U	0.3 U
Carbon tetrachloride	µg/l	0.3 U	0.3 U	0.3 U
1,2-Dichloropropane	µg/l	0.3 U	0.3 U	0.3 U
Trichloroethene	µg/l	0.2 U	0.2 U	0.2 U
1,1,2-Trichloroethane	µg/l	0.3 U	0.3 U	0.3 U
Tetrachloroethene	µg/l	0.2 U	0.2 U	0.2 U
Monochlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
Benzene	µg/l	0.5 U	0.5 U	0.5 U
Toluene	µg/l	0.5 U	0.5 U	0.5 U
Ethylbenzene	µg/l	0.5 U	0.5 U	0.5 U
Styrene	µg/l	0.5 U	0.5 U	0.5 U

U - Analyte was not detected; indicated concentration is method detection limit.

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05 - Water, IMW-5, sampled 9/23/98, 1010
06 - Water, IMW-6, sampled 9/23/98, 1130
Date Received: 9/24/98, 0715

Parameter	Units	(04) IMW-4	(05) IMW-5	(06) IMW-6
Secondary Drinking Water Parameters				
Aluminum	mg/l	0.21	0.85	0.1 U
Chloride	mg/l	14	32	29
Copper	mg/l	0.01 U	0.01 U	0.01 U
Fluoride	mg/l	0.59	1.3	0.43
Iron	mg/l	0.65	3.9	0.23
Manganese	mg/l	0.02	0.09	0.10
Silver	mg/l	0.01 U	0.01 U	0.01 U
Sulfate	mg/l	2 U	2	2 U
Zinc	mg/l	0.01 U	0.01 U	0.01 U
Color	PCU	5 U	5	5
Total Dissolved Solids	mg/l	252	382	358
Foaming Agents	mg/l	0.05 U	0.05 U	0.05 U

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Francis I. Daniels
Laboratory Director

Florida Power Corporation
Central Chemical Lab - CN77
15760 W. Powerline Street
Crystal River, Florida 34428-6708

LABORATORY REPORT

Project Description: Hines Energy Complex – Groundwater Analyses
Sample Description: 04 - Water, IMW-4, sampled 9/23/98, 1415
05 - Water, IMW-5, sampled 9/23/98, 1010
06 - Water, IMW-6, sampled 9/23/98, 1130
Date Received: 9/24/98, 0715

Parameter	Units	(04) IMW-4	(05) IMW-5	(06) IMW-6
Turbidity	NTU	22	120	11
Fecal Coliform	Ct/100 ml	10 K_1	10 K_1	1 U
TOC	mg/l	3.3	5.1	6.2
Dissolved Oxygen	mg/l	6.1	2.7	6.2
Ammonia	mg/l N	0.02	0.10	0.08
Ammonium	mg/l NH_4	0.03	0.13	0.10
Vanadium	mg/l	0.01 U	0.01 U	0.01 U
Calcium	mg/l	54	76	65
Magnesium	mg/l	31	36	35
Potassium	mg/l	0.62	1.0	0.72
Bicarbonate	mg/l as $CaCO_3$	220	300	300

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K - Analyte was less than indicated concentration; indicated concentration is method detection limit multiplied by sample dilution factor.
[1]Elevated detection limit due to interference from sediment and/or non-coliform bacteria in sample.

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05 - Water, IMW-5, sampled 9/23/98, 1010
06 - Water, IMW-6, sampled 9/23/98, 1130
Date Received: 9/24/98, 0715

Parameter	Units	(04) IMW-4	(05) IMW-5	(06) IMW-6
Purgeable Halocarbons – EPA Method 601				
Bromodichloromethane	µg/l	0.3 U	0.3 U	0.3 U
Bromoform	µg/l	0.5 U	0.5 U	0.5 U
Bromomethane	µg/l	0.5 U	0.5 U	0.5 U
Carbon tetrachloride	µg/l	0.3 U	0.3 U	0.3 U
Chlorobenzene	µg/l	0.3 U	0.3 U	0.3 U
Chloroethane	µg/l	0.5 U	0.5 U	0.5 U
2-Chloroethylvinyl ether	µg/l	0.5 U	0.5 U	0.5 U
Chloroform	µg/l	0.2 U	0.2 U	0.2 U
Chloromethane	µg/l	0.5 U	0.5 U	0.5 U
Dibromochloromethane	µg/l	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
1,3-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
1,4-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane	µg/l	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	µg/l	0.3 U	0.3 U	0.3 U
1,2-Dichloroethane	µg/l	0.2 U	0.2 U	0.2 U
1,1-Dichloroethene	µg/l	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	µg/l	0.5 U	0.5 U	**1.3**
trans-1,2-Dichloroethene	µg/l	0.5 U	0.5 U	0.5 U
1,2-Dichloropropane	µg/l	0.3 U	0.3 U	0.3 U
cis-1,3-Dichloropropene	µg/l	0.3 U	0.3 U	0.3 U
trans-1,3-Dichloropropene	µg/l	0.3 U	0.3 U	0.3 U
Methylene chloride	µg/l	0.5 U	0.5 U	0.5 U
1,1,2,2,-Tetrachloroethane	µg/l	0.3 U	0.3 U	0.3 U
Tetrachloroethene	µg/l	0.2 U	0.2 U	0.2 U
1,1,1-Trichloroethane	µg/l	0.3 U	0.3 U	0.3 U
1,1,2-Trichloroethane	µg/l	0.3 U	0.3 U	0.3 U
Trichloroethene	µg/l	0.2 U	0.2 U	0.2 U
Trichlorofluoromethane	µg/l	0.5 U	0.5 U	0.5 U
Vinyl chloride	µg/l	0.5 U	0.5 U	0.5 U

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Sample Description: 04 - Water, IMW-4, sampled 9/23/98, 1415
05 - Water, IMW-5, sampled 9/23/98, 1010
06 - Water, IMW-6, sampled 9/23/98, 1130
Date Received: 9/24/98, 0715

Parameter	Units	(04) IMW-4	(05) IMW-5	(06) IMW-6
Purgeable Aromatics – EPA 602				
Benzene	µg/l	0.5 U	0.5 U	0.5 U
Chlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
1,3-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
1,4-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U
Ethylbenzene	µg/l	0.5 U	0.5 U	0.5 U
Toluene	µg/l	0.5 U	0.5 U	0.5 U
Xylenes	µg/l	0.5 U	0.5 U	0.5 U
Methyl-t-butyl ether	µg/l	0.5 U	0.5 U	0.5 U

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Parameter	Units	(04) IMW-4	(05) IMW-5	(06) IMW-6
Phenols - EPA Method 604				
4-Chloro-3-methylphenol	µg/l	10 U	10 U	10 U
2-Chlorophenol	µg/l	5 U	5 U	5 U
2,4-Dichlorophenol	µg/l	10 U	10 U	10 U
2,4-Dimethylphenol	µg/l	5 U	5 U	5 U
2,4-Dinitrophenol	µg/l	20 U	20 U	20 U
2-Methyl-4,6-dinitrophenol	µg/l	20 U	20 U	20 U
2-Nitrophenol	µg/l	10 U	10 U	10 U
4-Nitrophenol	µg/l	20 U	20 U	20 U
Pentachlorophenol	µg/l	20 U	20 U	20 U
Phenol	µg/l	5 U	5 U	5 U
2,4,6-Trichlorophenol	µg/l	10 U	10 U	10 U

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Parameter	Units	(04) IMW-4	(05) IMW-5	(06) IMW-6
Phthalate Esters - EPA Method 606				
Bis(2-ethylhexyl)phthalate	µg/l	1 U	1 U	1 U
Butyl benzyl phthalate	µg/l	1 U	1 U	1 U
Di-n-butyl phthalate	µg/l	1 U	1 U	1 U
Diethyl phthalate	µg/l	1 U	1 U	1 U
Dimethyl phthalate	µg/l	1 U	1 U	1 U
Di-n-octyl phthalate	µg/l	1 U	1 U	1 U

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Parameter	Units	(04) IMW-4	(05) IMW-5	(06) IMW-6
PCBs – EPA Method 608				
PCB-1016	µg/l	0.05 U	0.05 U	0.05 U
PCB-1221	µg/l	0.05 U	0.05 U	0.05 U
PCB-1232	µg/l	0.05 U	0.05 U	0.05 U
PCB-1242	µg/l	0.05 U	0.05 U	0.05 U
PCB-1248	µg/l	0.05 U	0.05 U	0.05 U
PCB-1254	µg/l	0.05 U	0.05 U	0.05 U
PCB-1260	µg/l	0.05 U	0.05 U	0.05 U

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Parameter	Units	(04) IMW-4	(05) IMW-5	(06) IMW-6
Field Parameters				
Distance to Water (from TOC)	Ft.	5.12	12.78	5.44
pH (Field)	Units	6.8	7.1	7.7
Specific Conductance	umhos/cm	485	617	586
Temperature	°C	27.0	26.4	26.3

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Project Description: Hines Energy Complex – Groundwater Analyses
Sample Description: 07 - Water, FMW-1, sampled 9/23/98, 1045
08 - Water, Duplicate, IMW-4, sampled 9/23/98, 1425
09 - Water, Equipment Blank, sampled 9/23/98, 1545
Date Received: 9/24/98, 0715

Parameter	Units	(07) FMW-1	(08) Dup., IMW-4	(09) Eq. Blank	Method Blank
Primary Drinking Water Standards					
Arsenic	mg/l	0.017	0.001 U	0.001 U	0.001 U
Barium	mg/l	0.02	0.01 U	0.01 U	0.01 U
Cadmium	mg/l	0.002 U	0.002 U	0.002 U	0.002 U
Chromium	mg/l	0.02 U	0.02 U	0.02 U	0.02 U
Cyanide	mg/l	0.005 U	0.005 U	0.005 U	0.005 U
Fluoride	mg/l	2.0	0.56	0.01 U	0.01 U
Lead	mg/l	0.001 U	0.001 U	0.001 U	0.001 U
Mercury	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Nickel	mg/l	0.02 U	0.02 U	0.02 U	0.02 U
Nitrate Nitrogen	mg/l N	0.01 U	0.01 U	0.01 U	0.01 U
Nitrite Nitrogen	mg/l N	0.01 U	0.01 U	0.01 U	0.01 U
Selenium	mg/l	0.002 U	0.002 U	0.002 U	0.002 U
Sodium	mg/l	43	11	0.1 U	0.1 U
Antimony	mg/l	0.001 U	0.001 U	0.001 U	0.001 U
Beryllium	mg/l	0.002 U	0.002 U	0.002 U	0.002 U
Thallium	mg/l	0.001 U	0.001 U	0.001 U	0.001 U

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Date Received: 9/24/98, 0715

Parameter	Units	(07) FMW-1	(08) Dup., IMW-4	(09) Eq. Blank	Method Blank
Primary Drinking Water Standards - Volatile Organic Compounds (62-550.310(2)(b))					
1,2,4-Trichlorobenzene	ug/l	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	ug/l	0.2 U	0.2 U	0.2 U	0.2 U
Xylenes (Total)	ug/l	0.5 U	0.5 U	0.5 U	0.5 U
Dichloromethane	ug/l	0.5 U	0.5 U	0.5 U	0.5 U
o-Dichlorobenzene	ug/l	0.5 U	0.5 U	0.5 U	0.5 U
p-Dichlorobenzene	ug/l	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	ug/l	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	ug/l	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,2-Dichloroethene	ug/l	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	ug/l	0.2 U	0.2 U	0.2 U	0.2 U
1,1,1-Trichloroethane	ug/l	0.3 U	0.3 U	0.3 U	0.3 U
Carbon tetrachloride	ug/l	0.3 U	0.3 U	0.3 U	0.3 U
1,2-Dichloropropane	ug/l	0.3 U	0.3 U	0.3 U	0.3 U
Trichloroethene	ug/l	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2-Trichloroethane	ug/l	0.3 U	0.3 U	0.3 U	0.3 U
Tetrachloroethene	ug/l	0.2 U	0.2 U	0.2 U	0.2 U
Monochlorobenzene	ug/l	0.5 U	0.5 U	0.5 U	0.5 U
Benzene	ug/l	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	ug/l	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	ug/l	0.5 U	0.5 U	0.5 U	0.5 U
Styrene	ug/l	0.5 U	0.5 U	0.5 U	0.5 U

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Date Received: 9/24/98, 0715

Parameter	Units	(07) FMW-#1	(08) Dup, IMW-4	(09) Eq. Blank	Method Blank
Secondary Drinking Water Parameters (62-550.320)					
Aluminum	mg/l	0.70	0.18	0.1 U	0.1 U
Chloride	mg/l	19	14	0.1 U	0.1 U
Copper	mg/l	0.01 U	0.01 U	0.01 U	0.01 U
Fluoride	mg/l	2.0	0.56	0.01 U	0.01 U
Iron	mg/l	1.2	0.69	0.02 U	0.02 U
Manganese	mg/l	0.03	0.02	0.01 U	0.01 U
Silver	mg/l	0.01 U	0.01 U	0.01 U	0.01 U
Sulfate	mg/l	13	2 U	2 U	2 U
Zinc	mg/l	0.01 U	0.01 U	0.01 U	0.01 U
Color	PCU	5	5 U	5 U	5 U
Total Dissolved Solids	mg/l	244	244	10 U	10 U
Foaming Agents	mg/l	0.05 U	0.05 U	0.05 U	0.05 U

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Parameter	Units	(07) FMW-4	(08) Dup., IMW-4	(09) Eq. Blank	Method Blank
Turbidity	NTU	160	22	0.05 U	0.05 U
Fecal Coliform	Ct/100 ml	1,000 K_1	10 K_1	1 U	1 U
TOC	mg/l	4.8	3.0	1 U	1 U
Dissolved Oxygen	mg/l	4.7	2.0	4.3	N/A
Ammonia	mg/l N	0.25	0.02	0.01 U	0.01 U
Ammonium	mg/l NH_4	0.32	0.03	0.01 U	0.01 U
Vanadium	mg/l	0.02	0.01 U	0.01 U	0.01 U
Calcium	mg/l	89	52	0.1 U	0.1 U
Magnesium	mg/l	48	31	0.1 U	0.1 U
Potassium	mg/l	2.7	0.64	0.1 U	0.1 U
Bicarbonate	mg/l as $CaCO_3$	290	220	2	2

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K - Analyte was less than indicated concentration; indicated concentration is method detection limit multiplied by sample dilution factor.
[1]Elevated detection limit due to interference from sediment and/or non-coliform bacteria in sample.

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Parameter	Units	(07) FMW-1	(08) Dup, IMW-4	(09) Eq. Blank	Method Blank
Purgeable Halocarbons – EPA Method 601					
Bromodichloromethane	µg/l	0.3 U	0.3 U	0.3 U	0.3 U
Bromoform	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
Bromomethane	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
Carbon tetrachloride	µg/l	0.3 U	0.3 U	0.3 U	0.3 U
Chlorobenzene	µg/l	0.3 U	0.3 U	0.3 U	0.3 U
Chloroethane	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
2-Chloroethylvinyl ether	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	µg/l	0.2 U	0.2 U	0.2 U	0.2 U
Chloromethane	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
Dibromochloromethane	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
1,3-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
1,4-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	µg/l	0.3 U	0.3 U	0.3 U	0.3 U
1,2-Dichloroethane	µg/l	0.2 U	0.2 U	0.2 U	0.2 U
1,1-Dichloroethene	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,2-Dichloroethene	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloropropane	µg/l	0.3 U	0.3 U	0.3 U	0.3 U
cis-1,3-Dichloropropene	µg/l	0.3 U	0.3 U	0.3 U	0.3 U
trans-1,3-Dichloropropene	µg/l	0.3 U	0.3 U	0.3 U	0.3 U
Methylene chloride	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2,-Tetrachloroethane	µg/l	0.3 U	0.3 U	0.3 U	0.3 U
Tetrachloroethene	µg/l	0.2 U	0.2 U	0.2 U	0.2 U
1,1,1-Trichloroethane	µg/l	0.3 U	0.3 U	0.3 U	0.3 U
1,1,2-Trichloroethane	µg/l	0.3 U	0.3 U	0.3 U	0.3 U
Trichloroethene	µg/l	0.2 U	0.2 U	0.2 U	0.2 U
Trichlorofluoromethane	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	µg/l	0.5 U	0.5 U	0.5 U	0.5 U

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Parameter	Units	(07) FMW-1	(08) Dup, IMW-4	(09) Eq. Blank	Method Blank
Purgeable Aromatics – EPA 602					
Benzene	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
1,3-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
1,4-Dichlorobenzene	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
Xylenes	µg/l	0.5 U	0.5 U	0.5 U	0.5 U
Methyl-t-butyl ether	µg/l	0.5 U	0.5 U	0.5 U	0.5 U

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09 - Water, Equipment Blank, sampled 9/23/98, 1545
Date Received: 9/24/98, 0715

Parameter	Units	(07) FMW-1	(08) Dup., IMW-4	(09) Eq. Blank	Method Blank
Phenols - EPA Method 604					
4-Chloro-3-methylphenol	µg/l	10 U	10 U	10 U	10 U
2-Chlorophenol	µg/l	5 U	5 U	5 U	5 U
2,4-Dichlorophenol	µg/l	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	µg/l	5 U	5 U	5 U	5 U
2,4-Dinitrophenol	µg/l	20 U	20 U	20 U	20 U
2-Methyl-4,6-dinitrophenol	µg/l	20 U	20 U	20 U	20 U
2-Nitrophenol	µg/l	10 U	10 U	10 U	10 U
4-Nitrophenol	µg/l	20 U	20 U	20 U	20 U
Pentachlorophenol	µg/l	20 U	20 U	20 U	20 U
Phenol	µg/l	5 U	5 U	5 U	5 U
2,4,6-Trichlorophenol	µg/l	10 U	10 U	10 U	10 U

U - Analyte was not detected; indicated concentration is method detection limit.

Francis I. Daniels
Laboratory Director

Florida Power Corporation
Central Chemical Lab - CN77
15760 W. Powerline Street
Crystal River, Florida 34428-6708

LABORATORY REPORT

Project Description: Hines Energy Complex – Groundwater Analyses
Sample Description: 07 - Water, FMW-1, sampled 9/23/98, 1045
08 - Water, Duplicate, IMW-4, sampled 9/23/98, 1425
09 - Water, Equipment Blank, sampled 9/23/98, 1545
Date Received: 9/24/98, 0715

Parameter	Units	(07) FMW-1	(08) Dup, IMW-4	(09) Eq. Blank	Method Blank
Phthalate Esters - EPA Method 606					
Bis(2-ethylhexyl)phthalate	µg/l	1 U	1 U	1 U	1 U
Butyl benzyl phthalate	µg/l	1 U	1 U	1 U	1 U
Di-n-butyl phthalate	µg/l	1 U	1 U	1 U	1 U
Diethyl phthalate	µg/l	1 U	1 U	1 U	1 U
Dimethyl phthalate	µg/l	1 U	1 U	1 U	1 U
Di-n-octyl phthalate	µg/l	1 U	1 U	1 U	1 U

U - Analyte was not detected; indicated concentration is method detection limit.

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LABORATORY REPORT

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Sample Description: 07 - Water, FMW-1, sampled 9/23/98, 1045
08 - Water, Duplicate, IMW-4, sampled 9/23/98, 1425
09 - Water, Equipment Blank, sampled 9/23/98, 1545
Date Received: 9/24/98, 0715

Parameter	Units	(07) FMW-1	(08) Dup., IMW-4	(09) Eq. Blank	Method Blank
PCBs – EPA Method 608					
PCB-1016	µg/l	0.05 U	0.05 U	0.05 U	0.05 U
PCB-1221	µg/l	0.05 U	0.05 U	0.05 U	0.05 U
PCB-1232	µg/l	0.05 U	0.05 U	0.05 U	0.05 U
PCB-1242	µg/l	0.05 U	0.05 U	0.05 U	0.05 U
PCB-1248	µg/l	0.05 U	0.05 U	0.05 U	0.05 U
PCB-1254	µg/l	0.05 U	0.05 U	0.05 U	0.05 U
PCB-1260	µg/l	0.05 U	0.05 U	0.05 U	0.05 U

U - Analyte was not detected; indicated concentration is method detection limit.

Francis I. Daniels
Laboratory Director

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15760 W. Powerline Street
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LABORATORY REPORT

Project Description: Hines Energy Complex – Groundwater Analyses
Sample Description: 07 - Water, FMW-1, sampled 9/23/98, 1045
08 - Water, Duplicate, IMW-4, sampled 9/23/98, 1425
09 - Water, Equipment Blank, sampled 9/23/98, 1545
Date Received: 9/24/98, 0715

Parameter	Units	(07) FMW-1	(08) Dup., IMW-4	(09) Eq. Blank
Field Parameters				
Distance to Water (from TOC)	Ft.	87.63	5.12	--
pH (Field)	Units	7.0	6.8	5.0
Specific Conductance	umhos/cm	843	485	0.97
Temperature	°C	26.4	27.0	27.5

Francis I. Daniels
Laboratory Director

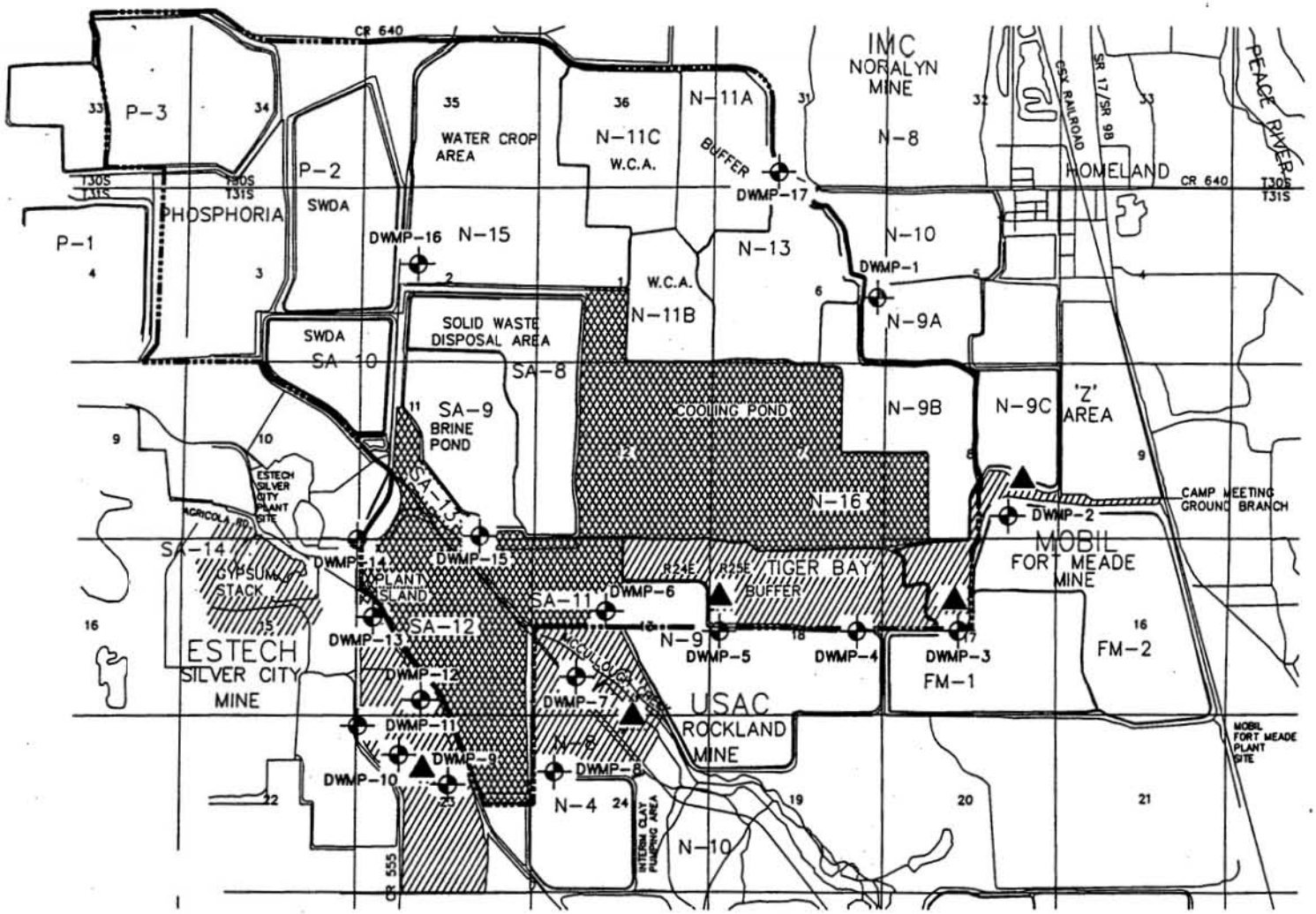
10.5.2.2 Groundwater

This section contains groundwater level monitoring data which was collected during construction dewatering for Power Block 1 from April 1993 through May 1996.

GROUND WATER LEVEL MONITORING
CONSTRUCTION DEWATERING PROGRAM
FOR
POWER BLOCK 1

CONSTRUCTION DEWATERING WATER LEVEL MONITORING WELLS

UPPER SURFICIAL AQUIFER *MONITOR WELLS*	**LOWER SURFICIAL AQUIFER** *MONITOR WELLS*
DMWP-1S	DMWP-3I
DMWP-2S	DMWP-6I
DMWP-3S	DMWP-9I
DMWP-4S	DMWP-12I
DMWP-5S	DMWP-13I
DMWP-6S	DMWP-15I
DMWP-7S	
DMWP-8S	
DMWP-9S	
DMWP-12S	
DMWP-13S	
DMWP-14S	
DMWP-15S	
DMWP-16S	
DMWP-17S	



LEGEND

- ROADWAYS
- SITE BOUNDARY
- RAILROAD
- POTENTIALLY SENSITIVE ENVIRONMENTAL ARE
- DEWATERING AREA
- PROPOSED MONITOR WELL LOCATION
- PROPOSED STAFF GUAGE LOCATION

N
W — E

0 4000'

RCE: DAMES & MOORE, 1992

Florida Power CORPORATION

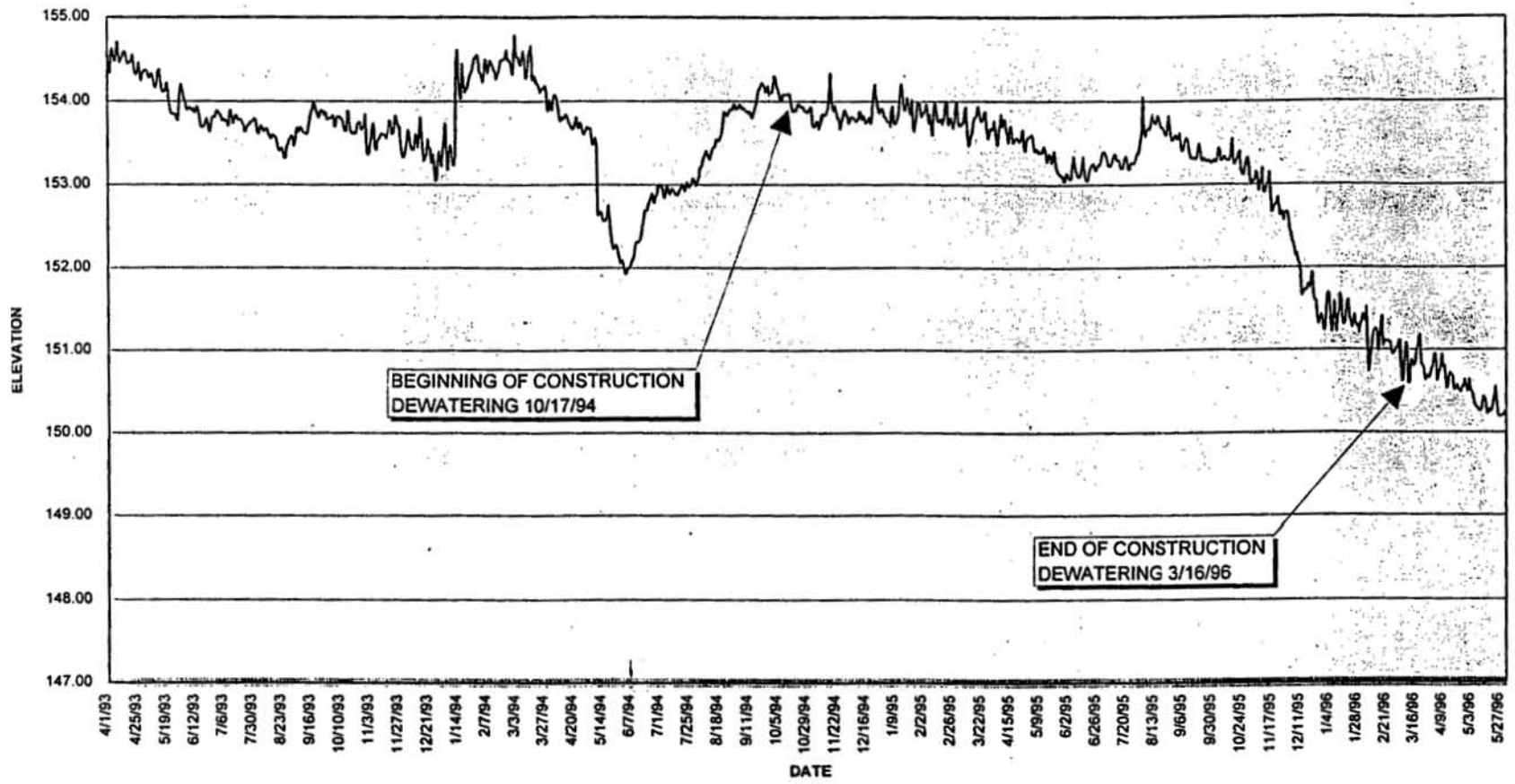
lk County Site

/SCA

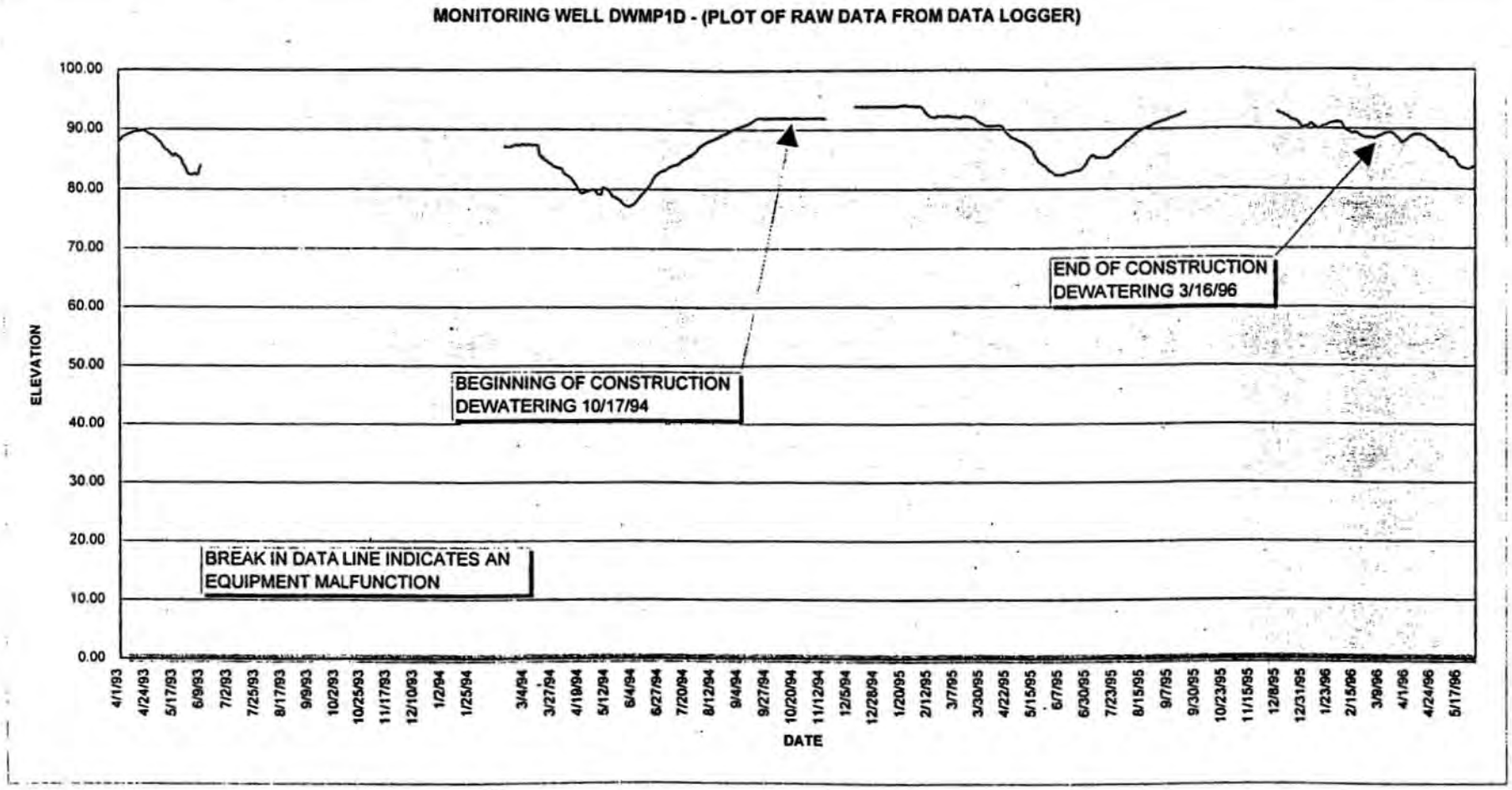
FIGURE 4.3.2-2
MONITORING SITE PLAN

FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT

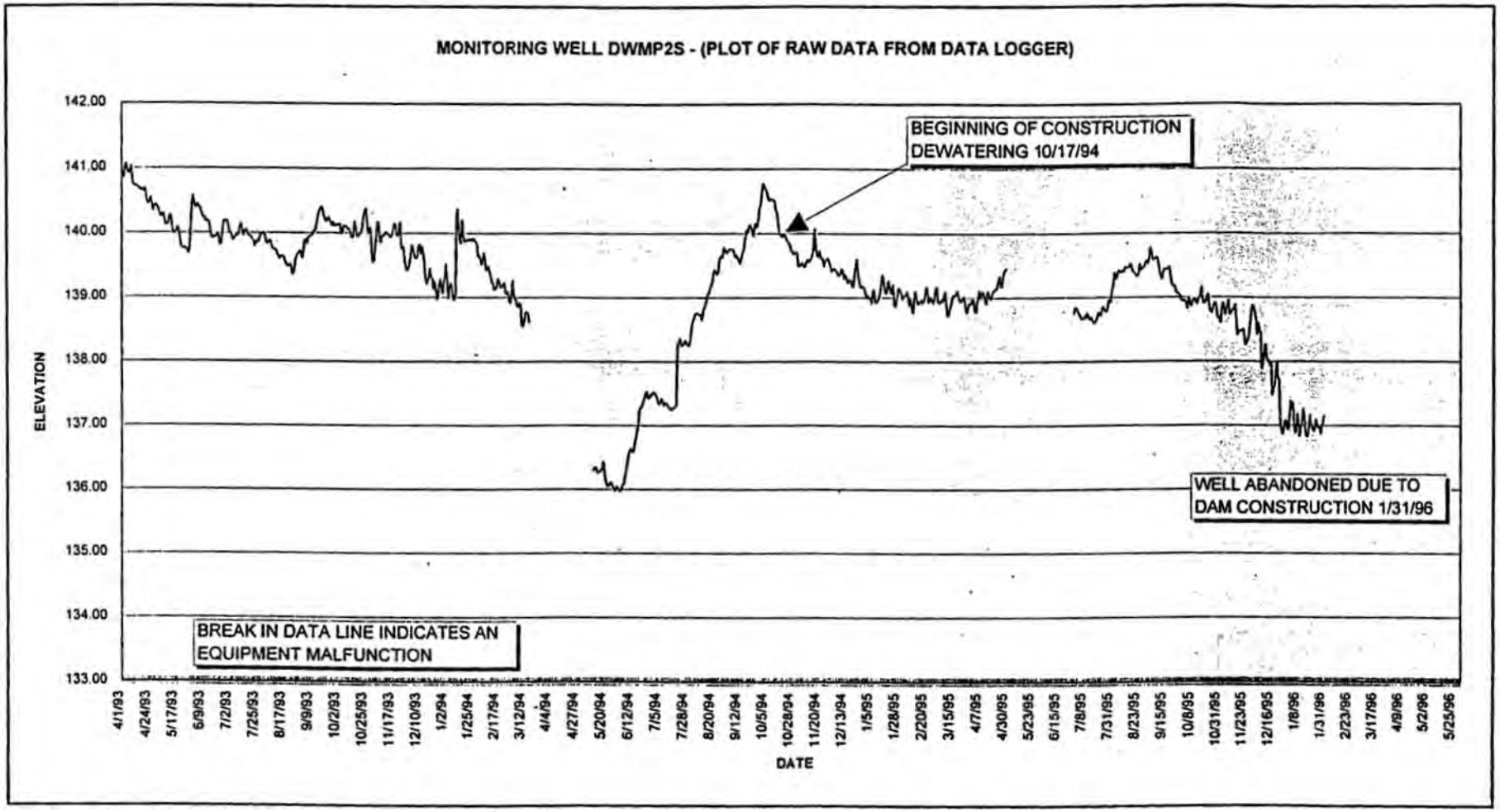
MONITORING WELL DWMP1S - (PLOT OF RAW DATA FROM DATA LOGGER)



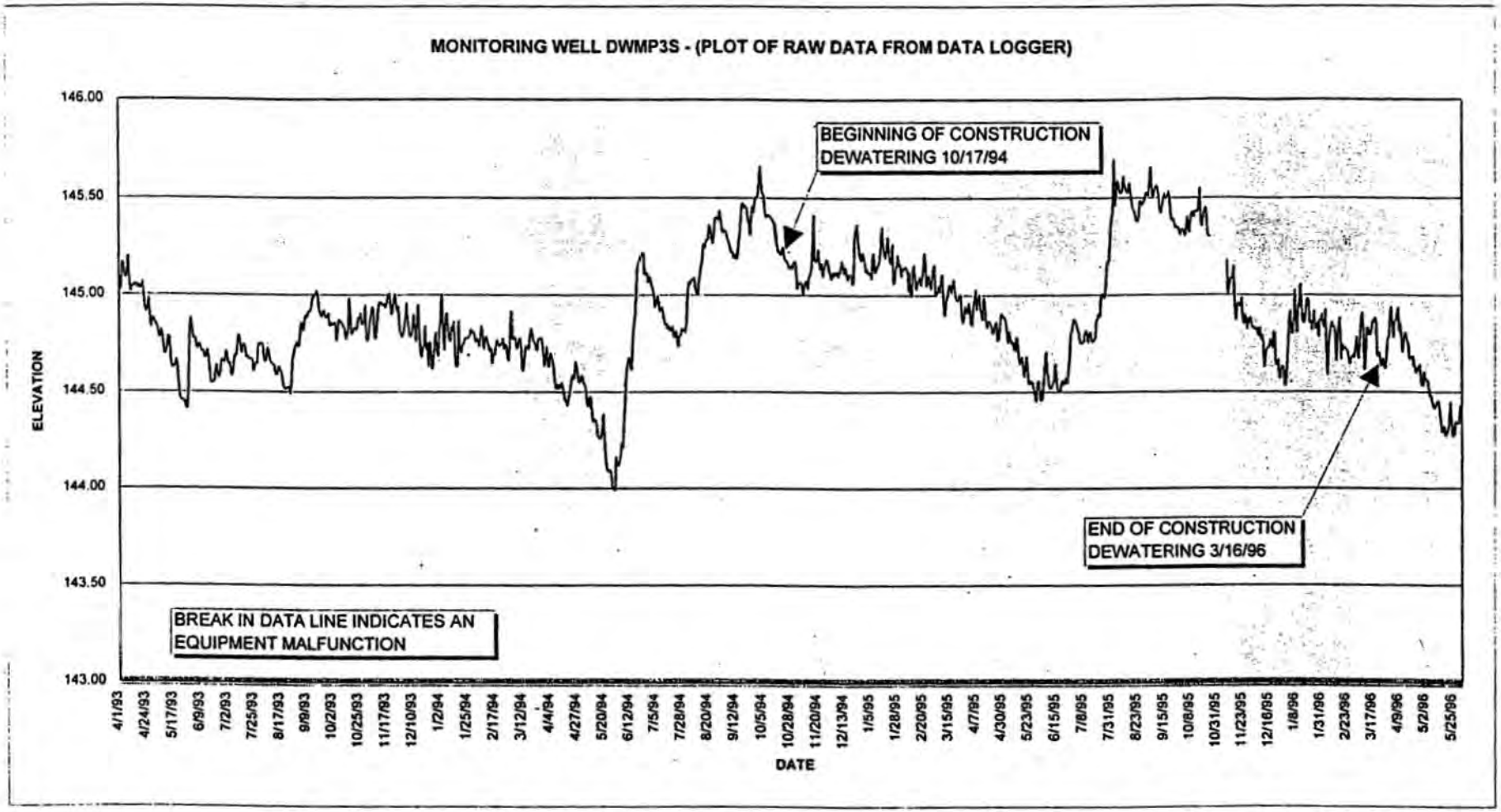
FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT



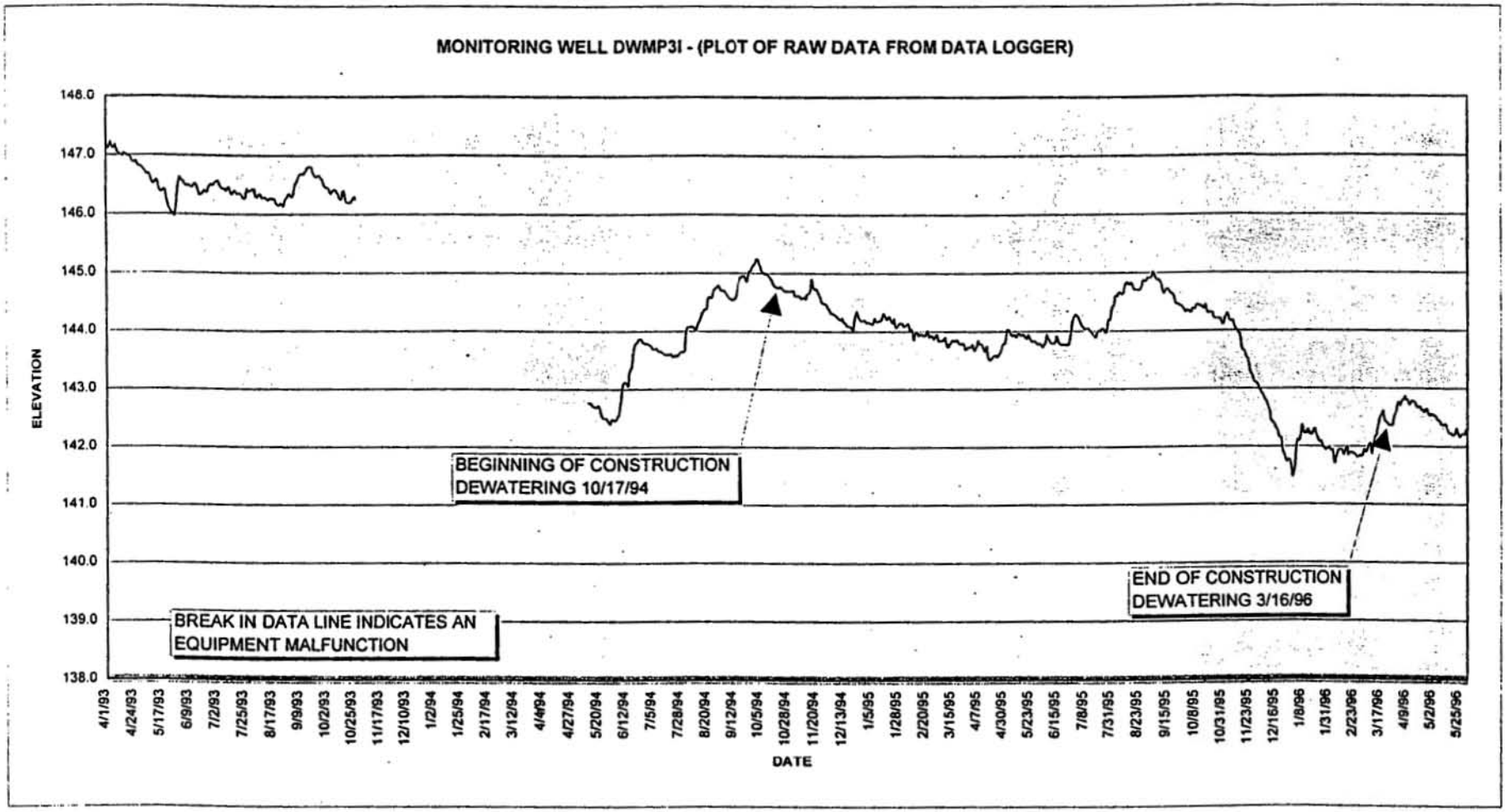
FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT



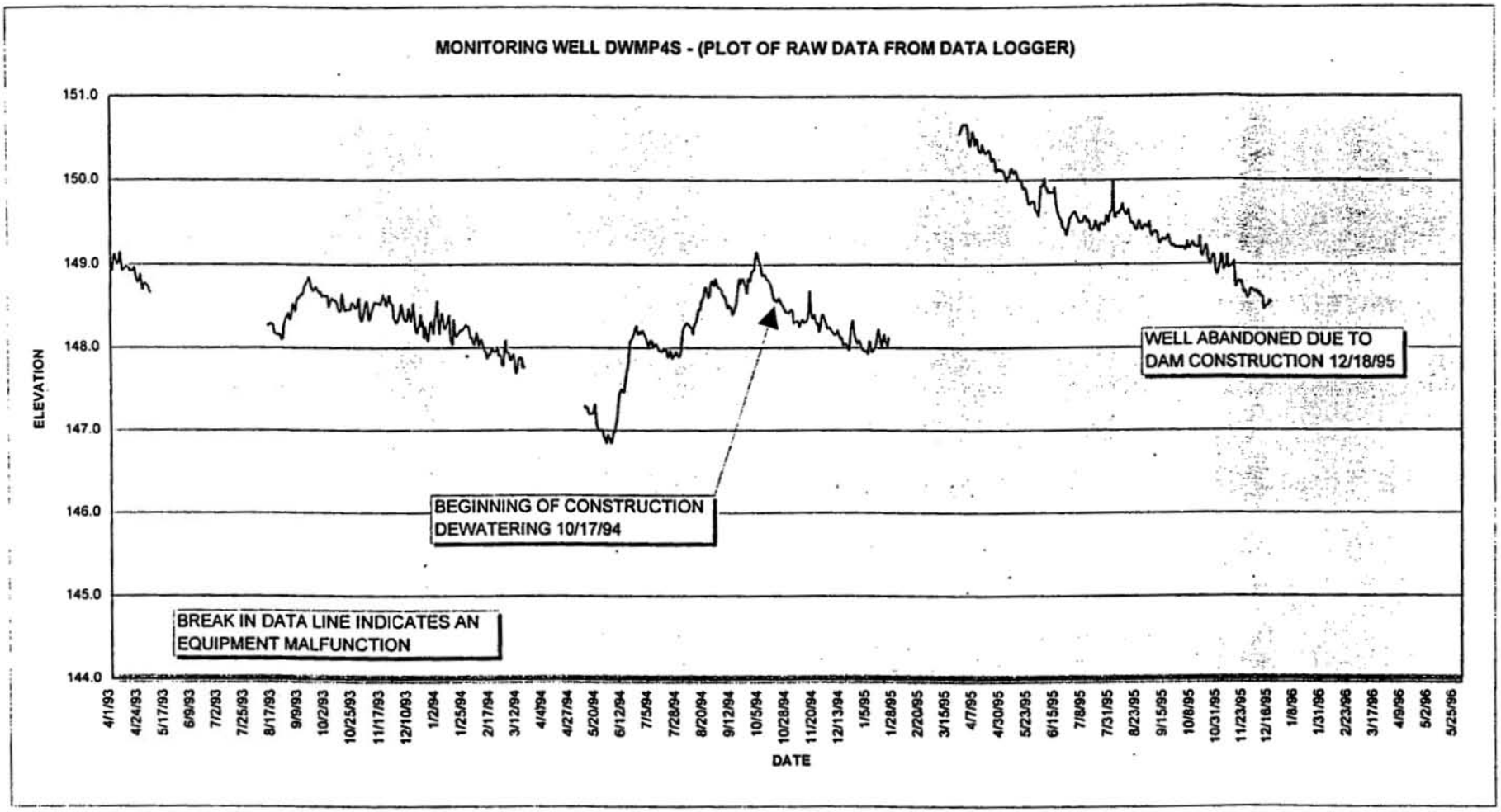
FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT



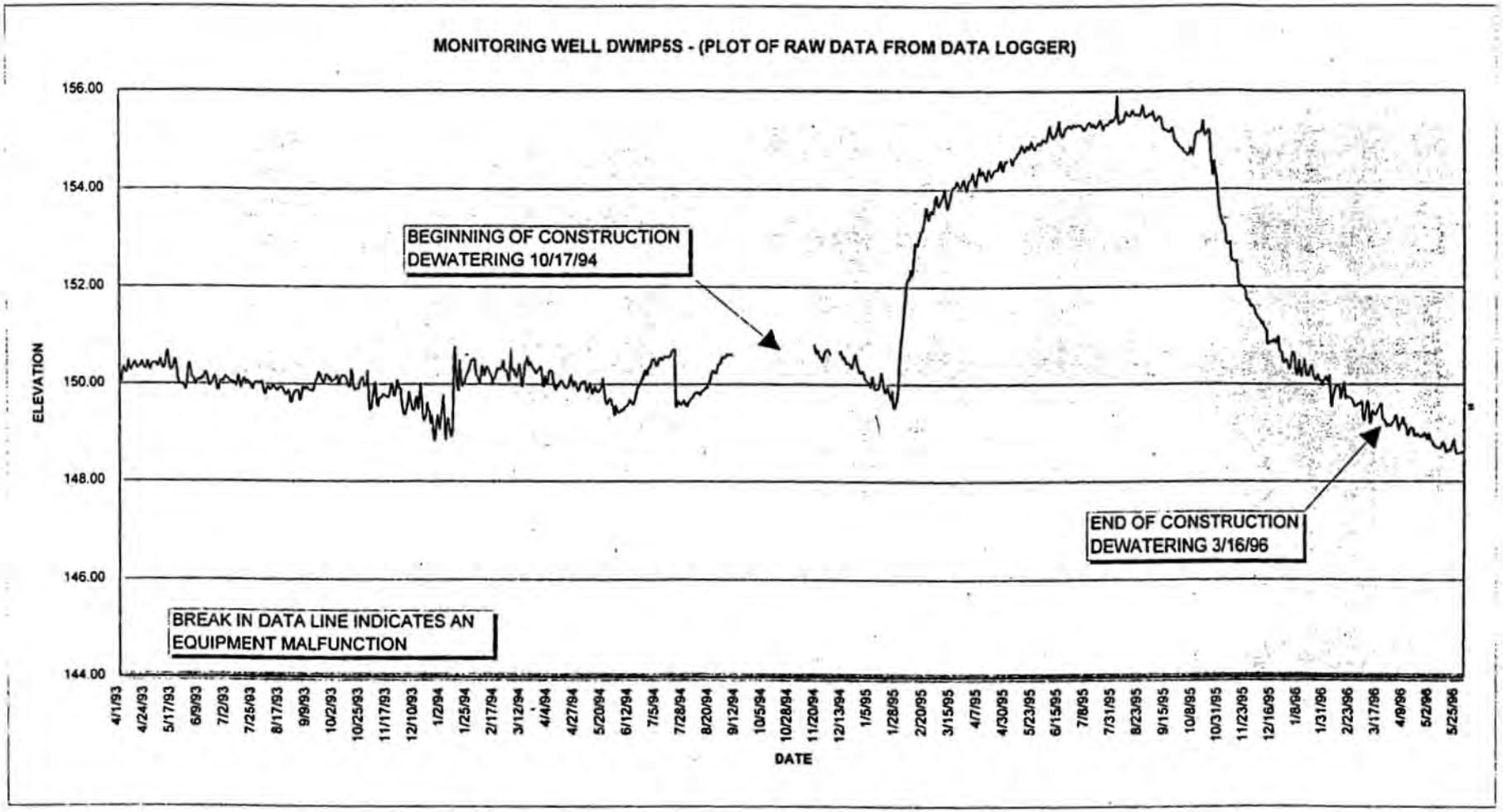
FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT



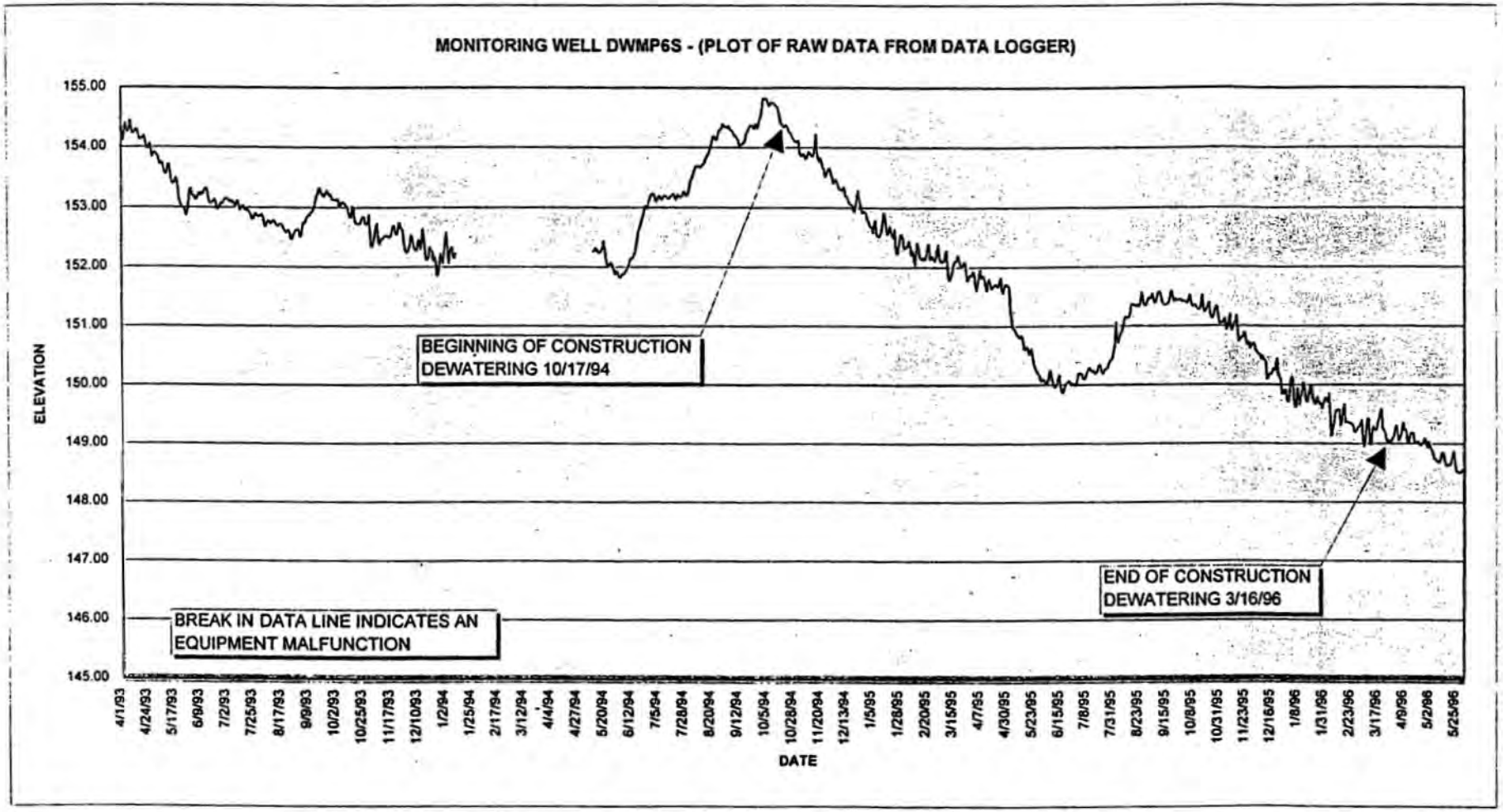
FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT



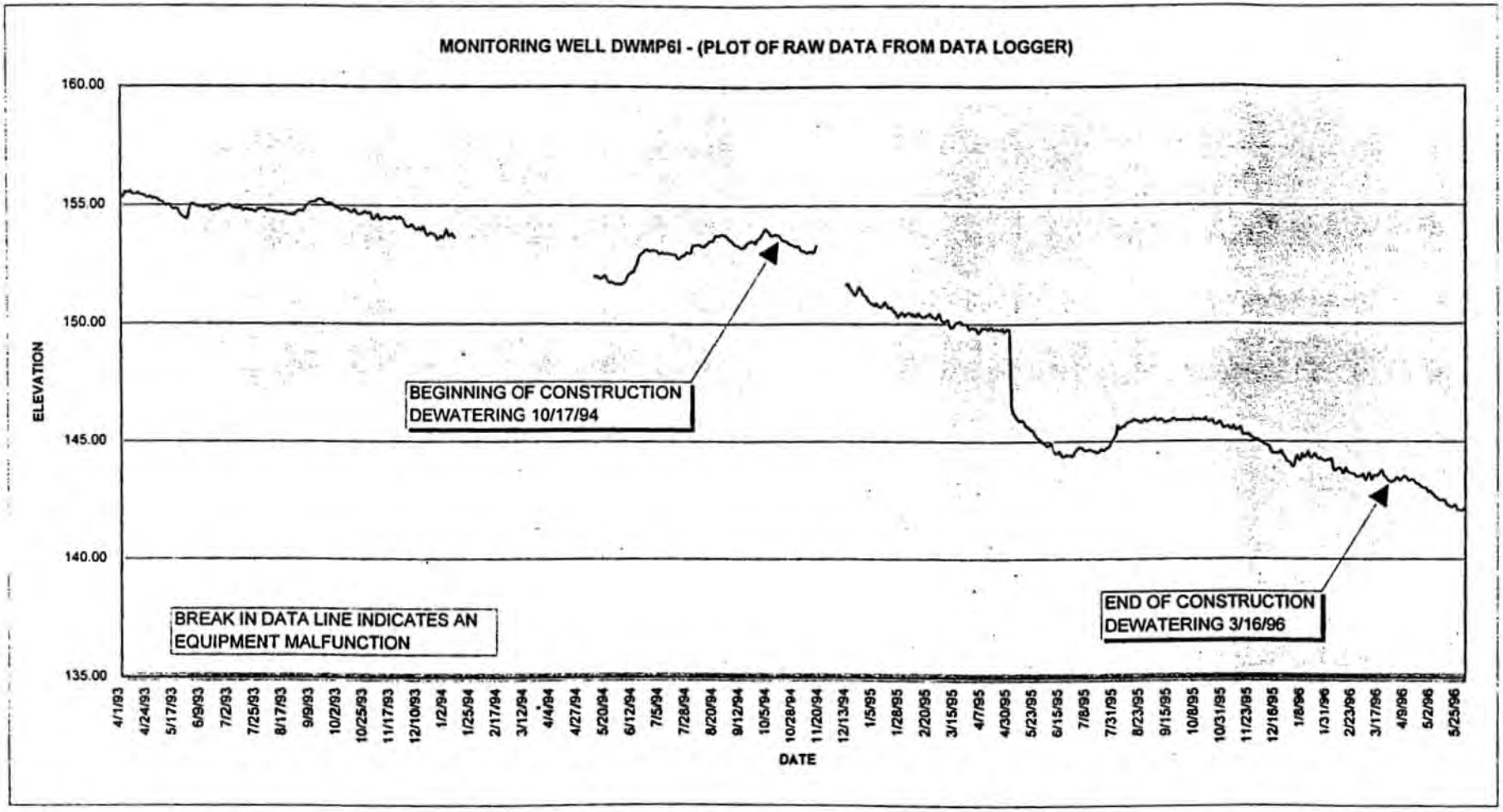
FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT



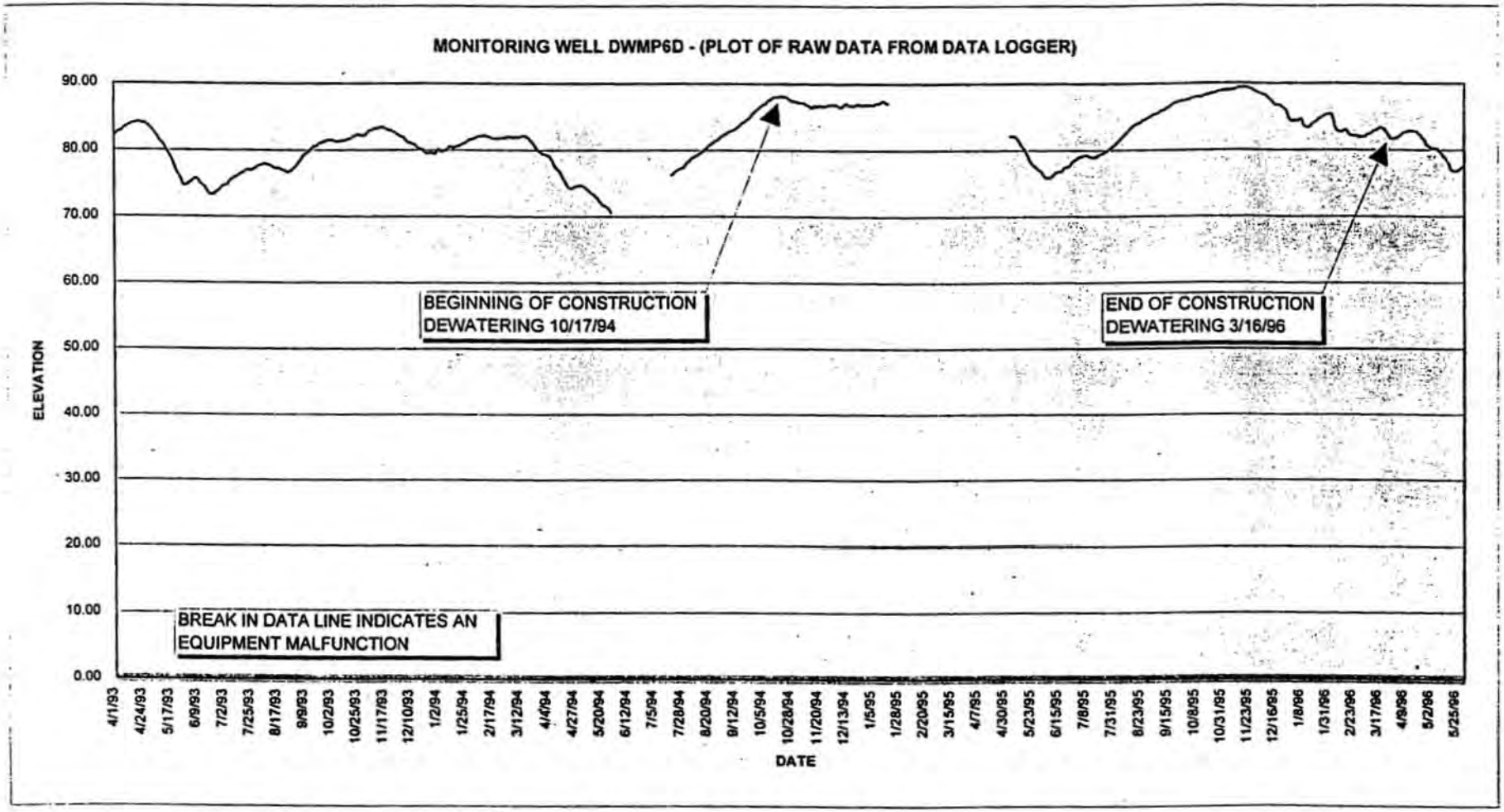
FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT



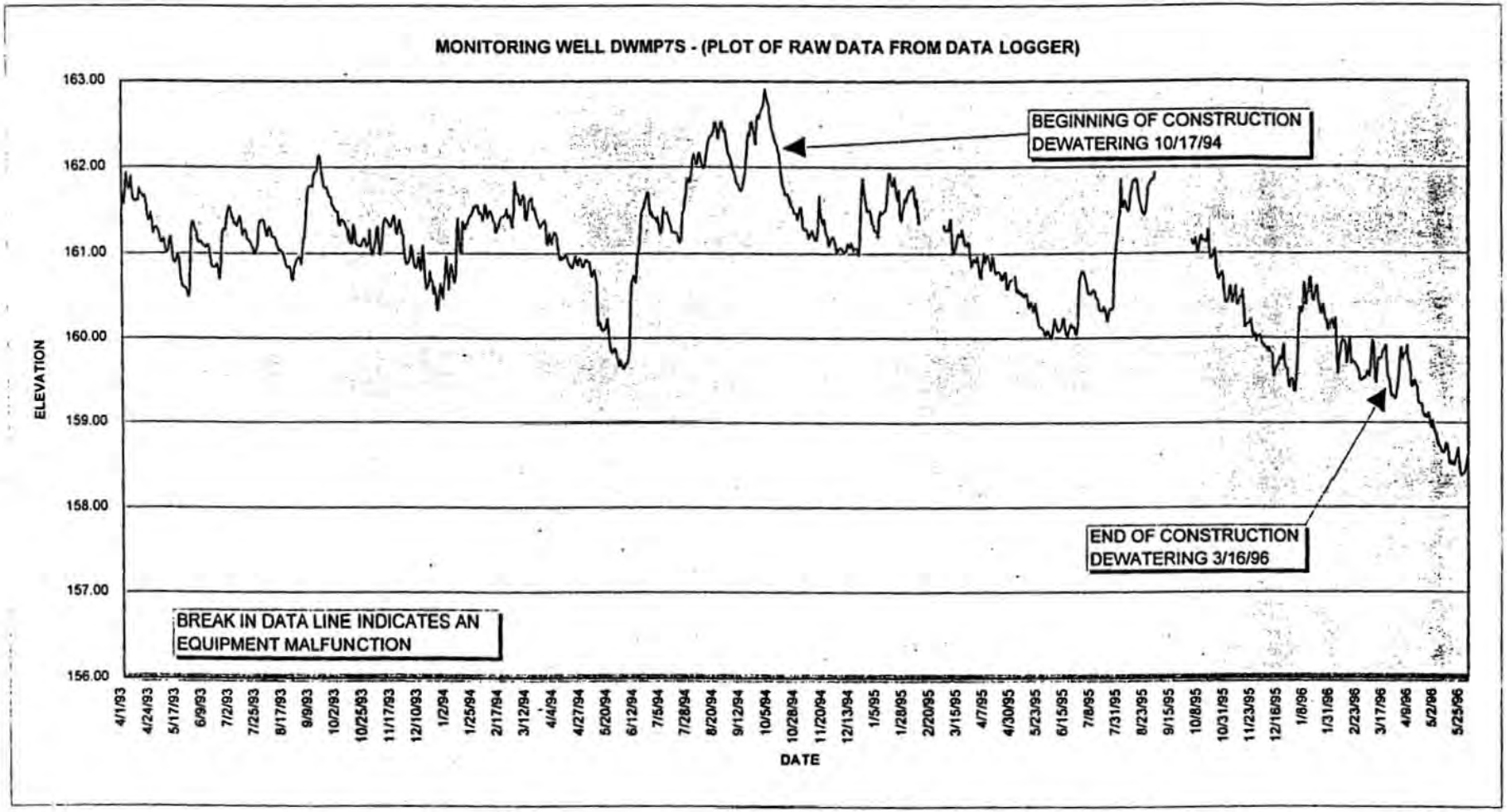
FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT



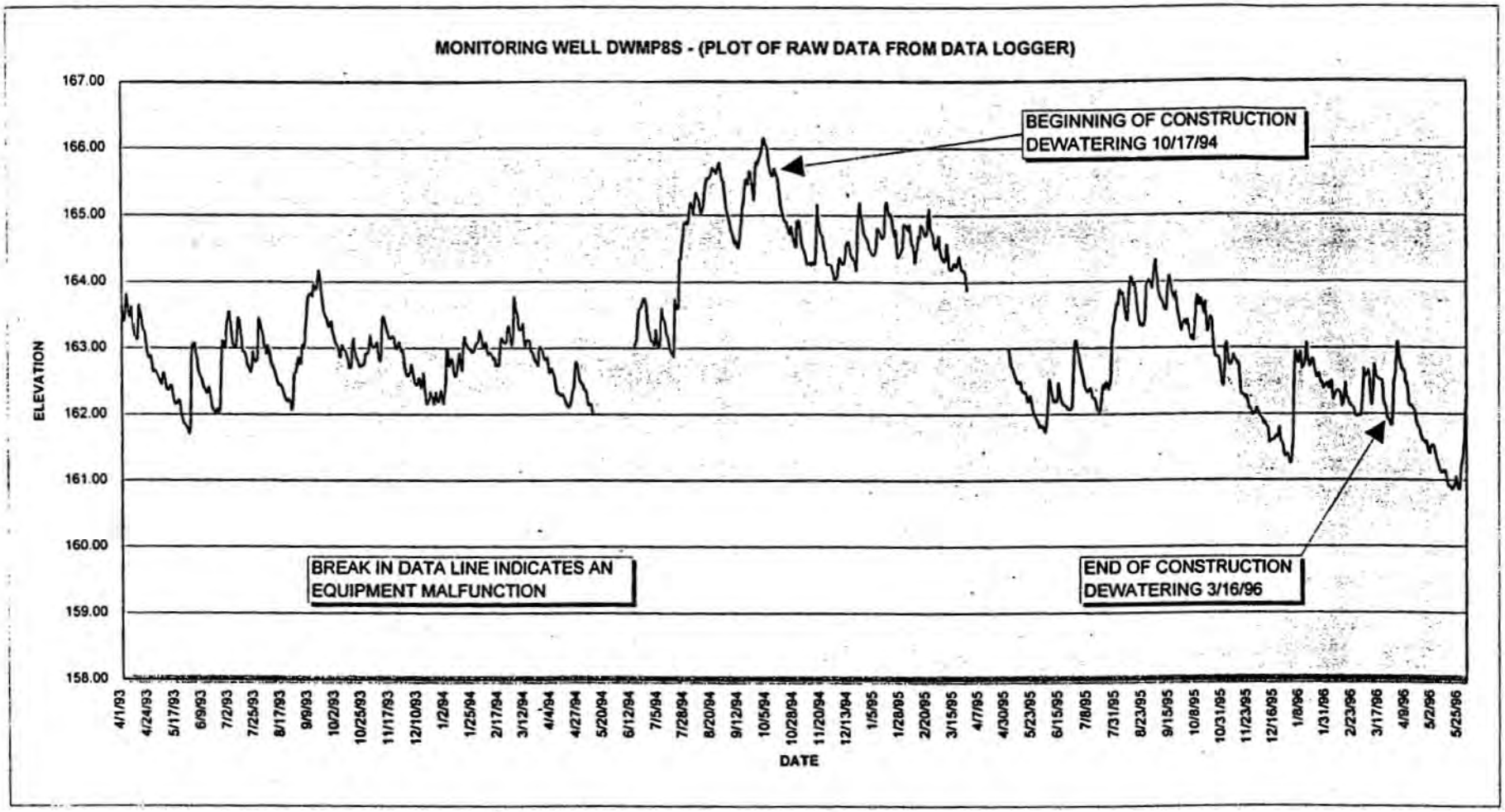
FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT



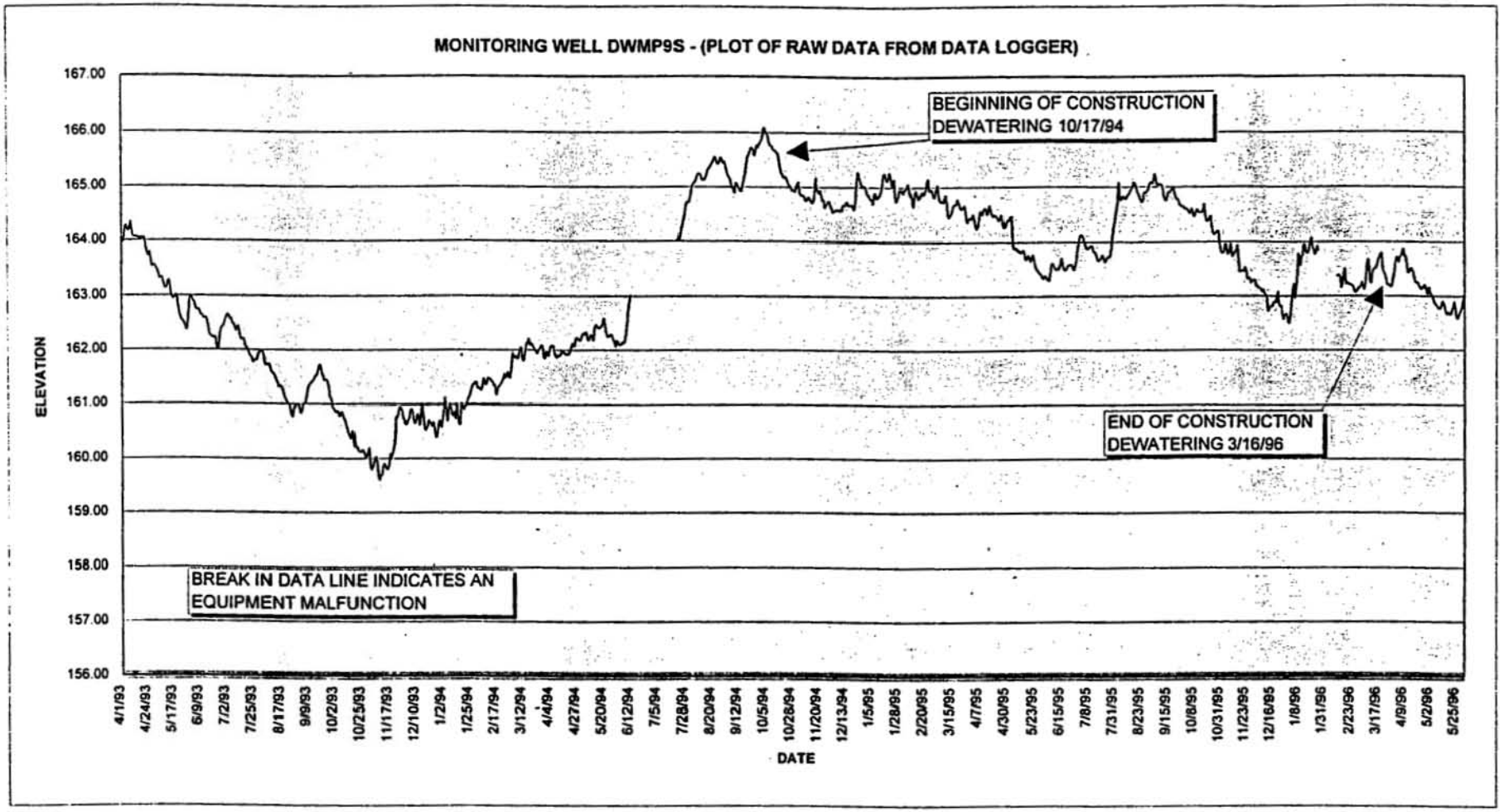
FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT



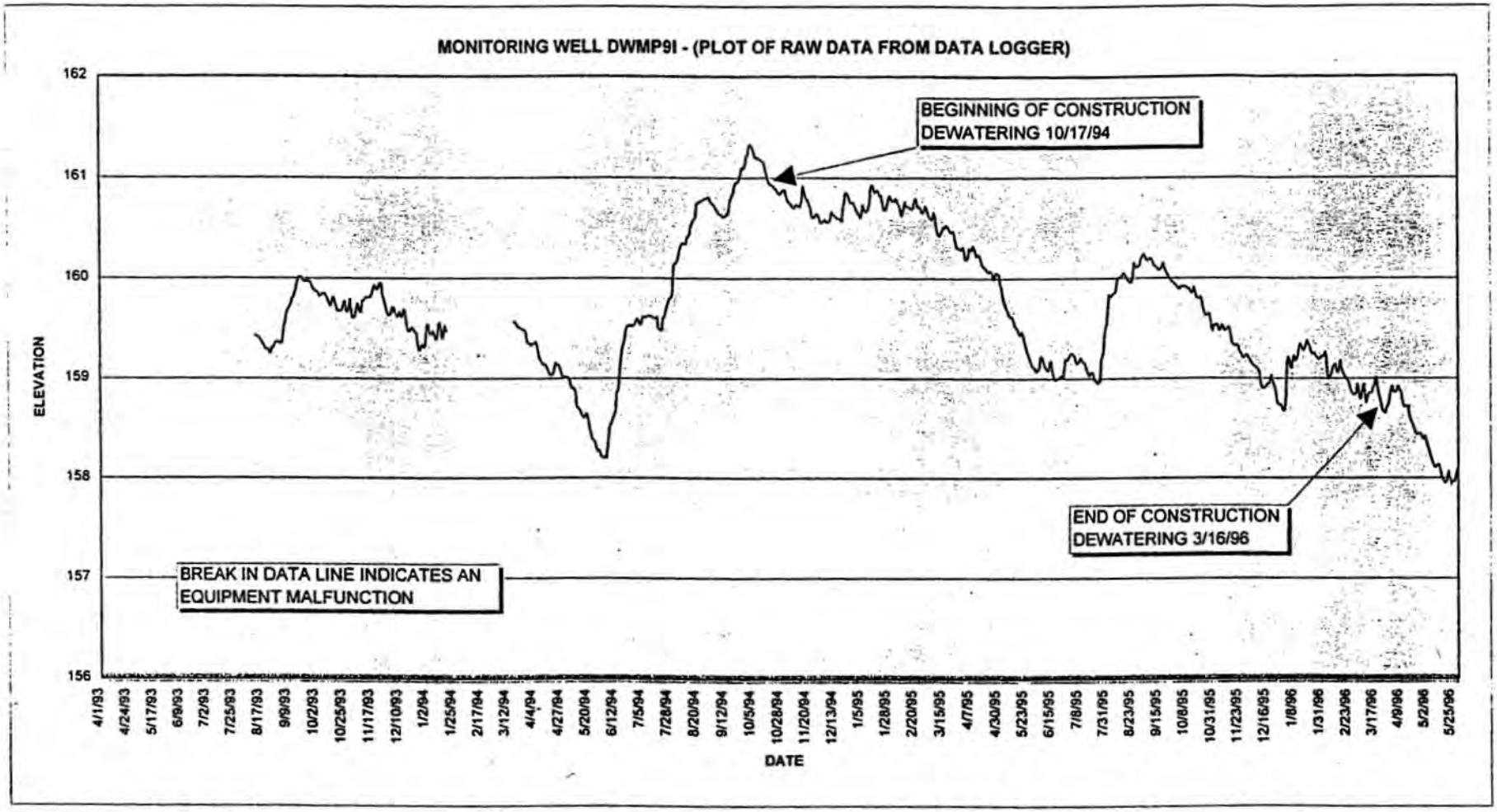
FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT



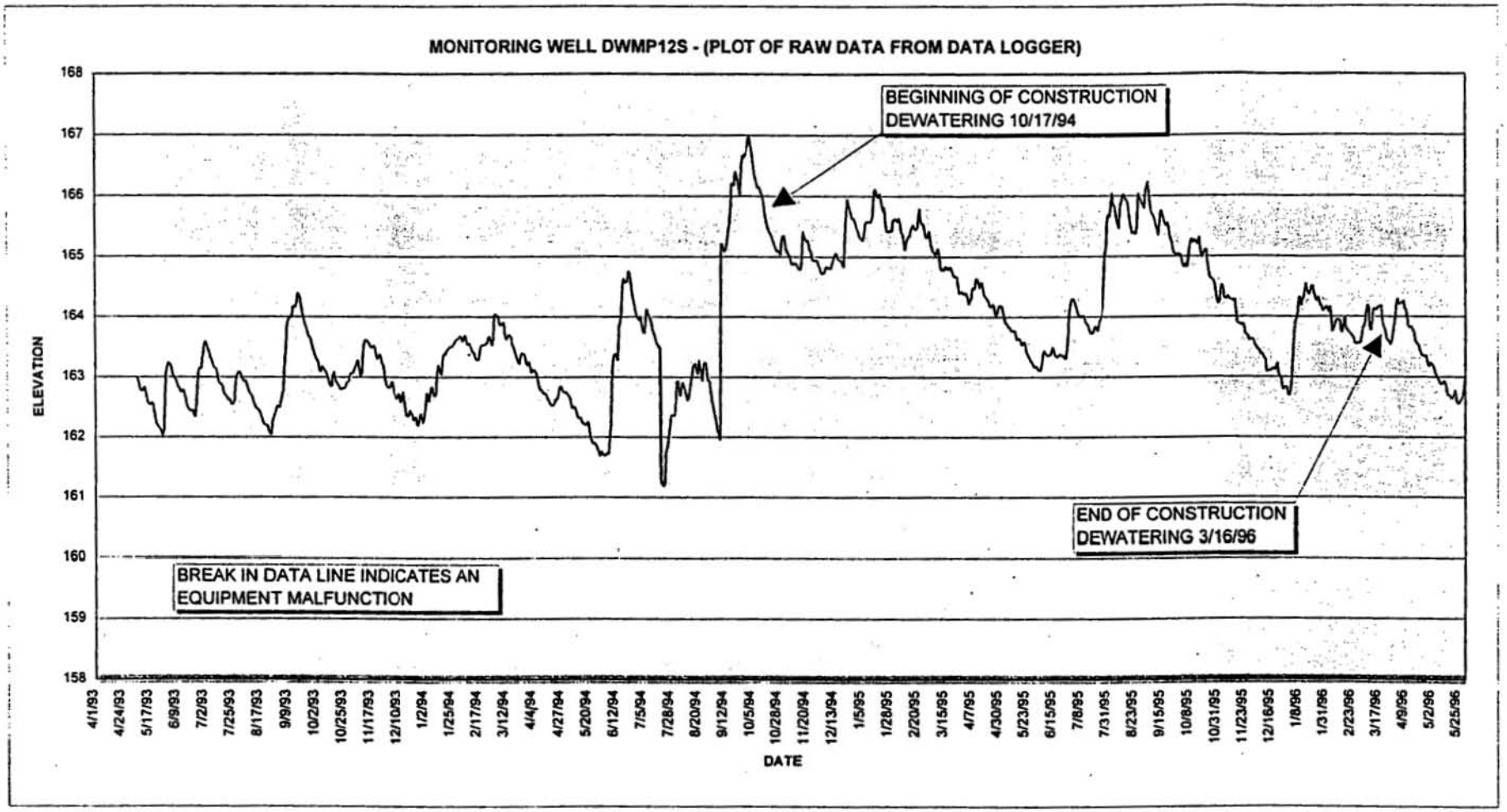
FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT



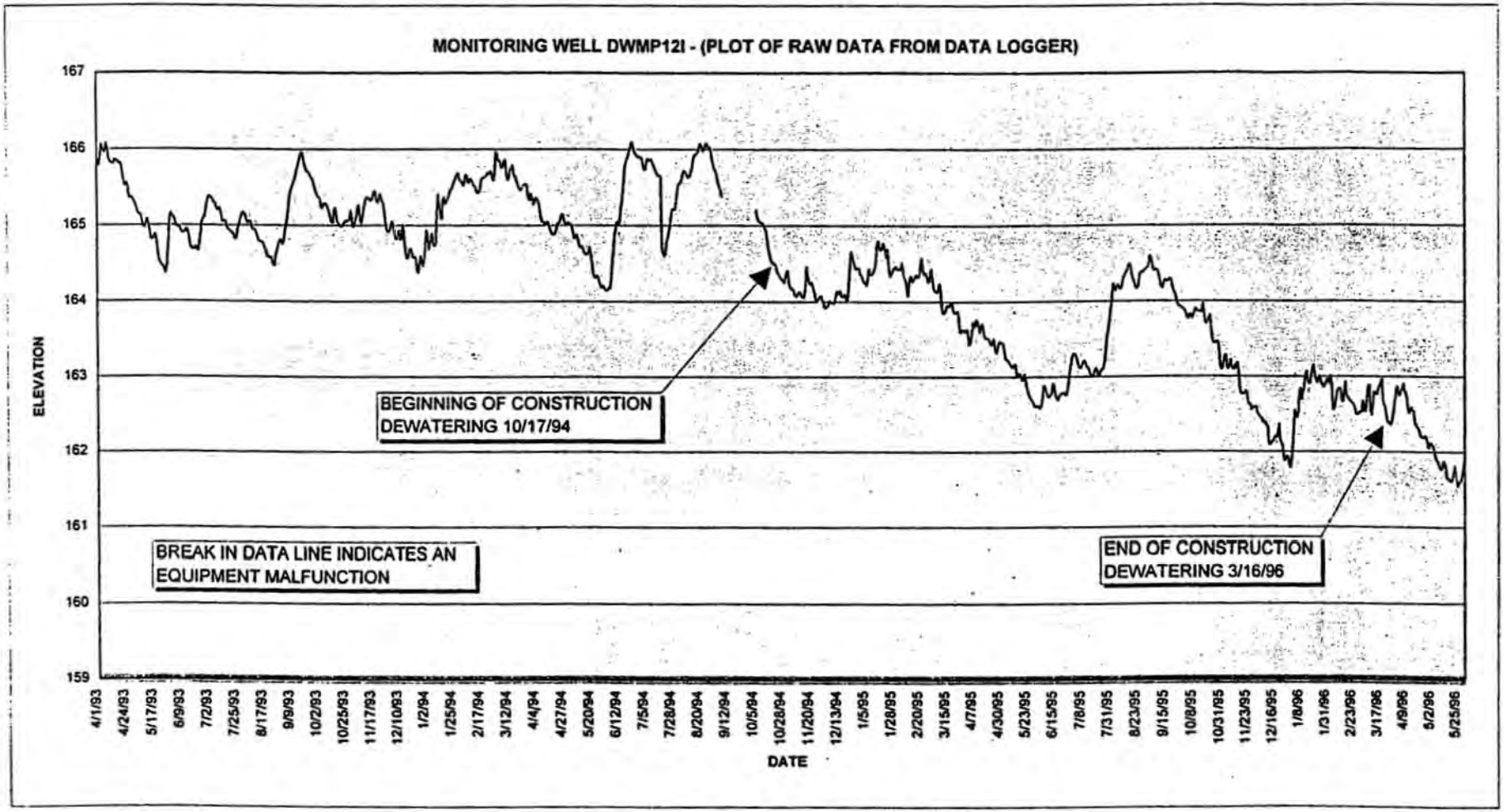
FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT

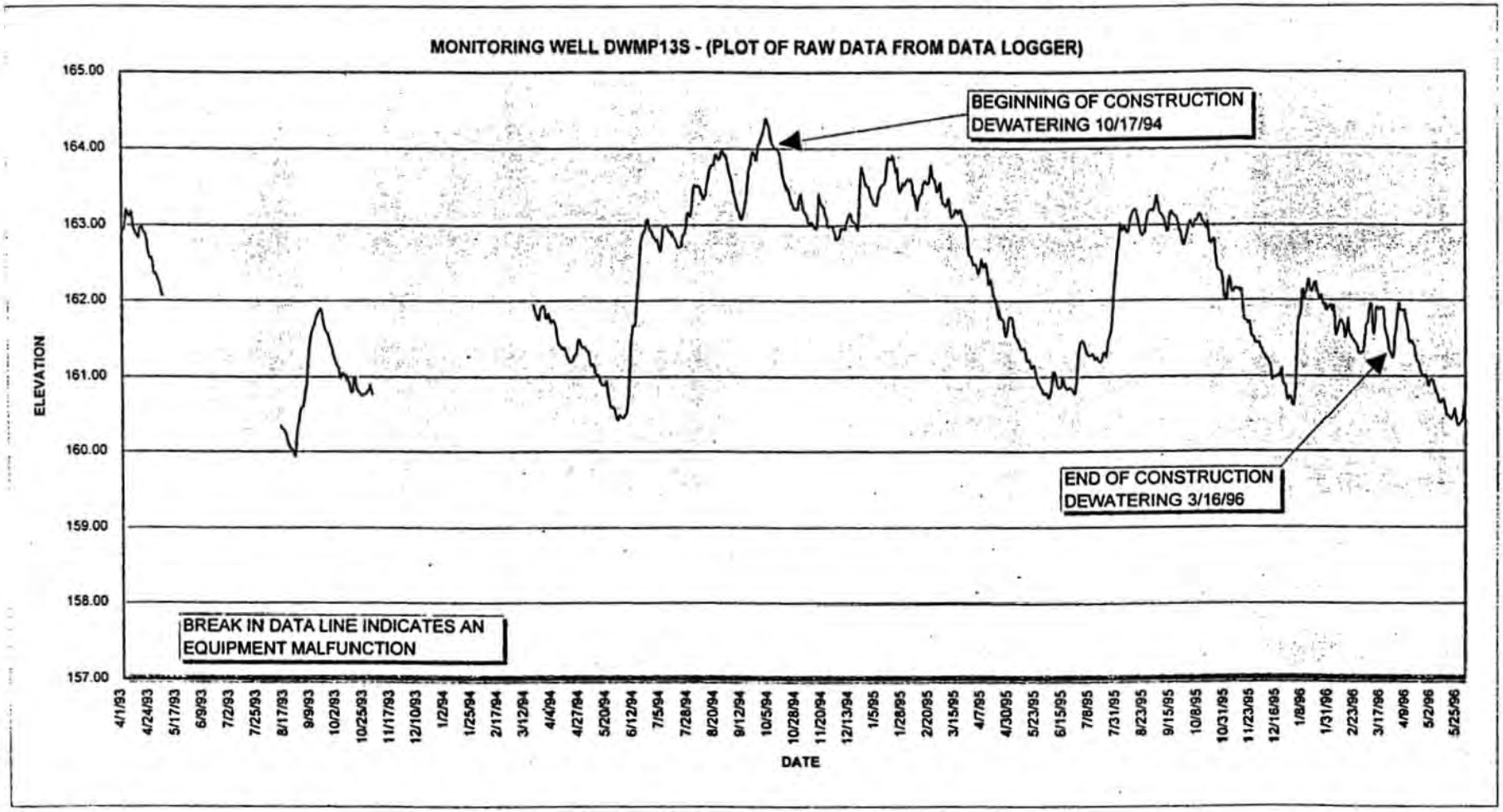


FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT

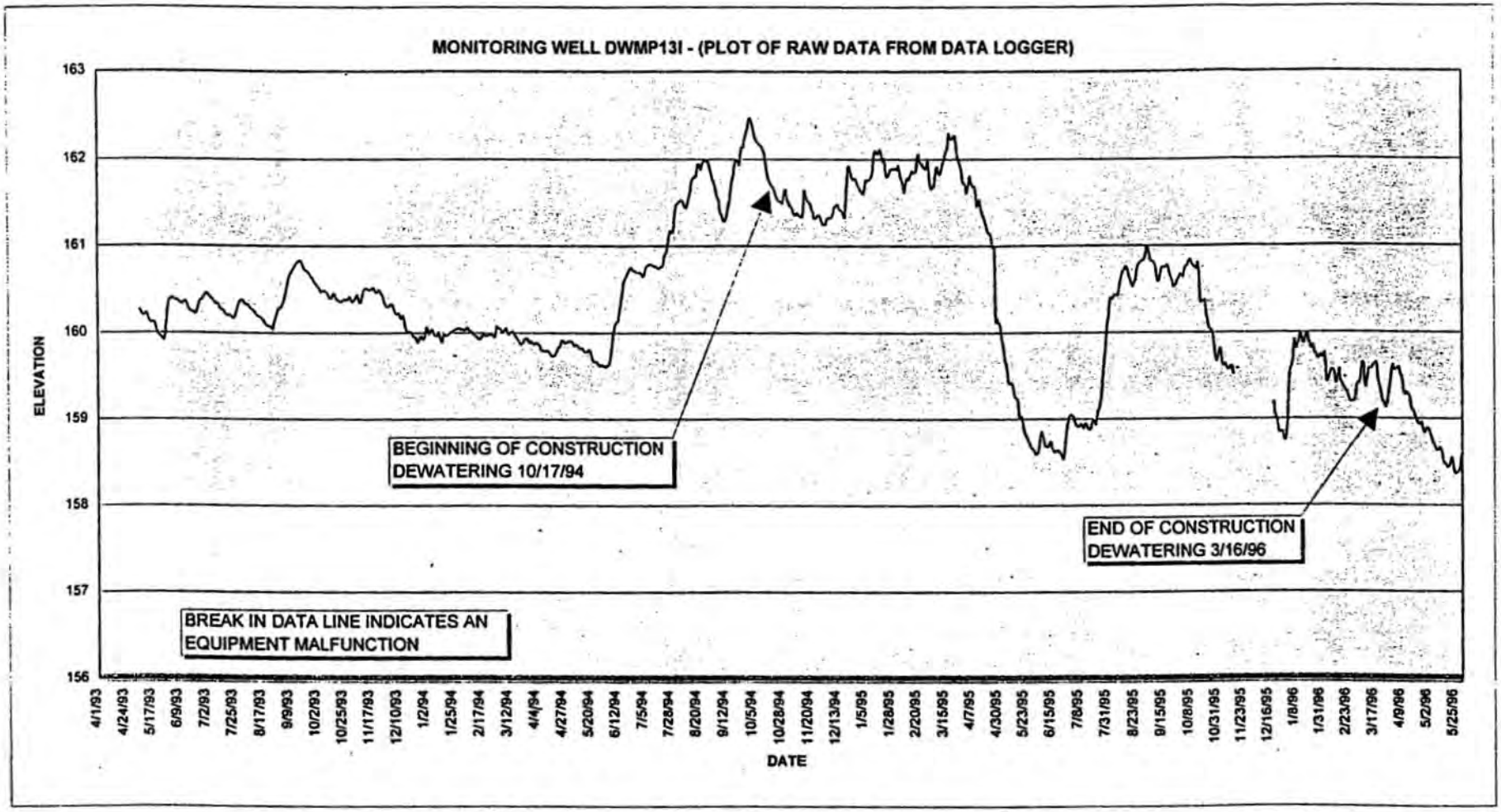


FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT

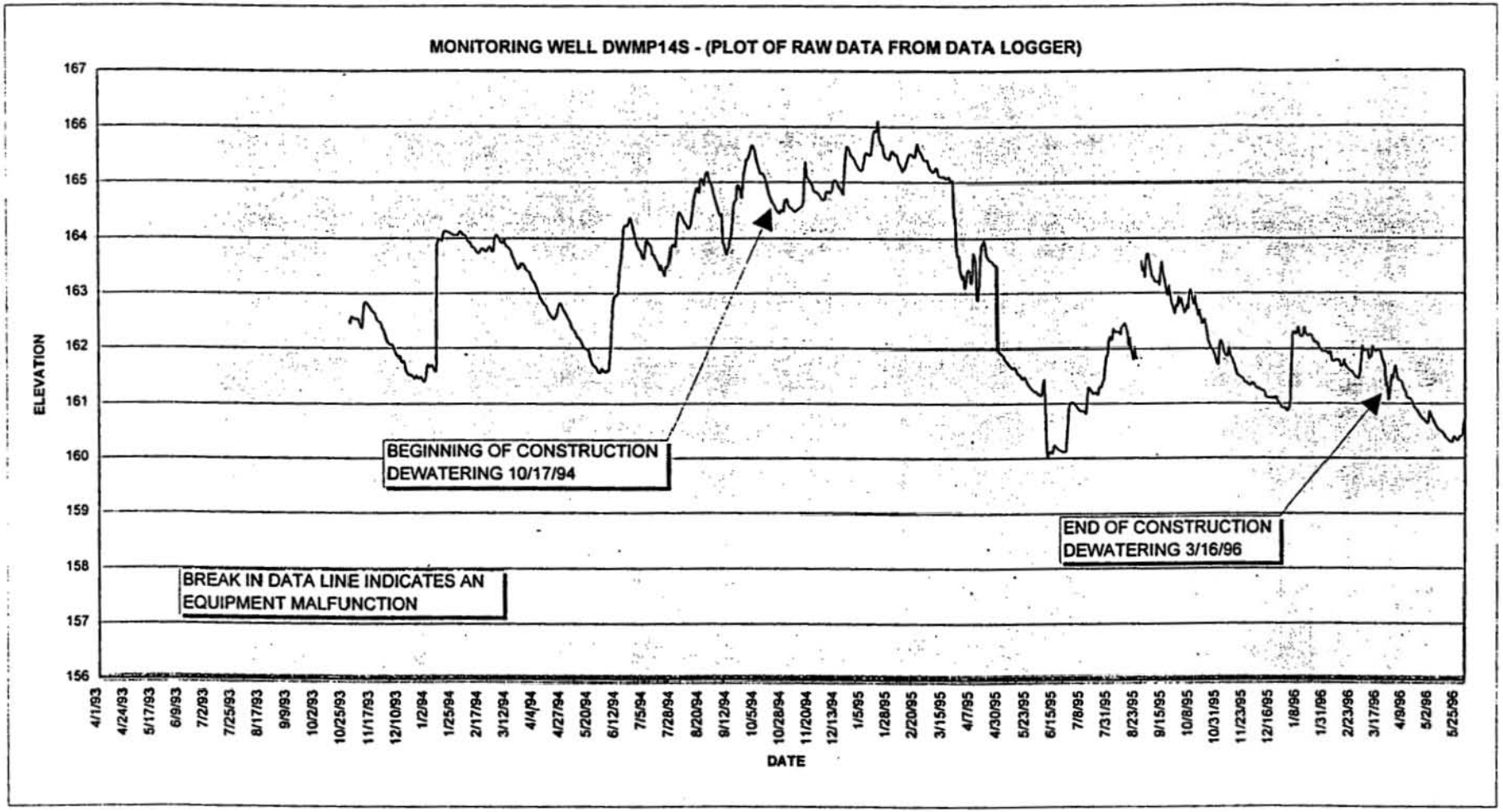



MONITORING WELL DWMP13S - (PLOT OF RAW DATA FROM DATA LOGGER)
ELEVATION
165.00
164.00
163.00
162.00
161.00
160.00
159.00
158.00
157.00
BEGINNING OF CONSTRUCTION DEWATERING 10/17/94
END OF CONSTRUCTION DEWATERING 3/16/96
BREAK IN DATA LINE INDICATES AN EQUIPMENT MALFUNCTION
4/1/93
4/24/93
5/17/93
6/9/93
7/2/93
7/25/93
8/17/93
9/9/93
10/2/93
10/25/93
11/17/93
12/10/93
1/2/94
1/25/94
2/17/94
3/12/94
4/4/94
4/27/94
5/20/94
6/12/94
7/5/94
7/28/94
8/20/94
9/12/94
10/5/94
10/28/94
11/20/94
12/13/94
1/5/95
1/28/95
2/20/95
3/15/95
4/7/95
4/30/95
5/23/95
6/15/95
7/8/95
7/31/95
8/23/95
9/15/95
10/8/95
10/31/95
11/23/95
12/16/95
1/8/96
1/31/96
2/23/96
3/17/96
4/9/96
5/2/96
5/25/96
DATE

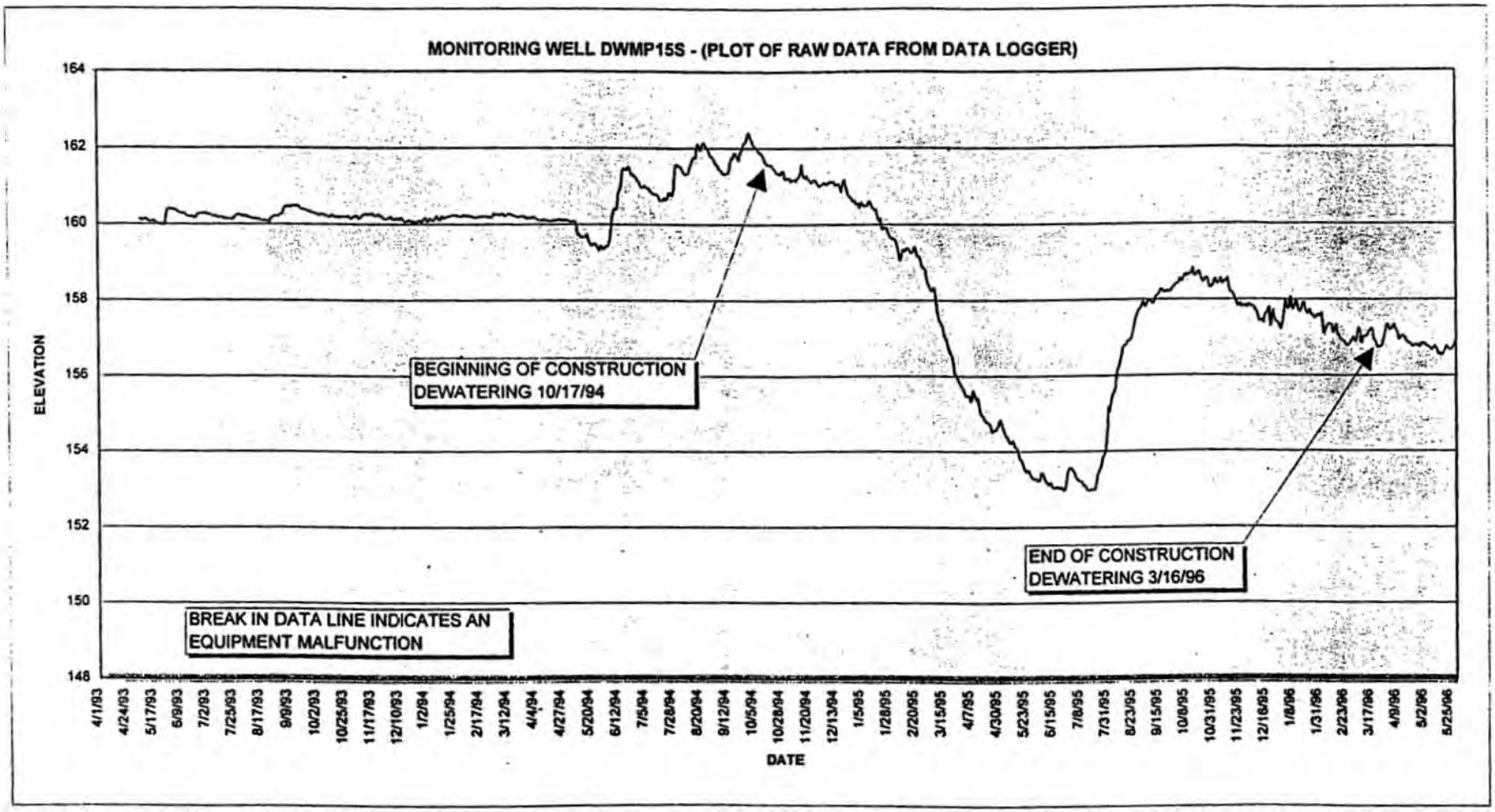
FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT

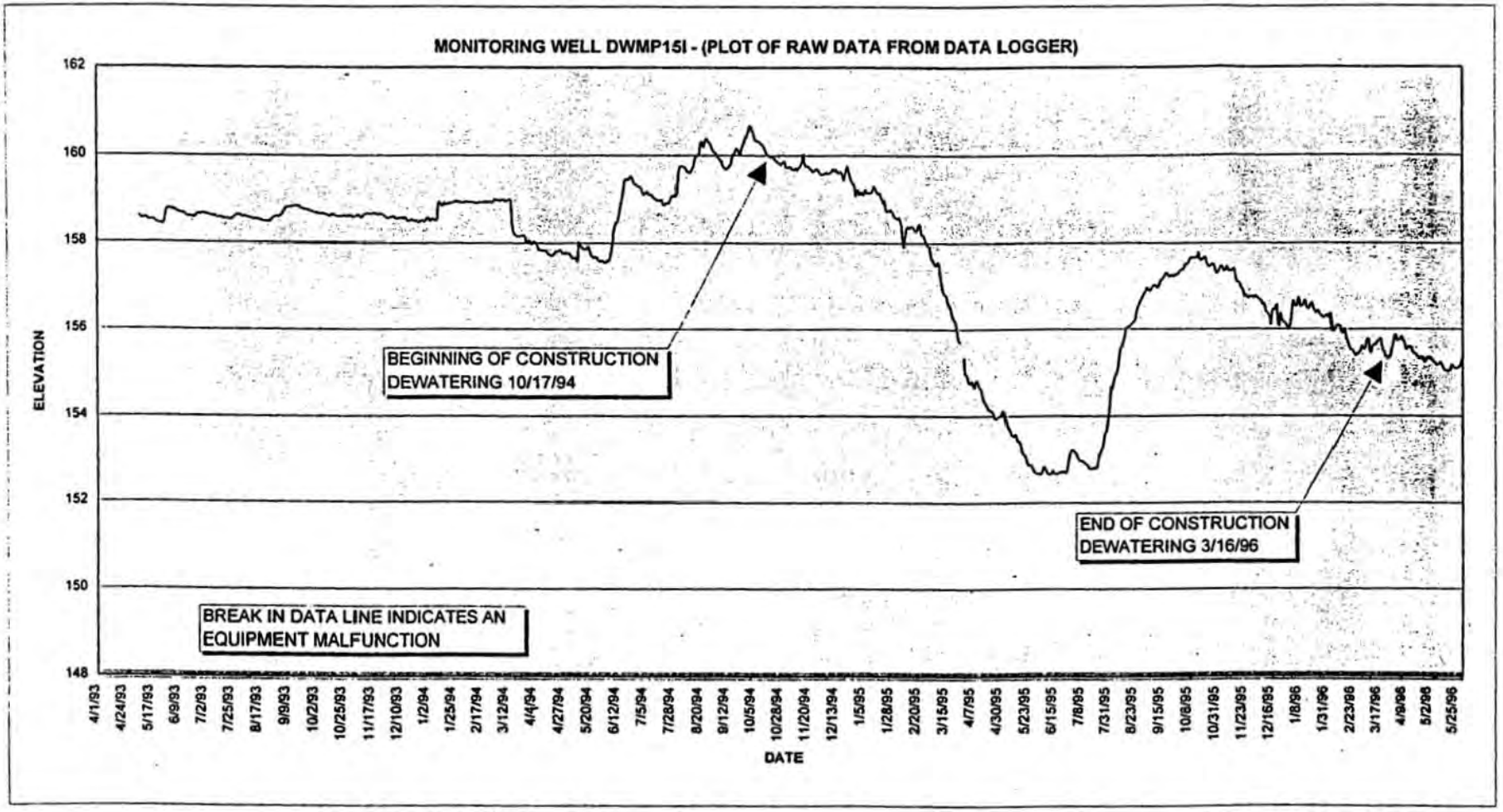


FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT

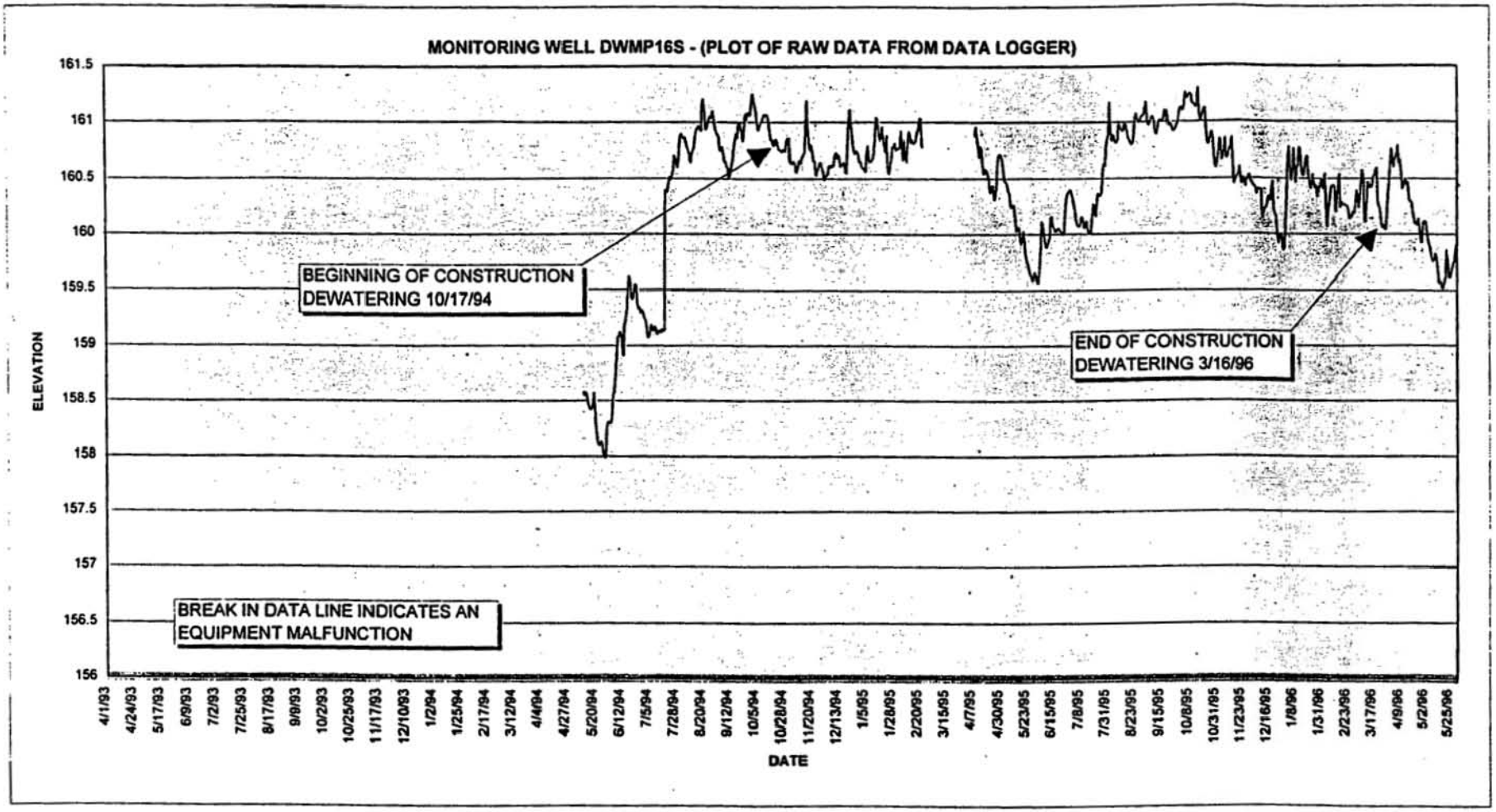


FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT

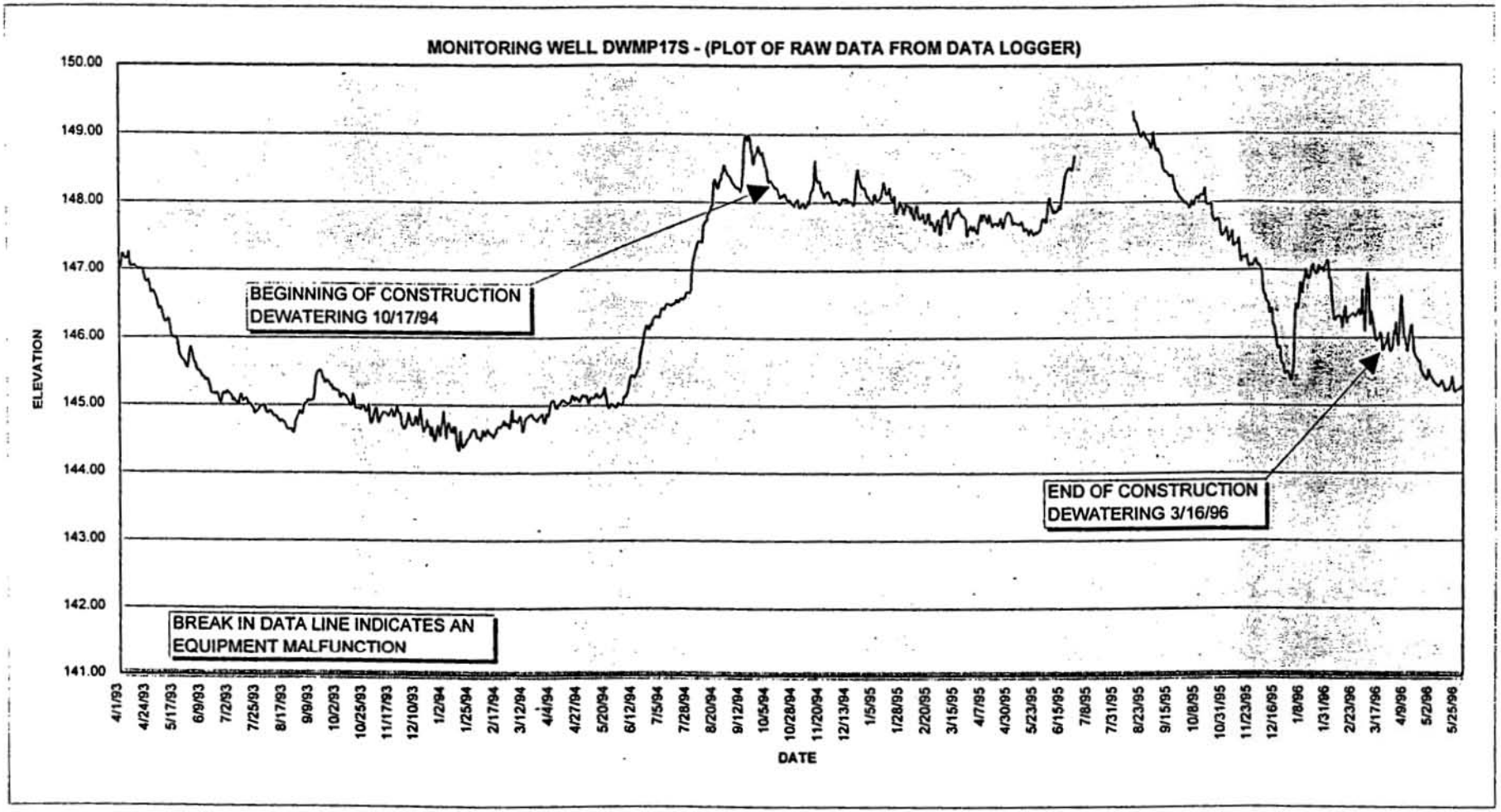



MONITORING WELL DWMP15I - (PLOT OF RAW DATA FROM DATA LOGGER)
ELEVATION
162
160
158
156
154
152
150
148
BEGINNING OF CONSTRUCTION DEWATERING 10/17/94
END OF CONSTRUCTION DEWATERING 3/16/96
BREAK IN DATA LINE INDICATES AN EQUIPMENT MALFUNCTION
4/1/93
4/24/93
5/17/93
6/9/93
7/2/93
7/25/93
8/17/93
9/9/93
10/2/93
10/25/93
11/17/93
12/10/93
1/2/94
1/25/94
2/17/94
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4/4/94
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10/8/95
10/31/95
11/23/95
12/16/95
1/8/96
1/31/96
2/23/96
3/17/96
4/9/96
5/2/96
5/25/96
DATE

FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT



FLORIDA POWER CORPORATION - POLK COUNTY COMBINED CYCLE PROJECT



10.5.2.3

10.5.2.3 Surface Water Quality Results

This section contains surface water quality results from the baseline hydrology studies which were conducted in support of the 1992 SCA.

TABLE 2.3.4-4
SURFACE WATER MONITORING DATA - POLK COUNTY SITE

Parameter (mg/l unless noted otherwise)	FPC-001 (N-15) 09/91	FPC-009 (N-15) 02/92	FPC-002 (N-16) 09/91	FPC-010 (N-16) 02/92	FPC-003 (Tiger Bay) 09/91	FPC-011 (Tiger Bay) 02/92	FPC-004 (CMGB) 09/91	FPC-015 (CMGB) 02/92	FPC-005 (SA-11) 09/91
Alkalinity (as $CaCO_3$)	89	75.5	119	133	82.5	93.2	139	151	95.5
Aluminum	0.36	0.52	0.31	0.32	< 0.1	< 0.1	1.2	0.67	0.26
Ammonia, as N	< 0.1	< 0.1	< 0.1	0.14	< 0.1	< 0.1	0.27	0.36	0.15
Antimony	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Arsenic	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Barium	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Beryllium	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bicarbonate	< 78.2	< 48.3	109	123	82.5	92.2	139	151	73.9
Boron	< 0.1	< 0.05	< 0.1	< 0.05	< 0.1	< 0.05	< 0.1	< 0.05	< 0.1
Cadmium	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Calcium	49	62	56	60	15	20	58	58	82
Carbonate	13	26.8	8.56	10.2	< 2	< 2	< 2	< 2	21.4
Chloride	16.1	17.9	17.6	19.9	8.04	11.1	17.1	19.1	42.2
Chromium	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Color (PCU)	40	100	50	70	30	20	40	40	50
Copper	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cyanides (total)	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Dissolved Oxygen	8.8	**	9.7	**	5.8	**	3.9	**	6.7
Fecal Coliform Bacteria (Cfu/100 ml)	< 1	6	6	5	18	18	< 1	100	< 1
Fluoride	2.84	2.55	2.38	2.51	1.99	1.93	2.24	2.33	2.53
Gross Alpha (pCi/l)	9.5	15.8	3.2	6.9	< 0.5	0.6	4.2	6.9	8.9

TABLE 2.3.4-4
SURFACE WATER MONITORING DATA - POLK COUNTY SITE

Parameter (mg/l unless noted otherwise)	FPC-001 (N-15) 09/91	FPC-009 (N-15) 02/92	FPC-002 (N-16) 09/91	FPC-010 (N-16) 02/92	FPC-003 (Tiger Bay) 09/91	FPC-011 (Tiger Bay) 02/92	FPC-004 (CMGB) 09/91	FPC-015 (CMGB) 02/92	FPC-005 (SA-11) 09/91
Iron	< 0.1	0.28	< 0.1	0.11	0.19	0.23	1.1	0.79	< 0.1
Lead	< 0.01	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005	< 0.01
Magnesium	22	22	24	26	11	14	27	27	41
Manganese	< 0.03	0.033	< 0.03	< 0.03	< 0.03	< 0.03	0.052	0.049	< 0.03
Mercury	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Molybdenum	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	< 0.01	< 0.04	< 0.01	< 0.04	< 0.01	< 0.04	< 0.1	< 0.04	< 0.01
Nitrate, as N	0.04	0.07	< 0.03	0.07	< 0.03	0.05	0.133	0.31	< 0.03
Nitrite, as N	< 0.03	0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Oil & Grease, Grav.	4.2	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
pH, Field	8.87	9.18	9.06	7.08	7.48	8.52	7.38	7.16	9.3
Phenolics	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Potassium	3.6	2.5	3.4	3	< 1	< 1	4.2	2.5	3.3
Radium 226 (pCi/l)	0.3	1.1	1.1	0.6	< 0.2	< 0.2	1.3	1.7	1.1
Radium 228 (pCi/l)	0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.07
Selenium	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Silica-Dissolved	5.41	< 0.5	4.21	< 0.5	3.83	< 0.5	2.1	3.1	< 0.5
Silver	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sodium	47	50	42	47	7.1	8.9	41	42	41
Specific Conductance (umho/cm)	670	620	645	620	205	220	677	600	978
Strontium	0.2	0.13	0.1	0.11	< 0.1	< 0.05	0.13	0.12	0.19

TABLE 2.3.4-4
SURFACE WATER MONITORING DATA - POLK COUNTY SITE

Parameter (mg/l unless noted otherwise)	FPC-001 (N-15) 09/91	FPC-009 (N-15) 02/92	FPC-002 (N-16) 09/91	FPC-010 (N-16) 02-92	FPC-003 (Tiger Bay) 09/91	FPC-011 (Tiger Bay) 02/92	FPC-004 (CMGB) 09/91	FPC-015 (CMGB) 09/91	FPC-005 (SA-11) 09/91
Strontium 90 (pCi/l)	0.2	0.3	7	0.5	0	0.1	0	0	0
Sulfate	213	254	132	195	< 1	< 1	143	160	289
Surfactants	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TDS	428	444	400	412	122	114	416	398	660
Total Coliform (Cfu/100 ml)	10/H	100/H	*	100/H	*	*	< 1/H	1200/H	*
Total Hardness (as $CaCO_3$)	235	250	239	260	110	110	167	260	374
Total Phosphorus	0.741	1.12	0.543	1.06	0.102	0.09	0.895	2.81	0.344
Total Sulfide	0.11	0.32	0.11	0.2	< 0.1	< 0.1	< 0.1	< 0.1	0.12
Tritium (pCi/l)	0	36	0.1	0	2	43	26	12	60
TSS	12.5	32.5	13.5	19.5	< 5	8.5	14	18.5	11.5
Turbidity, Field (NTU)	42	81	44	12	12	0.8	0.34	6.2	0.24
Vanadium	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Zinc	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

TABLE 2.3.4-4
SURFACE WATER MONITORING DATA - POLK COUNTY SITE

Parameter (mg/l unless noted otherwise)	FPC-001 (N-15) 09/91	FPC-009 (N-15) 02/92	FPC-002 (N-16) 09/91	FPC-010 (N-16) 02-92	FPC-003 (Tiger Bay) 09/91	FPC-011 (Tiger Bay) 02/92	FPC-004 (CMGB) 09/91	FPC-015 (CMGB) 09/91	FPC-005 (SA-11) 09/91
Organics									
Benzene	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Detergents	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
1,2 - Dichloroethane	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Ethylene dibromide	< 0.00002	< .00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Oil and Grease	4.2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
PCBs	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Phthalate Esters	< 0.01	< 0.1	< 0.01	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachloroethane	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,1,1 - Trichloroethane	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Total Trihalomethanes	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Vinyl Chloride	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

TABLE 2.3.4-4
SURFACE WATER MONITORING DATA - POLK COUNTY SITE

Parameter (mg/l unless noted otherwise)	FPC-001 (N-15) 09/91	FPC-009 (N-15) 02/92	FPC-002 (N-16) 09/91	FPC-010 (N-16) 02-92	FPC-003 (Tiger Bay) 09/91	FPC-011 (Tiger Bay) 02/92	FPC-004 (CMGB) 09/91	FPC-015 (CMGB) 09/91	FPC-005 (SA-11) 09/91
Pesticides									
Aldrin plus Dieldrin	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chlordane	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
2,4-D	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.006	< 0.002
2,4,5 - TP	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001
Demeton	< 0.001	< .001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Endosulfan	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endrin	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Guthion	< 0.002	< 0.001	< 0.002	< 0.001	< 0.002	< 0.001	< 0.002	< 0.001	< 0.002
Heptachlor	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Lindane	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Malathion	***	< 0.001	***	< 0.001	***	< 0.001	< 0.001	< 0.001	< 0.001
Methoxychlor	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Myrex	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Parathion	***	< 0.001	***	< 0.001	***	< 0.001	< 0.001	< 0.001	< 0.001
Toxaphene	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

TABLE 2.3.4-4
SURFACE WATER MONITORING DATA - POLK COUNTY SITE

Parameter (mg/l unless noted otherwise)	FPC-006 (SA-11) 09/91	FPC-012 (SA-11) 02/92	FPC-007 (Peace Riv) 09/91	FPC-014 (Peace Riv) 02/92	FPC-008 (McC Crk) 09/91	FPC-016 (McC Crk) 09/91	FPC-017 (McC Crk) 02/92	FPC-013 (Sewage Pit) 02/92
Alkalinity (as $CaCO_3$)	82.5	107	58.8	117	81.1	114	104	133
Aluminum	0.24	0.51	< 0.1	< 0.1	0.97	0.72	0.75	2.4
Ammonia, as N	< 0.1	< 0.1	0.13	0.2	0.31	< 0.1	< 0.1	14.9
Antimony	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Arsenic	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Barium	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Beryllium	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bicarbonate	69.6	97.6	58.8	117	81.1	114	104	133
Boron	< 0.1	< 0.05	< 0.1	< 0.05	< 0.1	< 0.05	< 0.1	0.15
Cadmium	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Calcium	86	94	65	60	86	87	90	79
Carbonate	12.8	9.2	< 2	< 2	< 2	< 2	< 2	< 2
Chloride	41.2	46.9	20.1	18.1	42.2	46.4	46.1	139
Chromium	< 0.01	< 0.01	0.041	< 0.01	< 0.01	< 0.01	< 0.01	0.038
Color (PCU)	50	40	150	30	80	40	40	60
Copper	< 0.01	< 0.01	0.014	< 0.01	< 0.01	< 0.01	< 0.01	0.052
Cyanides (total)	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.011
Dissolved Oxygen	6.7	**	3.5	**	2.8	2.8	**	**
Fecal Coliform Bact. (Cfu/100 ml)	10	3	70	100	40	540	490	> 20000
Fluoride	2.58	2.8	0.822	1.84	2.54	2.69	2.7	0.264
Gross Alpha (pCi/l)	4.6	11.4	< 0.5	6.3	6.1	5.5	14.8	3.7

TABLE 2.3.4-4
SURFACE WATER MONITORING DATA - POLK COUNTY SITE

Parameter (mg/l unless noted otherwise)	FPC-006 (SA-11) 09/91	FPC-012 (SA-11) 02/92	FPC-007 (Peace Riv) 09/91	FPC-014 (Peace Riv) 02/92	FPC-008 (McC Crk) 09/91	FPC-016 (McC Crk) 09/91	FPC-017 (McC Crk) 02/92	FPC-013 (Sewage Pit) 02/92
Iron	< 0.1	< 0.1	< 0.1	0.15	< 0.1	< 0.1	< 0.1	0.28
Lead	< 0.01	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
Magnesium	43	46	8.1	24	43	42	43	21
Manganese	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.037
Mercury	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Molybdenum	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	< 0.01	< 0.04	0.1	< 0.04	< 0.01	< 0.04	< 0.01	< 0.04
Nitrate, as N	< 0.03	0.05	0.273	0.43	< 0.03	0.06	0.05	1.46
Nitrite, as N	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Oil & Grease, Grav.	< 1	< 1	1.1	< 1	< 1	< 1	< 1	5.8
pH, Field	9.3	9.02	7.27	5.18	7.5	7.16	7.16	6.92
Phenolics	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.008
Potassium	3.2	2.3	39	1.9	3.5	3.2	2.9	8.5
Radium 226 (pCi/l)	1	0.7	1.2	< 0.2	1.7	0.9	< 0.2	< 0.2
Radium 228 (pCi/l)	< 0.7	1.1	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Selenium	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Silica-Dissolved	< 0.5	< 0.5	6.5	4.4	< 0.5	< 1	< 1	19.2
Silver	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sodium	43	46	24	35	42	42	44	95
Specific Conductance (umho/cm)	939	890	313	580	886	820		1100
Strontium	0.21	0.25	0.14	0.37	0.2	0.21	0.22	1.7

TABLE 2.3.4-4
SURFACE WATER MONITORING DATA - POLK COUNTY SITE

Parameter (mg/l unless noted otherwise)	FPC-006 (SA-11) 09/91	FPC-012 (SA-11) 02/92	FPC-007 (Peace River) 09/91	FPC-014 (Peace River) 02/92	FPC-008 (McC Crk) 09/91	FPC-016 (McC Crk) 09/91	FPC-017 (McC Crk) 02/92	FPC-013 (Sewage Pit) 02/92
Strontium 90 (pCi/l)	0	0	0	0	0	0	0	0
Sulfate	247	303	42.3	192	308	356	352	240
Surfactants	< 0.1	< 0.1	0.111	< 0.1	0.125	< 0.01	< 0.1	2.64
TDS	644	616	204	380	668	604	614	652
Total Coliform (Cfu/100 ml)	*	200/H	*	900/H	*	3,200/H	3,400/H	*
Total Hardness (as $CaCo_3$)	389	420	195	250	392	390	400	290
Total Phosphorus	0.322	0.56	1.16	0.71	0.498	0.75	0.71	1.01
Total Sulfide	0.11	0.13	0.16	< 0.1	0.12	< 0.1	0.11	0.17
Tritium (pCi/l)	0	50	0.4	0	12	19	17	7
TSS	11.5	16.5	38.9	5	18	11	10.5	15.5
Turbidity, Field (NTU)	0.24	42	0.22	1.8	0.32	4.4	4.4	12
Vanadium	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Zinc	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.065

TABLE 2.3.4-4
SURFACE WATER MONITORING DATA - POLK COUNTY SITE

Parameter (mg/l unless noted otherwise)	FPC-006 (SA-11) 09/91	FPC-002 (SA-11) 02/92	FPC-007 (Peace River) 09/91	FPC-014 (Peace River) 02-92	FPC-008 (McCullough Creek) 09/91	FPC-016 (McCullough Creek) 02/92	FPC-017 (McCullough Creek) 09/91	FPC-013 (Sewage Plant) 09/91
Pesticides								
Aldrin plus Dieldrin	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Chlordane	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	<0.0005
2,4-D	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.006
2,4,5 - TP	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.003
Demeton	< 0.001	< .001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Endosulfan	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Endrin	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001
Guthion	< 0.002	< 0.001	< 0.002	< 0.001	< 0.002	< 0.001	< 0.002	< 0.001
Heptachlor	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005
Lindane	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005
Malathion	< 0.00005	< 0.001	< 0.00005	< 0.001	< 0.00005	< 0.001	< 0.001	< 0.001
Methoxychlor	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005
Myrex	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	<0.00005
Parathion	< .001	< 0.001	***	< 0.001	***	< 0.001	< 0.001	< 0.001
Toxaphene	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

TABLE 2.3.4-4
SURFACE WATER MONITORING DATA - POLK COUNTY SITE

Parameter (mg/l unless noted otherwise)	FPC-006 (SA-11) 09/91	FPC-012 (SA-11) 02/92	FPC-007 (Peace River) 09/91	FPC-014 (Peace River) 02-92	FPC-008 (McCullough Creek) 09/91	FPC-016 (McCullough Creek) 02/92	FPC-017 (McCullough Creek) 09/91	FPC-013 (Sewage Plant) 09/91
Organics								
Benzene	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Detergents	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
1,2 - Dichloroethane	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Ethylene dibromide	< 0.00002	< .00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Oil and Grease	4.2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
PCBs	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Phthalate Esters	< 0.01	< 0.1	< 0.01	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachloroethane	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,1,1 - Trichloroethane	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Total Trihalomethanes	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Vinyl Chloride	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

* matrix interference
** not measured due to equipment malfunction
*** inadvertently not tested
Source: Ebasco Environmental, 1992

TABLE 2.3.4-5
DETECTED WATER QUALITY MONITORING DATA

Parameter (mg/l unless otherwise noted)	FPC-001 (N-15) 09/91	FPC-009 (N-15) 02/92	FPC-002 (N-16) 09/91	FPC-010 (N-16) 02/92	FPC-003 (Tiger Bay) 09/91	FPC-011 (Tiger Bay) 02/92	FPC-004 (CMGB) 09/91	FPC-015 (CMGB) 02/92	FPC-005 (SA-11) 09/91
Alkalinity (as $CaCO_3$)	89	75.5	119	133	82.5	93.2	139	151	95.5
Aluminum	0.36	0.52	0.31	0.32			1.2	0.67	0.26
Ammonia, as N				0.14			0.27	0.36	0.15
Bicarbonate	78.2	48.3	109	123	82.5	92.2	139	151	73.9
Boron									
Calcium	49	62	56	60	15	20	58	58	82
Carbonate	13	26.8	8.56	10.2					21.4
Chloride	16.1	17.9	17.6	19.9	8.04	11.1	17.1	19.1	42.2
Chromium									
Color (PCU)	40	100	50	70	30	20	40	40	50
Copper									
Cyanides (total)									
Fecal Coliform Bact. (Cfu/100 ml)		6	6	5	18	18		100	
Fluoride	2.84	2.55	2.38	2.51	1.99	1.93	2.24	2.33	2.53
Gross Alpha (pCi/l)	9.5	15.8	3.2	6.9		0.6	4.2	6.9	8.9
Iron		0.28		0.11	0.19	0.23	1.1	0.79	
Magnesium	22	22	24	26	11	14	27	27	41
Manganese		0.033					0.052	0.049	
Nickel									
Nitrate, as N	0.04	0.07		0.07		0.05	0.133	0.31	
Nitrite, as N		0.03							

TABLE 2.3.4-5
DETECTED WATER QUALITY MONITORING DATA

Parameter (mg/l unless otherwise noted)	FPC-001 (N-15) 02/92	FPC-009 (N-15) 02/92	FPC-002 (N-16) 09/91	FPC-010 (N-16) 02/92	FPC-003 (Tiger Bay) 09/91	FPC-011 (Tiger Bay) 02/92	FPC-004 (CMGB) 09/91	FPC-015 (CMGB) 02/92	FPC-005 (SA-11) 09/91
Oil & Grease, Grav.	4.2								
pH, Field	8.87	9.18	9.06	7.08	7.48	8.52	7.38	7.16	9.3
Potassium	3.6	2.5	3.4	3			4.2	2.5	3.3
Radium 226 (pCi/l)	0.3	1.1	1.1	0.6			1.3	1.7	1.1
Radium 228 (pCi/l)	0.7								
Silica-Dissolved	5.41		4.21		3.83		2.1	3.1	
Sodium	47	50	42	47	7.1	8.9	41	42	41
Specific Conductance (umho/cm)	670	620	645	620	205	220	677	600	978
Strontium	0.2	0.13	0.1	0.11			0.13	0.12	0.19
Strontium 90 (pCi/l)	0.2	0.3	7	0.5	0	0.1	0	0	0
Sulfate	213	254	132	195			143	160	289
Surfactants									
TDS	428	444	400	412	122	114	416	398	660
Total Coliform (Cfu/100 ml)	10/H	100/H	*	100/H	*	*	*	1200/H	*
Total Hardness (as $CaCO_3$)	235	250	239	260	110	110	167	260	374
Total Phosphorus	0.741	1.12	0.543	1.06	0.102	0.09	0.895	2.81	0.344
Total Sulfide	0.11	0.32	0.11	0.2					0.12
Tritium (pCi/l)	0	36	0.1	0	2	43	26	12	60
TSS	12.5	32.5	13.5	19.5		8.5	14	18.5	11.5
Turbidity, Field (NTU)	42	81	44	12	12	0.8	0.34	6.2	0.24
Zinc									

TABLE 2.3.4-5
DETECTED WATER QUALITY MONITORING DATA

Parameter (mg/l unless otherwise noted)	FPC-006 (SA-11) 09/91	FPC-012 (SA-11) 02/92	FPC-007 (Peace Riv) 09/91	FPC-014 (Peace Riv) 02/92	FPC-008 (McC Crk) 09/91	FPC-016 (McC Crk) 09/91	FPC-017 (McC Crk) 02/92	FPC-013 (Sewage Pit) 02/92
Alkalinity (as $CaCO_3$)	82.5	107	58.8	117	81.1	114	104	133
Aluminum	0.24	0.51			0.97	0.72	0.75	2.4
Ammonia, as N			0.13	0.2	0.31			14.9
Bicarbonate	69.6	97.6	58.8	117	81.1	114	104	133
Boron						0.05		0.15
Calcium	86	94	65	60	86	87	90	79
Carbonate	12.8	9.2						
Chloride	41.2	46.9	20.1	18.1	42.2	46.4	46.1	139
Chromium			0.041					0.038
Color (PCU)	50	40	150	30	80	40	40	60
Copper			0.014					0.052
Cyanides (total)								0.011
Fecal Coliform Bact. (Cfu/100 ml)	10	3	70	100	40	540	490	> 20000
Fluoride	2.58	2.8	0.822	1.84	2.54	2.69	2.7	0.264
Gross Alpha (pCi/l)	4.6	11.4		6.3	6.1	5.5	14.8	3.7
Iron				0.15				0.28
Magnesium	43	46	8.1	24	43	42	43	21
Manganese				0.03				0.037
Nickel			0.01					
Nitrate, as N		0.05	0.273	0.43		0.06	0.05	1.46
Nitrite, as N								

TABLE 2.3.4-5
DETECTED WATER QUALITY MONITORING DATA

Parameter (mg/l unless otherwise noted)	FPC-006 (SA-11) 09/91	FPC-012 (SA-11) 02/92	FPC-007 (Peace Riv) 09/91	FPC-014 (Peace Riv) 02/92	FPC-008 (McC Crk) 09/91	FPC-016 (McC Crk) 09/91	FPC-017 (McC Crk) 02/92	FPC-013 (Sewage Pit) 02/92
Oil & Grease, Grav.			1.1					5.8
pH, Field		9.02	7.27	5.18	7.5	7.16		6.92
Potassium	3.2	2.3	39	1.9	3.5	3.2	2.9	8.5
Radium 226 (pCi/l)	1	0.7	1.2		1.7	0.9		
Radium 228 (pCi/l)		1.1						
Silica-Dissolved			6.5	4.4				19.2
Sodium	43	46	24	35	42	42	44	95
Specific Conductance (umho/cm)	939	890	313	580	886	820		1,100
Strontium	0.21	0.25	0.14	0.37	0.2	0.21	0.22	1.7
Strontium 90 (pCi/l)	0	0	0	0	0	0	0	0
Sulfate	247	303	42.3	192	308	356	352	240
Surfactants			0.111		0.125			2.64
TDS	644	616	204	380	668	604	614	652
Total Coliform (Cfu/100 ml)	*	200/H	*	900/H	*	3,200/H	3,400/H	*
Total Hardness (as $CaCO_3$)	389	420	195	250	392	390	400	290
Total Phosphorus	0.322	0.56	1.16	0.71	0.498	0.75	0.71	1.01
Total Sulfide	0.11	0.13	0.16		0.12		0.11	0.17
Tritium (pCi/l)	0	50	0.4	0	12	19	17	7
TSS	11.5	16.5	38.9	5	18	11	10.5	15.5
Turbidity, Field (NTU)		42	0.22	1.8	0.32	4.4		12
Zinc								

* matrix interference
** not measured due to equipment malfunction

10.5.3 Local Climatological Data, Tampa Station

This section contains climatological data that was collected from the Tampa National Weather Service station. This information was used to characterize the general climatology of the area surrounding the Hines Energy Complex.

NORMALS, MEANS, AND EXTREMES

TAMPA, FL (TPA)

LATITUDE: 27° 57' 41" N LONGITUDE: 82° 32' 25" W ELEVATION (FT): GRND: 19 BARO: 41 TIME ZONE: EASTERN (UTC+ 5) WBAN: 12842

	ELEMENT	POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	69.8	71.4	76.6	81.7	87.2	89.5	90.2	90.2	89.0	84.3	77.7	72.1	81.6
	MEAN DAILY MAXIMUM	50	70.5	72.2	76.5	81.7	87.4	89.8	90.3	90.4	89.1	84.0	77.4	72.0	81.8
	HIGHEST DAILY MAXIMUM	51	86	88	91	93	98	99	97	98	96	94	90	86	99
	YEAR OF OCCURRENCE		1991	1971	1949	1975	1975	1985	1995	1975	1991	1990	1971	1994	JUN 1985
	MEAN OF EXTREME MAXS.	50	80.7	82.2	85.3	88.8	93.0	94.6	94.6	94.4	93.4	90.3	85.3	82.0	88.7
	NORMAL DAILY MINIMUM	30	50.0	51.6	56.5	60.8	67.5	72.9	74.5	74.5	72.8	65.2	57.2	52.3	63.0
	MEAN DAILY MINIMUM	50	50.2	51.9	56.6	61.2	67.5	72.6	74.3	74.3	72.8	65.7	57.4	51.8	63.0
	LOWEST DAILY MINIMUM	51	21	24	29	40	49	53	63	67	57	40	23	18	18
	YEAR OF OCCURRENCE		1985	1958	1980	1987	1992	1984	1970	1973	1981	1964	1970	1962	DEC 1962
	MEAN OF EXTREME MINS.	50	32.5	35.6	40.8	48.2	57.6	66.2	70.2	70.4	67.2	52.4	40.9	34.3	51.4
	NORMAL DRY BULB	30	59.9	61.5	66.4	71.2	77.2	81.0	82.1	82.1	81.0	74.9	67.6	62.2	72.3
	MEAN DRY BULB	50	60.3	62.1	66.6	71.4	77.4	81.2	82.3	82.3	81.0	74.9	67.5	61.9	72.4
	MEAN WET BULB	14	56.3	58.1	61.1	64.5	70.4	74.7	76.0	76.1	74.7	69.0	63.5	53.7	66.5
	MEAN DEW POINT	14	52.4	53.7	56.8	59.9	66.4	71.8	73.5	73.9	72.2	65.7	59.9	50.0	63.0
	NORMAL NO. DAYS WITH:														
	MAXIMUM ≥ 90°	30	0.0	0.0	0.0	0.6	8.2	15.8	20.5	21.4	15.4	2.9	0.1	0.0	84.9
	MAXIMUM ≤ 32°	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MINIMUM ≤ 32°	30	1.8	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0	3.6
	MINIMUM ≤ 0°	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
H/C	NORMAL HEATING DEG. DAYS	30	234	160	81	7	0	0	0	0	0	0	72	171	725
	NORMAL COOLING DEG. DAYS	30	76	62	130	196	384	489	539	539	477	304	147	84	3427
RH	NORMAL (PERCENT)	30	75	73	72	69	70	74	77	78	78	74	75	75	74
	HOUR 01 LST	30	84	83	82	82	82	84	85	87	86	85	86	84	84
	HOUR 07 LST	30	86	86	87	86	86	87	88	90	91	89	88	87	88
	HOUR 13 LST	30	58	56	54	50	52	60	63	64	62	56	57	58	58
	HOUR 19 LST	30	73	69	67	62	62	69	73	75	75	71	74	74	70
S	PERCENT POSSIBLE SUNSHINE	49	63	65	71	75	75	67	62	61	61	65	64	61	66
W/O	MEAN NO. DAYS WITH:														
	HEAVY FOG(VISBY≤1/4 MI)	51	5.3	3.0	2.5	1.1	0.4	0.3	0.1	0.2	0.3	1.0	2.6	3.9	20.7
	THUNDERSTORMS	51	1.0	1.6	2.6	2.7	5.2	13.6	20.7	20.0	11.5	3.0	1.2	1.2	84.3
CLOUDINESS	MEAN:														
	SUNRISE-SUNSET (OKTAS)														
	MIDNIGHT-MIDNIGHT (OKTAS)														
	MEAN NO. DAYS WITH:														
	CLEAR	1	1.0	2.0	9.0		9.0	9.0							
	PARTLY CLOUDY	1	1.0	2.0	3.0		10.0	9.0							
	CLOUDY	1	3.0	1.0	8.0		2.0	5.0							
PR	MEAN STATION PRESSURE(IN)	24	30.12	30.10	30.05	30.02	29.99	30.01	30.05	30.02	29.99	30.01	30.07	30.11	30.05
	MEAN SEA-LEVEL PRES. (IN)	14	30.13	30.11	30.07	30.02	30.01	30.01	30.06	30.02	30.00	30.02	30.08	30.13	30.05
WINDS	MEAN SPEED (MPH)	45	8.6	9.1	9.5	9.2	8.6	7.9	7.2	7.0	7.6	8.4	8.4	8.4	8.3
	PREVAIL.DIR(TENS OF DEGS)	29	06	06	09	09	09	27	27	09	06	06	06	06	09
	MAXIMUM 2-MINUTE:														
	SPEED (MPH)	2	36	32	31	44	32	26	31	28	26	40	33	37	44
	DIR. (TENS OF DEGS)		33	30	32	28	34	23	23	35	32	21	27	29	28
	YEAR OF OCCURRENCE		1997	1996	1996	1997	1997	1996	1996	1997	1996	1996	1997	1997	APR 1997
	MAXIMUM 5-SECOND:														
	SPEED (MPH)	2	40	43	38	49	47	47	38	43	35	53	41	47	53
	DIR. (TENS OF DEGS)		34	32	32	28	34	13	23	12	28	21	26	30	21
	YEAR OF OCCURRENCE		1997	1996	1996	1997	1997	1996	1996	1996	1996	1996	1997	1997	OCT 1996
PRECIPITATION	NORMAL (IN)	30	1.99	3.08	3.01	1.15	3.10	5.48	6.58	7.61	5.98	2.02	1.77	2.15	43.92
	MAXIMUM MONTHLY (IN)	51	8.02	7.95	12.64	10.71	17.64	13.75	20.59	18.59	13.98	7.36	6.12	15.57	20.59
	YEAR OF OCCURRENCE		1948	1963	1959	1997	1979	1974	1960	1949	1979	1952	1963	1997	JUL 1960
	MINIMUM MONTHLY (IN)	51	T	0.21	0.06	T	0.07	1.46	1.65	2.35	1.28	0.09	T	0.07	T
	YEAR OF OCCURRENCE		1950	1950	1956	1981	1994	1997	1981	1952	1972	1988	1960	1984	APR 1981
	MAXIMUM IN 24 HOURS (IN)	51	3.81	3.68	5.20	5.44	11.84	5.53	12.11	5.37	8.45	2.93	4.48	4.76	12.11
	YEAR OF OCCURRENCE		1996	1981	1960	1997	1979	1974	1960	1949	1997	1985	1988	1997	JUL 1960
	NORMAL NO. DAYS WITH:														
	PRECIPITATION ≥ 0.01	30	6.7	6.7	6.2	3.6	6.2	11.7	14.8	16.7	11.9	6.2	5.7	6.3	102.7
	PRECIPITATION ≥ 1.00	30	0.4	0.9	1.0	0.2	0.7	1.8	1.9	2.6	2.1	0.6	0.3	0.6	13.1
SNOWFALL	NORMAL (IN)	30	0.*	0.0	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0
	MAXIMUM MONTHLY (IN)	51	0.2	T	T	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	0.2
	YEAR OF OCCURRENCE		1977	1951	1980	1997								1989	JAN 1977
	MAXIMUM IN 24 HOURS (IN)	51	0.2	T	T	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	0.2
	YEAR OF OCCURRENCE		1977	1951	1980	1997								1989	JAN 1977
	MAXIMUM SNOW DEPTH (IN)	49	0	0	0	0	0	0	0	0	0	0	0	0	0
	YEAR OF OCCURRENCE														
	NORMAL NO. DAYS WITH:														
	SNOWFALL ≥ 1.0	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

published by: NCDC Asheville, NC

PRECIPITATION (inches) 1997 TAMPA, FL (TPA)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1968	0.41	1.52	1.23	0.74	2.08	6.72	8.39	6.79	3.58	4.16	3.14	0.59	39.35
1969	1.78	2.11	5.33	0.05	6.23	4.39	7.39	11.88	4.09	3.12	2.68	5.17	54.22
1970	3.10	4.02	6.12	0.49	4.12	2.05	2.77	8.43	3.95	0.89	1.08	1.25	38.27
1971	0.86	4.25	0.54	1.80	4.09	2.54	7.74	7.46	10.16	4.70	1.40	0.79	46.33
1972	0.54	4.44	3.01	0.38	1.88	5.24	6.65	9.78	1.28	3.29	3.53	2.16	42.18
1973	3.75	2.54	4.21	2.42	0.17	4.19	4.77	9.43	8.91	0.98	2.82	5.52	49.71
1974	0.17	0.89	2.35	0.38	1.11	13.75	3.43	4.67	4.00	0.23	0.12	2.80	33.90
1975	0.91	1.56	1.09	0.91	2.07	8.73	6.65	4.24	11.25	4.94	0.22	0.87	43.44
1976	0.40	0.49	1.64	1.83	8.13	7.22	4.58	7.02	6.04	1.30	1.59	2.05	42.29
1977	2.75	2.41	0.73	0.86	0.73	2.66	5.36	5.98	4.28	0.42	1.89	3.40	31.47
1978	2.82	5.17	2.44	0.94	5.00	2.03	5.85	5.97	3.08	3.42	0.01	3.12	39.85
1979	5.72	2.87	2.43	0.55	17.64	2.07	5.93	12.76	13.98	0.16	0.83	1.52	66.46
1980	1.72	2.01	3.09	4.38	3.94	3.81	5.66	7.62	4.05	1.27	2.68	0.37	40.60
1981	0.44	5.34	1.70	T	1.68	9.37	1.65	7.71	5.87	0.87	0.43	3.58	38.64
1982	1.86	2.09	2.99	1.87	5.90	8.34	10.49	7.20	10.76	2.17	0.85	1.29	55.81
1983	1.25	7.35	7.59	2.76	4.10	7.17	6.37	8.89	6.61	1.74	2.33	4.71	60.87
1984	1.62	3.32	1.31	1.51	3.19	3.24	7.15	5.68	4.21	0.29	0.72	0.07	32.31
1985	2.06	2.07	1.80	0.96	0.22	6.43	6.48	8.65	9.04	4.77	0.99	1.13	44.60
1986	2.37	1.49	4.27	0.95	2.46	5.00	6.24	5.46	3.87	6.21	1.33	1.95	41.60
1987	3.29	1.50	12.01	0.39	2.86	3.39	6.06	8.50	4.76	1.46	4.36	0.50	49.08
1988	2.76	1.44	4.09	1.83	1.27	5.19	3.40	11.09	13.56	0.09	5.97	1.64	52.33
1989	1.54	0.41	1.79	0.71	0.24	7.41	8.86	7.90	6.11	1.89	2.05	4.72	43.63
1990	0.53	4.58	1.71	1.47	1.76	5.16	10.01	3.27	2.42	2.63	0.66	0.19	34.39
1991	2.41	0.41	4.73	1.54	6.88	3.78	9.92	7.35	3.43	0.78	1.26	0.67	43.16
1992	1.47	3.67	0.95	2.17	0.10	7.03	2.80	8.22	2.95	2.20	2.43	0.99	34.98
1993	3.60	2.32	3.93	2.45	1.74	3.18	2.92	5.06	6.60	4.23	0.22	1.28	37.53
1994	3.68	0.43	0.66	3.43	0.07	5.98	11.31	8.37	8.20	3.29	0.24	1.57	47.23
1995	3.51	2.02	2.02	1.48	1.67	9.79	10.12	13.75	2.80	4.71	1.24	1.02	54.13
1996	5.42	3.04	4.65	4.20	1.45	8.96	2.72	7.39	5.44	3.12	0.91	2.11	49.41
1997	0.95	0.66	1.28	10.71	1.70	1.46	6.73	8.20	12.84	4.20	3.41	15.57	67.71
POR= 107 YRS	2.27	2.72	3.00	2.11	2.97	6.75	7.52	7.90	6.45	2.61	1.61	2.13	48.04

WBAN : 12842

AVERAGE TEMPERATURE (°F) 1997 TAMPA, FL (TPA)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1968	59.4	54.3	60.9	72.5	75.7	79.6	80.2	82.0	79.6	73.2	62.3	57.6	69.8
1969	58.5	55.8	58.2	72.3	76.2	82.1	83.1	80.9	80.5	76.9	62.9	58.1	70.5
1970	54.0	57.6	64.9	73.2	76.2	80.1	82.8	82.9	81.9	76.1	61.9	62.4	71.2
1971	60.0	63.1	62.2	69.4	75.8	81.2	82.3	81.8	80.3	77.5	67.7	69.4	72.6
1972	67.0	60.7	66.8	71.4	76.6	81.0	81.9	82.1	81.3	76.1	68.2	65.1	73.2
1973	61.9	57.4	70.2	69.3	76.8	81.8	83.2	81.8	81.7	75.8	70.8	60.1	72.6
1974	71.1	61.1	70.9	70.9	78.2	80.1	81.1	82.8	82.8	72.9	67.9	61.9	73.5
1975	65.1	66.6	67.6	74.0	81.5	82.6	83.2	83.7	81.9	77.9	68.3	60.2	74.4
1976	56.6	63.1	70.5	70.6	76.1	79.0	81.7	81.6	79.3	71.0	62.8	59.6	71.0
1977	51.2	57.5	70.9	71.5	76.5	83.7	82.9	83.0	82.3	72.5	67.7	58.7	71.5
1978	55.0	53.2	64.2	72.3	78.7	82.4	83.0	82.8	81.4	75.1	71.7	66.2	72.2
1979	57.8	59.3	65.4	74.2	75.9	80.8	83.9	82.2	81.9	75.2	68.7	63.0	72.4
1980	62.0	56.6	68.1	70.1	77.2	81.6	84.0	83.0	81.3	74.0	66.4	57.5	71.8
1981	50.4	61.4	62.8	72.4	75.4	81.5	82.5	81.7	78.6	74.5	64.4	59.2	70.4
1982	59.8	67.9	68.1	71.4	74.4	81.5	82.1	82.1	80.2	74.3	70.8	67.6	73.4
1983	58.9	60.3	63.3	68.6	76.8	80.9	82.2	82.2	79.4	75.8	65.9	59.9	71.2
1984	58.0	62.6	66.0	71.0	78.0	80.4	81.5	82.4	79.9	75.7	64.9	67.3	72.3
1985	55.9	63.6	69.4	72.5	79.8	83.7	82.4	83.1	80.5	79.2	73.6	59.0	73.6
1986	59.3	65.0	65.4	69.1	77.4	81.8	83.0	82.6	82.3	76.8	76.3	66.5	73.8
1987	59.2	63.2	66.4	66.4	77.8	82.7	83.1	83.7	81.4	71.3	68.9	64.3	72.4
1988	58.6	59.1	65.6	70.6	75.3	81.0	82.7	82.9	82.0	73.5	70.8	63.0	72.1
1989	67.1	64.9	69.8	72.0	78.4	82.4	83.3	83.0	82.4	75.4	68.9	56.2	73.7
1990	66.1	69.2	69.7	72.1	80.5	82.7	82.5	83.9	82.8	77.6	70.2	66.9	75.4
1991	66.7	64.2	68.4	76.8	81.2	81.3	82.3	83.2	81.9	75.3	65.8	64.6	74.3
1992	59.8	63.6	64.8	69.4	74.3	82.1	83.8	82.4	82.0	72.7	70.0	64.3	72.4
1993	67.0	60.2	64.3	67.2	76.1	81.8	83.8	83.7	81.9	75.8	69.1	59.5	72.5
1994	60.6	66.9	68.0	75.4	78.2	82.6	81.7	81.7	80.2	76.5	72.4	65.1	74.1
1995	58.8	61.4	68.7	73.5	81.8	80.2	83.0	83.3	82.0	77.8	65.2	61.0	73.1
1996	59.2	60.0	62.4	70.4	79.3	80.9	83.7	83.2	82.0	75.8	68.1	63.5	72.4
1997	62.6	68.6	73.9	71.6	77.7	81.8	82.7	82.8	81.7	74.7	66.8	61.3	73.9
POR= 107 YRS	60.8	62.3	66.8	71.4	77.0	80.8	81.1	82.1	80.7	74.7	67.3	62.0	72.2

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HEATING DEGREE DAYS (base 65°F) 1997 TAMPA, FL (TPA)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1968-69	0	0	0	27	138	264	201	252	220	0	0	0	1102
1969-70	0	0	0	0	111	218	343	209	81	0	0	0	962
1970-71	0	0	0	0	145	115	201	134	139	36	0	0	770
1971-72	0	0	0	0	41	13	62	139	26	5	0	0	286
1972-73	0	0	0	0	65	130	166	223	18	21	0	0	623
1973-74	0	0	0	6	24	200	0	159	17	12	0	0	418
1974-75	0	0	0	0	39	138	84	64	61	5	0	0	391
1975-76	0	0	0	0	88	183	268	109	18	2	0	0	668
1976-77	0	0	0	11	122	208	422	214	28	6	0	0	1011
1977-78	0	0	0	18	53	222	320	323	99	4	0	0	1039
1978-79	0	0	0	0	2	75	245	190	53	0	0	0	565
1979-80	0	0	0	0	47	112	136	262	64	8	0	0	629
1980-81	0	0	0	1	65	233	447	127	103	2	0	0	978
1981-82	0	0	0	0	83	223	209	24	53	8	0	0	600
1982-83	0	0	0	12	18	95	218	148	103	20	0	0	614
1983-84	0	0	0	0	57	214	252	115	68	5	0	0	711
1984-85	0	0	0	0	87	61	306	119	17	5	0	0	595
1985-86	0	0	0	0	9	238	185	78	105	7	0	0	622
1986-87	0	0	0	0	0	53	202	88	42	64	0	0	449
1987-88	0	0	0	4	46	107	221	195	85	14	0	0	672
1988-89	0	0	0	0	9	127	41	116	45	7	0	0	345
1989-90	0	0	0	17	27	285	70	32	13	5	0	0	449
1990-91	0	0	0	7	11	70	72	84	46	0	0	0	290
1991-92	0	0	0	0	93	94	179	90	69	32	5	0	562
1992-93	0	0	0	0	57	83	58	137	84	24	0	0	443
1993-94	0	0	0	6	44	185	158	62	50	5	0	0	510
1994-95	0	0	0	0	7	81	200	151	23	1	0	0	463
1995-96	0	0	0	0	83	180	198	188	152	16	0	0	817
1996-97	0	0	0	3	36	101	132	39	0	7	0	0	318
1997-	0	0	0	7	36	163							

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COOLING DEGREE DAYS (base 65°F) 1997 TAMPA, FL (TPA)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1969	8	2	14	224	353	521	568	498	471	377	55	10	3101
1970	12	10	85	255	352	464	557	563	514	353	58	40	3263
1971	54	86	58	174	342	490	541	526	463	396	128	155	3413
1972	131	20	90	204	365	487	528	536	497	352	168	141	3519
1973	75	15	188	158	374	510	574	529	510	348	205	55	3541
1974	196	55	204	197	413	460	506	562	540	250	130	48	3561
1975	93	115	151	282	521	536	572	585	512	407	191	39	4004
1976	17	63	199	175	348	424	525	517	440	202	63	45	3018
1977	2	9	218	210	364	567	559	565	526	258	139	36	3453
1978	18	0	79	232	431	529	565	557	500	319	208	121	3559
1979	28	36	73	283	344	482	592	543	515	322	164	55	3437
1980	45	22	164	165	386	506	598	564	493	284	115	7	3349
1981	0	32	43	230	331	501	552	525	414	303	71	49	3051
1982	56	114	156	208	299	499	537	537	467	311	197	182	3563
1983	36	24	57	137	369	487	540	541	439	342	91	64	3127
1984	42	52	104	190	410	468	517	546	454	337	92	135	3347
1985	30	88	163	237	464	569	547	566	475	445	275	58	3917
1986	15	85	123	139	391	510	565	551	526	374	348	107	3734
1987	27	43	91	114	405	538	567	583	497	207	169	91	3332
1988	30	32	110	188	326	489	554	562	517	271	191	74	3344
1989	112	120	202	224	425	528	575	564	529	344	151	18	3792
1990	107	154	164	225	487	537	549	592	541	406	176	139	4077
1991	131	68	158	361	509	498	543	572	515	326	126	88	3895
1992	25	55	70	170	301	519	589	544	518	248	212	72	3323
1993	126	12	72	95	352	511	593	587	513	347	174	21	3403
1994	32	118	148	321	415	535	524	524	461	364	233	91	3766
1995	15	59	145	264	526	464	561	574	518	405	95	63	3689
1996	27	50	76	182	450	482	589	570	516	348	135	63	3488
1997	62	145	283	213	397	510	556	559	508	314	97	55	3699

SNOWFALL (inches) 1997 TAMPA, FL (TPA)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1970-71	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1971-72	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1972-73	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973-74	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1974-75	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1975-76	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976-77	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2
1977-78	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978-79	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1979-80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	T
1980-81	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981-82	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982-83	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983-84	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984-85	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985-86	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986-87	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987-88	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988-89	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989-90	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	0.0	0.0	0.0	T
1990-91	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991-92	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992-93	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993-94	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994-95	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1995-96	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996-97	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	T	0.0	0.0	T
1997-	0.0	0.0	0.0	0.0	0.0	0.0							
POR= 50 YRS	0.0	0.0	0.0	0.0	0.0	T	0.0	T	T	0.0	0.0	0.0	0.0

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REFERENCE NOTES:

PAGE 1:
THE TEMPERATURE GRAPH SHOWS NORMAL MAXIMUM AND NORMAL MINIMUM DAILY TEMPERATURES (SOLID CURVES) AND THE ACTUAL DAILY HIGH AND LOW TEMPERATURES (VERTICAL BARS).

PAGE 2 AND 3:
H/C INDICATES HEATING AND COOLING DEGREE DAYS.
RH INDICATES RELATIVE HUMIDITY
W/O INDICATES WEATHER AND OBSTRUCTIONS
S INDICATES SUNSHINE.
PR INDICATES PRESSURE.
CLOUDINESS ON PAGE 3 IS THE SUM OF THE CEILOMETER AND SATELLITE DATA NOT TO EXCEED EIGHT EIGHTHS(OKTAS).

GENERAL:
T INDICATES TRACE PRECIPITATION, AN AMOUNT GREATER THAN ZERO BUT LESS THAN THE LOWEST REPORTABLE VALUE.
+ INDICATES THE VALUE ALSO OCCURS ON EARLIER DATES.
BLANK ENTRIES DENOTE MISSING OR UNREPORTED DATA.
NORMALS ARE 30-YEAR AVERAGES (1961 - 1990).
ASOS INDICATES AUTOMATED SURFACE OBSERVING SYSTEM.
PM INDICATES THE LAST DAY OF THE PREVIOUS MONTH.
POR (PERIOD OF RECORD) BEGINS WITH THE JANUARY DATA MONTH AND IS THE NUMBER OF YEARS USED TO COMPUTE THE MEAN. INDIVIDUAL MONTHS WITHIN THE POR MAY BE MISSING.
WHEN THE POR FOR A NORMAL IS LESS THAN 30 YEARS, THE NORMAL IS PROVISIONAL AND IS BASED ON THE NUMBER OF YEARS INDICATED.
0.* OR * INDICATES THE VALUE OR MEAN-DAYS-WITH IS BETWEEN 0.00 AND 0.05.
CLOUDINESS FOR ASOS STATIONS DIFFERS FROM THE NON-ASOS OBSERVATION TAKEN BY A HUMAN OBSERVER. ASOS STATION CLOUDINESS IS BASED ON TIME-AVERAGED CEILOMETER DATA FOR CLOUDS AT OR BELOW 12,000 FEET AND ON SATELLITE DATA FOR CLOUDS ABOVE 12,000 FEET.
THE NUMBER OF DAYS WITH CLEAR, PARTLY CLOUDY, AND CLOUDY CONDITIONS FOR ASOS STATIONS IS THE SUM OF THE CEILOMETER AND SATELLITE DATA FOR THE SUNRISE TO SUNSET PERIOD.

GENERAL CONTINUED:
CLEAR INDICATES 0 - 2 OKTAS, PARTLY CLOUDY INDICATES 3 - 6 OKTAS, AND CLOUDY INDICATES 7 OR 8 OKTAS. WHEN AT LEAST ONE OF THE ELEMENTS (CEILOMETER OR SATELLITE) IS MISSING, THE DAILY CLOUDINESS IS NOT COMPUTED.
WIND DIRECTION IS RECORDED IN TENS OF DEGREES (2 DIGITS) CLOCKWISE FROM TRUE NORTH. "00" INDICATES CALM. "36" INDICATES TRUE NORTH.
RESULTANT WIND IS THE VECTOR AVERAGE OF THE SPEED AND DIRECTION.
AVERAGE TEMPERATURE IS THE SUM OF THE MEAN DAILY MAXIMUM AND MINIMUM TEMPERATURE DIVIDED BY 2.
SNOWFALL DATA COMPRISE ALL FORMS OF FROZEN PRECIPITATION, INCLUDING HAIL.
A HEATING (COOLING) DEGREE DAY IS THE DIFFERENCE BETWEEN THE AVERAGE DAILY TEMPERATURE AND 65° F.
DRY BULB IS THE TEMPERATURE OF THE AMBIENT AIR.
DEW POINT IS THE TEMPERATURE TO WHICH THE AIR MUST BE COOLED TO ACHIEVE 100 PERCENT RELATIVE HUMIDITY.
WET BULB IS THE TEMPERATURE THE AIR WOULD HAVE IF THE MOISTURE CONTENT WAS INCREASED TO 100 PERCENT RELATIVE HUMIDITY.

ON JULY 1, 1996, THE NATIONAL WEATHER SERVICE BEGAN USING THE "METAR" OBSERVATION CODE THAT WAS ALREADY EMPLOYED BY MOST OTHER NATIONS OF THE WORLD. THE MOST NOTICEABLE DIFFERENCE IN THIS ANNUAL PUBLICATION WILL BE THE CHANGE IN UNITS FROM TENTHS TO EIGHTS(OKTAS) FOR REPORTING THE AMOUNT OF SKY COVER.

10.6. SOCIOECONOMIC COSTS/BENEFITS

This section contains Section 7.2 of the 1992 SCA which provides an analysis of the benefits and costs which accrue to Polk County throughout construction of the Hines Energy Complex (3000 MW).

7.2 SOCIOECONOMIC COSTS

7.2.1 Temporary External Costs

The majority of the site construction workforce is expected to commute on a daily basis. As discussed in Section 4.6.2, the few construction workers who may relocate to the area are most likely to reside in metropolitan areas, such as Tampa or Lakeland, which have sufficient residential rental properties to serve a temporary construction workforce. The City of Fort Meade has expressed interest in promoting development in the City in order to meet the housing and service needs of the construction workforce during the construction period. Although there are only a limited number of residential rental properties available, properties have been zoned for multi-family development and have the utilities available in anticipation of an increase in housing demand. However, as discussed earlier, demands upon the City of Fort Meade from the construction workforce are expected to be minimal.

7.2.2 Long-Term External Costs

7.2.2.1 Impact On Community Services

The long-term socioeconomic costs associated with the project reflect the cost of providing services to the population which has moved into Polk County due to the project, i.e., the employees and their families (the impact population). The power plant site itself will make very minor use of community services. Long-term costs include government expenditures on utilities, public safety, health care, and other government services. A per capita method has been used to estimate these costs, which are expressed in 1991 dollars. The county's 1991-1992 budget reflects expenditures on general government, physical environment, recreation and culture, human services, transportation, internal services, and public safety. Information on education expenditures was obtained from the Polk County school board.

The total cost of services associated with the project's impact population is estimated at $123,764 annually for the natural gas scenario and $658,490 for the CG scenario. Educational expenditures represent 25 percent of the socioeconomic cost. Other significant costs are for public safety (emergency medical services, fire protection, police protection) and for physical environment (utilities, solid waste management, etc.). Public safety and physical environment expenditures each represent 19 percent of the socioeconomic cost. Human services, including

the county hospital, the county nursing home, and health services, represent 14 percent of the socioeconomic cost, and spending on general government, recreation and culture, transportation, and internal services represent the remaining 23 percent of the cost.

Education expenditures per student for 1991 in Polk County were $3,965, including both capital and operating expenditures. The Polk County school board reported that 10 percent of these expenditures were funded by the federal government, 65 percent by the state, and 25 percent by the county. Therefore, the cost to the county for educational services is estimated at approximately $991 per student. Based on an estimated 31 students, educational costs associated with the natural gas scenario total $30,729 annually, while the cost estimated for the CG scenario totals $162,524 for an estimated 164 students. Estimated per capita costs for other services, such as public safety, transportation, and human services, are listed in Table 7.2.2-1.

7.2.2.2 Aesthetic and Scenic Values

SITE LANDSCAPE DESCRIPTION

The Polk County Site is located in southwest Polk County, approximately 3.5 miles northwest of Fort Meade, 3 miles south of Bartow and about one mile southwest of Homeland. It is bounded by CR 640 on the north, a U.S. Agrichemical Company (USAC) mine and Camp Meeting Ground Branch on the south and southeast, and the Estech Silver City Mine and plant on the west. CR 555 runs through the site.

The site consists of approximately 8,000 acres which have been previously disturbed by, or are currently engaged in, phosphate mining activities. Most of the site consists of clay settling areas and mined-out areas. Elevated dams are located on the north boundary along CR 640 and, for a distance of about 2 miles, along the east side of CR 555. Currently, the only structures on the site are railroad tracks, the Agricola and Barcola Substations, and the 230kV and 138kV transmission lines which serve these substations. Tiger Bay, an area that has been reclaimed under Florida Department of Natural Resources (FDNR) mine reclamation requirements, will remain as part of the buffer area.

SURROUNDING LAND USES

The Polk County Site is located away from existing residential areas. Adjacent land uses consist entirely of phosphate mining, except for one mobile home on the corner of CR 555 and CR 640. The two nearest communities, Homeland and Fort Meade, are about 3.5 and 4.5 miles from the power block area, respectively. The cooling pond and buffer areas will be the areas closest to these communities. Three residences, located on CR 630 east of CR 555, are approximately 2.5 miles from the proposed power block area. The Elim Primitive Baptist Church, located on the west side of CR 555, is approximately 1.5 miles from the proposed power block.

PROPOSED DEVELOPMENT FEATURES

Under the pulverized coal (PC) development scenario (Case B), as shown on Figure 3.2.1-2, the Polk County Site will include eight 200 foot stacks, two 250 foot stacks, and two stacks that might be as tall as 625 feet above grade. Associated buildings and equipment are all expected to be less than 245 feet in height. The plant layout is in an east-west direction which reduces visual impact from CR 555, the nearest opportunity for viewing.

LINE-OF-SIGHT DETERMINATIONS

The purpose of this analysis was to determine key viewpoint areas where the proposed project would be seen, partially seen, and not seen. To determine these areas, line-of-sight drawings were prepared by establishing landscape control points. In order to determine the key viewpoints, the number of times the project will be observed, the duration of the view, the number of observers viewing the project, and the distance over which the project will be seen were considered. Aerial photographs were used as a data source for existing vegetation.

KEY VIEWPOINT ANALYSIS

In addition to traveler view points, nearby locations which may have a view of the project include some residences on CR 630, the churches located on CR 555, and a residence at the intersection of CR 555 and CR 640. Key viewpoints were determined based on analysis of available land use data and field observations. Prior to the field work, a copy of the project site plan was superimposed on a current aerial photograph of the site in order to locate key viewpoints. Field observations provided a photographically documented observer's image of the

project site and surroundings from the various key viewpoints. Selected photographs were used in assessing potential visual impacts of the proposed project on travelers along CR 555, CR 630 and CR 640.

The traveler's view from CR 555 south of the proposed site entrance drive was determined to be the worst case view and a visual simulation was prepared for that key viewpoint. Figure 7.2.2-1 is a photographic simulation of the view of the project to observers from the worst case viewpoint along CR 555. The simulation depicts existing conditions and vegetation with the addition of the power plant facilities. The existing transmission lines seen in the photograph are likely to be replaced with single pole structures carrying multiple circuits for the ultimate site development, and the Agricola Substation seen in the left side of the photograph may be removed in the future. In addition, the visible structures and the coal storage area are anticipated to be screened from view to a large extent along CR 555 upon maturity of a 100-feet wide landscape buffer as shown on Figures 3.2.1-3A, 3.2.1-3B and 3.2.1-3C. Once the buffer is in place, the view depicted in the simulation will be visible, primarily for northbound travelers, for only a short distance along CR 555. For northbound travelers traveling at the posted speed of 55 miles per hour along CR 555, it is estimated that the full plant development would be in view for less than two minutes. Figure 7.2.2-2 locates the position from which the original series of photographs were taken to prepare the simulation.

Finally, regardless of the view, the actual opportunities for viewing the facility while traveling along CR 555 are not expected to be substantial due to the low volume of traffic for non-plant based travelers, thus further minimizing potential for visual impact.

7.2.3 Long-Term Cost and Benefit Summary

Table 7.2.2-1 illustrates the net benefit resulting from the Polk County Site project at completion. Socioeconomic costs associated with the project are estimated at $123,764 annually for the natural gas scenario and $658,490 annually for the CG scenario, each after the year 2018. However, these costs will be outweighed greatly by the property taxes generated annually after construction of the power plants. The net fiscal benefit associated with the Polk County Site and the project's employees is estimated at over $24 million per year for the natural gas scenario and at over $43 million annually for the CG scenario.

TABLE 7.2.2-1
NET BENEFIT SUMMARY FOR
POWER PLANTS AT COMPLETION

		Natural Gas	Coal Gasification
REVENUES (1991 Dollars)			
Plant Property Taxes	County	$ 11,110,000	$ 19,840,000
	School Board	$ 13,320,000	$ 23,780,000
Employee Property Taxes	County	$ 19,140	$ 101,964
	School Board	$ 22,935	$ 122,181
Fire District Taxes	Plant[1]	$ 22,950	$ 22,950
	Employees[2]	$ 1,554	$ 8,277
Total Revenues		$ 24,496,579	$ 43,875,372
ESTIMATED EXPENDITURES[3] (1991 Dollars)			
General Government		$ 15,389	$ 82,036
Physical Environment		$ 23,702	$ 126,355
Recreation and Culture		$ 2,061	$ 10,989
Educational Services		$ 30,729	$ 162,524
Human Services		$ 17,640	$ 94,040
Transportation		$ 9,712	$ 51,774
Internal Services		$ 738	$ 3,935
Public Safety		$ 23,793	$ 126,837
Total Expenditures		$ 123,764	$ 658,490
NET BENEFIT		$ 24,372,815	$ 43,216,882

[1] Taxes based on estimated square footage of plant facilities.
[2] Taxes based on average of fees for Fire District 1 and Fire District 2.
[3] Expenditures estimated based on per capita method.

Sources:
Polk County Office of Management & Budget, 1992
Polk County Tax Collector, 1991
Polk County School Board, 1991
Central Florida Economic Development Council, 1992
Moore/Bowers, 1992