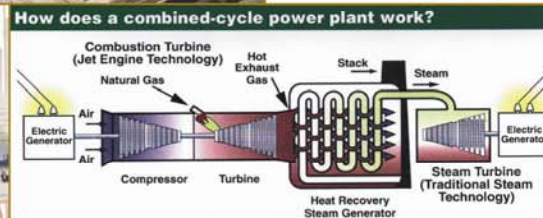


West County energy center



Volume 1 of 3

**SITE CERTIFICATION APPLICATION
WEST COUNTY ENERGY CENTER**

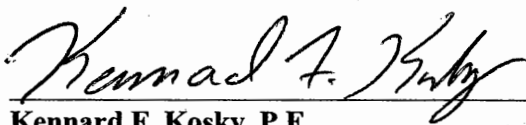
VOLUME 1 OF 3

Submitted by:

**Florida Power & Light Company
700 Universe Boulevard
Juno Beach, Florida 33408**

April 2005

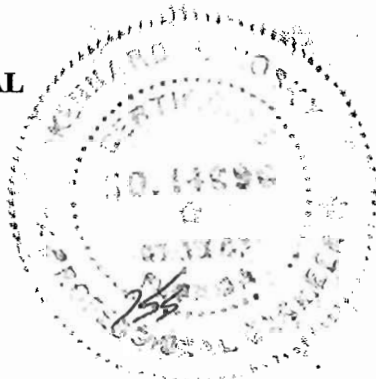
0437649



**Kennard F. Kosky, P.E.
Professional Registered Engineer No. 14996**

**Golder Associates Inc.*
6241 NW 23rd Street, Suite 500
Gainesville, Florida 32653-1500
*Board of Professional Engineers
Certificate of Authorization No. 00001670**

SEAL



APPLICANT INFORMATION

Please supply the following information:

Applicant's Official Name **Florida Power and Light Company (FPL)**

Address **700 Universe Boulevard, Juno Beach, FL 33408**

Address of Official Headquarters **700 Universe Boulevard, Juno Beach, FL 33408**

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

Names, owners, etc. **Florida Power and Light Company (an investor-owned electric utility)**

Name and Title of Chief Executive Officer **Armando J. Olivera, President**

Name, Address, and Phone Number of Official Representative responsible for obtaining certification
Barbara Linkiewicz, Environmental Licensing Manager, New Generation Projects, Environmental Services, 700 Universe Boulevard, Juno Beach, FL 33408 Phone: (561) 691-7518 Fax: (561) 691-7049

Site Location (county) **4000 205th Street, Loxahatchee, Palm Beach County, FL 33470**

Nearest Incorporated City **Wellington, FL (about 5 miles west of nearest boundary)**

Latitude and Longitude **26° 41' 54.98" 80° 22' 29.54" (HRSG Stack Unit 2; 2nd stack toward north; approx. center of power blocks).**

UTMs: Northerly **2,953.04 km N**

Easterly **562.19 km E (Zone 17)**

Section, Township, Range **Portions of Sections 29 and 32 of Township 43S, Range 40E**

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

Name Plate Generating Capacity **Site Certification: Unit 1 Nominal 1,100 MW (2009); Unit 2 Nominal 1,100 MW (2010)**

Capacity of Proposed Additions and Ultimate Site Capacity (where applicable):
Ultimate Site Capacity: Nominal 3,300 MW (an addition of a Nominal 1,100 MW as Unit 3)

Remarks (additional information that will help identify the applicant):
Project Name: West County Energy Center

EXHIBIT A

LEGAL DESCRIPTION

Part of Parcel I in Sections 29 and 32, Township 43 South, Range 40 East, Palm Beach County, Florida described as follows: Commencing at the Northwest corner of Section 29, Township 43 South, Range 40 East, Palm Beach County, Florida, thence South 88°52'46" East 745.00 feet along the North line of Section 29 to the East right-of-way line of the Florida Power & Light Company corridor as recorded in O.R.B. 2222, Page 1696, thence South 0°49'13" West 589.00 feet along a line parallel with the West line of said Section 29, along the East right-of-way line of the aforementioned Florida Power & Light Company corridor to the Southwest corner of the East 900 feet of the West 1,645 feet of the North 589 feet of said Section 29 and the point of beginning of Parcel II, thence South 88°52'46" East 1,200.00 feet along the South line of the East 900 feet of the West 1,645 feet of the North 589 feet of said Section 29 and its Easterly extension, thence South 0°49'13" West 4,658.85 feet along a line parallel with East right-of-way line of the Florida Power & Light company corridor, to the North line of Section 32, Township 43 South, Range 40 East, thence South 0°56'55" West 3,378.92 feet along a line parallel with the East right-of-way line of the aforesaid Florida Power & Light Company corridor to the North right-of-way line of State Road 80 thence North 88°28'14" West 1,100.09 feet along said right-of-way line of State Road 80, to the East right-of-way line of the Florida Power & Light Company corridor, thence North 0°56'55" East 880.76 feet along a line parallel with said West line of Section 32, Township 43 South, Range 40 East, thence North 89°03'05" West 100.00 feet at right angles to the preceding course, then North 0°56'55" East 2,501.94 feet along the East right-of-way line of Florida Power & Light Company corridor to the South line of Section 29, Township 43 South, Range 40 East, thence North 0°49'13" East 4,647.51 feet along said right-of-way line to the Point of Beginning.

Parcel = Approximately 220 acres.

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1.0 NEED FOR POWER AND THE PROPOSED FACILITIES

This chapter of the Site Certification Application (SCA) introduces Florida Power & Light Company (FPL or the Company), discusses the additional generating capacity needed to supply electricity to FPL's customers in 2009 through 2011, describes the self-build option identified by FPL to meet that need, and briefly addresses the ultimate capacity of the selected site for additional generation in the future.

1.1 INTRODUCTION – THE PROJECT

FPL proposes to construct two (2) new natural gas-fired combined cycle generating units, one providing approximately 1,100 megawatts (MW) of electric generation in 2009 and one providing approximately 1,100 additional MW in 2010 (the "Project") at a site comprising approximately 220 acres located adjacent to the existing FPL Corbett transmission substation in unincorporated Palm Beach County ("Site") (Figure 1.1.0-1). FPL's proposed new electric generating facility is referred to as the "West County Energy Center". This SCA seeks approval of 3,300 MW of ultimate site capacity that would accommodate an additional 1,100-MW unit.

The Site was initially identified for possible future electric generation by FPL in its Ten-Year Power Plant Site Plan 2004-2013 (FPL, 2004). The Site is identified in FPL's Ten-Year Power Plant Site Plan 2005-2014 (FPL, 2005) as the preferred site for 2009 through 2011 capacity need. The Site is accessible to both electric transmission facilities through existing infrastructure and existing natural gas supply through new lateral connections. The Site also has surface water and groundwater available as possible sources of industrial process water, boiler makeup, and cooling water makeup. The Site has been approved by Palm Beach County for electric generation. S.E. Florida (including Palm Beach, Broward, and Miami-Dade Counties) are experiencing significant ongoing growth and anticipated future development.

FPL is seeking approval of the West County Energy Center Project under the Florida Electrical Power Plant Siting Act (PPSA), Chapter 403, Part II, Florida Statutes (F.S.). The PPSA provides a centralized review process for new electrical generating facilities in Florida, involving a balancing of "the increasing demand for electrical power plants with the broad interests of the public." The Florida Public Service Commission (FPSC) is the sole forum for the determination of need for a proposed facility. The Florida Department of Environmental Protection (FDEP) acts as the



coordinator for the remainder of the site certification process, with input from various State, regional, and local agencies, along with interested citizens. Ultimate disposition of the SCA is by the Governor and Cabinet sitting as the Siting Board.

In accordance with the Florida Public Service Commission's "Bid Rule" [Rule 25-22.082, Florida Administrative Code (F.A.C.)], FPL plans to issue a Request for Proposals (RFP) in 2005 for the purpose of soliciting proposals for firm capacity and energy beginning in 2009 from non-FPL supply side resources. This RFP will seek alternatives that can be compared to FPL's self-build option – i.e., the Project constituting FPL's "next planned generating units". The eligible proposals submitted to FPL in response to the RFP will be evaluated against the Project.

After a comprehensive evaluation of power purchase alternatives presented in the responses to the RFP, if FPL determines that the Project is the best, most cost-effective option to meet the needs of its customers in 2009, or 2010, or 2011, or all 3 years, FPL will submit a Petition to Determine Need for the Project to the FPSC pursuant to Section 403.519, F.S. That Petition, along with supporting documentation, will address the manner in which FPL's Project will meet the need for electric system reliability and integrity and the need for adequate electricity at reasonable cost, whether the Project is the most cost-effective alternative available, and whether there is conservation available to mitigate the need for all or a portion of the Project. Section 1.5 contains a summary of FPL's capacity needs and its Request for Proposal process.

This SCA is filed with the FDEP pursuant to Chapter 62-17, F.A.C. The SCA describes the Project and addresses its environmental and socioeconomic aspects by presenting information on the existing natural and human environment, the new facilities to be constructed and operated, and the impacts of those facilities on those environments. Where possible, the 3,300-MW ultimate capacity of the Site is addressed.

1.2 THE APPLICANT

FPL, the principal subsidiary of FPL Group, Inc., is the largest electric utility in Florida. FPL serves more than 8 million people (approximately 4.2 million customer accounts) along the eastern seaboard and the southern and southwestern portions of Florida. FPL serves customers in all or parts of 35 Florida counties (see Figure 1.2.0-1).



FPL's existing generating resources are located at 14 power plant sites distributed geographically around the service territory, and also include partial ownership of two units located in Jacksonville and one unit in Georgia. The current generating facilities consist of nuclear steam units, coal units, combined cycle units, fossil steam units, combustion turbines, and diesel units. This diverse mix of generating technologies and fuels provides operating reliability, flexibility, and the opportunity to minimize fuel costs, while meeting the needs of FPL customers for electricity.

FPL's bulk transmission system is composed of 1,104 circuit miles of 500-kilovolt (kV) lines and 2,753 circuit miles of 230-kV lines. The underlying transmission network is composed of 1,584 circuit miles of 138-kV lines, 717 circuit miles of 115-kV lines, and 164 circuit miles of 69-kV lines. Integration of the generation, transmission, and distribution system is achieved through FPL's 515 substations.

The 2005-2014 Ten-Year Power Site Plan (FPL, 2005) contains FPL's projections of future electricity demand, which averages about 558 MW per year over the upcoming decade.

1.3 OVERVIEW OF THE PROJECT

FPL must add generating resources in the future to provide continued reliable and cost-effective service to its customers and to meet future load growth. FPL has determined that the best self-build option to meet the need projected in the years 2009 through 2011 involves construction of two new combined cycle generating units at the Site.

The Project (first two nominal 1,100-MW units) will consist of up to 8 new combustion turbines (CTs), with associated heat recovery steam generators (HRSGs), and 2 new steam turbine/electric generators (ST). The CTs are similar to, but larger and more efficient than, traditional jet engines. They produce electrical energy by direct connection to an electric generator. The exhaust heat from the CTs, which would otherwise be wasted energy released to the atmosphere, will be routed through the HRSGs, which act as boilers to produce steam for the new turbine generator, which produces additional electricity. The HRSGs will have duct burners to optimize the new units' generating capacity. Natural gas will be the primary fuel for the new units, with ultra low-sulfur light oil as a backup fuel for the CTs. Cooling water for the Project will come from surface water or the Floridan aquifer, and a cooling tower for the new units will be added as part of the Project. The two new generating units will be the most efficient fossil-fueled electric generators in the FPL system.



Natural gas will be supplied to the Site from one or more pipelines.

The Project will interconnect with FPL's existing transmission network at FPL's Corbett Substation adjacent to the Site.

Protecting the environment, while providing safe, reliable, and adequate power to its customers, is of great importance to FPL. The West County Energy Center will include state-of-the-art emissions controls and will comply with all applicable regulatory standards.

1.4 FPL'S RESOURCE PLANNING PROCESS

FPL uses an integrated resource planning (IRP) process in order to determine when new resources are needed, the magnitude of the resources needed, and the type of resources that should be added. The timing and type of potential new power plants are determined as part of this process. A description of FPL's IRP process is contained in FPL's Ten-Year Power Plant Site Plan 2005-2014.

Four basic steps are fundamental to FPL's resource planning process:

- Step 1: Determine the magnitude and timing of FPL's resource needs.
- Step 2: Identify which resource options and resource plans can meet the determined magnitude and timing of these resource needs (i.e., identify competing options and resource plans).
- Step 3: Determine the economics for the total utility system with each of the competing options and resource plans.
- Step 4: Select a resource plan and commit, as needed, to near-term options.

1.5 NEED FOR THE PROJECT

1.5.1 FPL'S CAPACITY NEEDS

FPL's IRP process in 2004 and early 2005 confirmed what its work in previous years had shown: that FPL will have a need for additional resources in 2009 and 2010. This part of the IRP process is generally called a "reliability assessment," and it is designed to determine both the magnitude and timing of FPL's resource needs. It is a forecast of how many megawatts of load reduction, new capacity, or a combination of both load reduction and new capacity options are needed, and when these megawatts are needed to meet FPL's customers' demand for electricity with the required reserve margin.



In the reliability assessment portion of its recent IRP work, FPL started with an updated load forecast. The primary drivers to develop these forecasts are demographic trends, weather, economic conditions, and prices of electricity. In addition, the resulting forecasts are an integration of economic evaluations, inputs of local economic development boards, weather assessments from NOAA, and inputs from FPL's own customer service planning areas. In the area of demographics, population trends by county and housing characteristics, such as housing starts, housing size, and vintage of homes, are assessed. FPL also updated several databases, including: delivered fuel price projections, current financial and economic assumptions, and power plant capability and reliability assumptions.

During its recent IRP work, FPL also utilized three other major assumptions regarding: 1) near-term construction capacity additions; 2) short-term, firm capacity purchase additions; and 3) long-term DSM implementation.

The first of these assumptions is based on FPL's addition of near-term capacity through the construction of several new generating units. These projects include a new combined cycle unit at Manatee and a new combined cycle unit at Martin using two existing CTs. Both additions are scheduled to come in service in mid-2005. A new combined cycle unit at FPL's Turkey Point site is assumed to come in service in mid-2007. FPL selected this construction option after evaluating competing proposals provided in response to a 2003 RFP. This capacity addition was approved by the FPSC in June 2004. On February 1, 2005, the Governor and Cabinet, acting as the Siting Board, granted certification to the new Turkey Point unit.

The second of these assumptions involves short-term, firm capacity purchase additions. These firm capacity purchases are from a combination of utility and independent power producers. The total capacity and duration of these purchases have changed somewhat from what was presented in FPL's 2004 Ten-Year Site Plan. Among those changes is a new firm purchase from an existing Florida facility of up to 576 MW from 2006 through 2009. In addition, the FPSC approved in January 2005 a five and a half-year firm purchase of 930 MW from the Southern Company beginning in 2010 that was shown as a projected purchase in FPL's prior Site Plan. These purchase amounts were assumed to be available to meet FPL's customers' needs for FPL's recent resource planning work.



The third of these assumptions involves Demand Side Management (DSM). Since 1994, FPL's resource planning work has used the DSM capacity called for in FPL's approved DSM goals in its analyses. In FPL's most recent planning work, its new DSM goals that address the years 2005 through 2014 and that were approved by the FPSC in August 2004, were included in the Resource Planning analysis.

These assumptions and much of the other updated information and assumptions were then used to determine the magnitude and the timing of FPL's resource needs. This determination is accomplished by system reliability analyses, which are typically based on a dual-planning criteria of a minimum peak period reserve margin of 20 percent (FPL applies this to both summer and winter peaks) and a maximum loss-of-load probability (LOLP) of 0.1 day per year. Both of these criteria are commonly used throughout the utility industry.

FPL's planning work showed that with no additional resources beyond its existing generating units and purchases, plus the new purchases, DSM implementation, and new combined cycle units mentioned above, FPL would fall below its summer reserve margin criterion of 20 percent starting with the summer of 2009. FPL projects that approximately 870 MW of additional resources will be needed by mid-2009, approximately 840 MW will be needed by mid-2010, and approximately 580 MW by mid-2011, in order for FPL to continue to meet its summer reserve margin criterion.

Consequently, FPL determined that it needs to add new resources for 2009 through 2011. FPL has chosen to begin the licensing process in 2005 for two new combined cycle generating units to ensure that it meets those needs.

1.5.2 OTHER CONSIDERATIONS

FPL's recent planning efforts also identified the significant imbalance in Southeast Florida (Palm Beach, Broward, and Miami-Dade Counties) between regional load (demand for electricity) and generating capacity located within this region. The imbalance is projected to worsen each year unless steps are taken to either fill the generation capacity gap or to increase the transmission import capability.



FPL's integrated resource planning process accounts for all the system costs associated with various alternatives for meeting capacity need, including the transmission-related costs arising from the significant imbalance between load and generating resources in the Southeast Florida area. The imbalance in this area is the result of strong regional population increases and associated load growth without commensurate new generating capacity additions in this region since 1993 (additions in Broward County). The decision to meet FPL's 2007 capacity needs by placing a new 1,100 MW (nominal) combined cycle unit (Unit 5) at FPL's existing Turkey Point site in southern Miami-Dade County was based, in part, on the cost-effectiveness of adding Turkey Point Unit 5 as compared to other alternatives with higher transmission-related costs that were, to a certain extent, associated with the imbalance.

While the addition of Unit 5 at Turkey Point in 2007 will partially mitigate the imbalance situation, it is only temporary. The continuing load growth in this region eventually offsets the addition of Unit 5 at Turkey Point and the imbalance between generation and load must be once again addressed. Even with Unit 5 added to FPL's system, by 2009 the peak summer load in the Southeast Florida area is forecasted to be approximately 13,770 MW while the installed generation in the same area will be approximately 7,465 MW. By 2011, the projected peak summer load is forecasted to be 14,335 MW. These projections indicate that there will be an imbalance between generation and load of 6,350 and 6,870 MWs in 2009 and 2011, respectively (and even greater when generating units in the area are unavailable due to maintenance or forced outages). With this increased load over the 2009 and 2011 timeframe and if no significant amount of additional generation is added in this area, FPL must further rely upon the transmission system to import greater amounts of power into the area to serve the load. However, the capability of the transmission system to import power into the Southeast Florida area is finite, and will be approaching its limits as more power is imported into this area to serve the increasing load. Given the projected load growth and the limits of transmission import capability, FPL projects that either generation capacity will have to be added or substantial transmission additions and/or upgrades will have to be made in order to maintain system reliability. In order to substantially increase transmission import capability into the Southeast Florida area, major high-voltage transmission facility(ies) additions [500 and/or 230 kilovolt (kV)] in addition to those required to serve the load within this area, would be required.

From a reliability perspective, it is irrefutable that it is preferable to have generation located in close proximity to major load concentrations whenever possible. The siting of generation close to the



major load concentration adds a level of operating flexibility and margin that contributes to increased electric system reliability. The addition of 2,200 MW of additional generating capacity at the West County Energy Center would significantly reduce the load/generation imbalance in the Southeast Florida area, and thus add a level of operating flexibility and margin that contributes to increased electric system reliability.

1.5.3 FPL'S REQUEST FOR PROPOSALS

New combined cycle units such as those proposed for the West County Energy Center fall under the FPSC's "Bid Rule" (Rule 25-22.082, F.A.C.). This rule requires electric utilities seeking to build such units to first solicit bids from interested parties in order to determine whether the utility's construction of this unit is the most economical alternative available. Consequently, FPL plans to issue a Request for Proposals in 2005. The RFP will be announced in an advertisement in the Wall Street Journal and in a press release carried in numerous Florida newspapers and trade publications.

After a comprehensive evaluation of all eligible proposals, if FPL determines that the Project is the best, most cost-effective option to meet all or a portion of the needs of its customers, FPL will submit a Petition to Determine Need to the FPSC. That Petition, along with supporting documentation, will address the manner in which FPL will meet the need for electric system reliability and integrity and the need for adequate electricity at reasonable cost, whether the Project is the most cost-effective alternative available, and whether there is conservation available to mitigate the need for the Project.

1.6 BENEFITS OF THE PROJECT

The Project will provide the most cost-effective reliable, self-build resource to meet the incremental demand projected for the 2009 through 2011 period, while providing significant relief to the growing generation/load imbalance.

The Project also provides positive economic benefits including increased employment and local expenditures for equipment and services during construction and operation of the units.

1.7 ULTIMATE SITE CAPACITY

The PPSA provides for certification of the "ultimate site capacity" of a power plant site. By this SCA, FPL seeks both full certification of the Project (two 1,100-MW nominal combined cycle units)



as well as approval of an ultimate capacity for the Site of 3,300 MW. This ultimate site capacity would accommodate an additional 1,100 MW of generating capacity at the Site. If the Siting Board grants full certification for the 2,200-MW Project and approves the ultimate capacity for the Site for 3,300 MW, future licensing of a third 1,100-MW combined cycle unit at the Site would be by "supplemental application" under the PPSA, pursuant to Section 403.517, F.S., and FDEP Rule 62-17.231, F.A.C.

1.8 SUMMARY OF PUBLIC OUTREACH PROGRAM

Representatives of FPL have been involved with the local community for many years, including providing ongoing communication about the Company's activities and plans. FPL will continue this dialogue with citizens in Palm Beach County. One goal will be to build shared understanding between FPL, citizens, and other stakeholders about this new Project, as well as to explore other shared, individual, and community interests. This process includes various outreach activities focused on a wide variety of individuals and groups that have, or may have, an interest in the project. These activities involve FPL employees, surrounding community residents and customers.

In addition to generating well-informed decisions about the Project, FPL also hopes to achieve a high degree of alignment between Project features and the interests and priorities of people living in the surrounding communities. FPL plans to maximize the potential for the surrounding community to participate in the Project through outreach efforts already underway that will continue throughout the Project and into the future.

Primary activities for accomplishing these outreach goals include continuing dialogue with citizens through one-on-one discussions, group meetings, and other opportunities as may be of interest to residents. Activities will be focused on listening to people's needs, issues, and concerns. FPL is committed to responding to people's comments and questions in a timely manner. FPL's goal is to be the first and best source of information about the project.

Prior to the announcement of the Project, FPL will begin its outreach to residents. Dialogue-based research will be conducted to determine what people in the surrounding communities know about the Project, what they are interested in learning about it, and how to best communicate with them.



FPL is committed to keeping the community updated on the Project through ongoing conversations, presentations, information on the FPL website, and in various print materials.

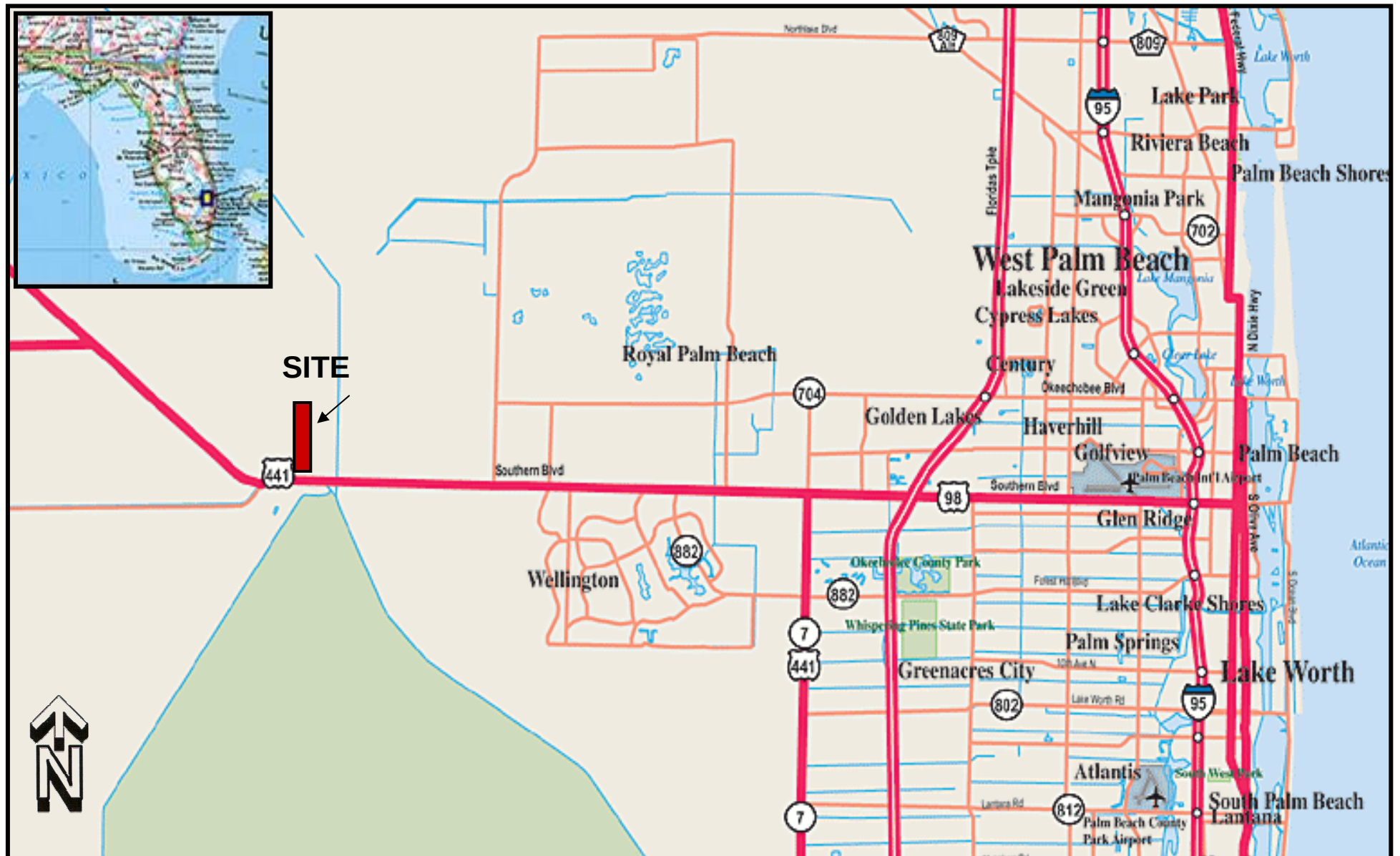


Figure 1.1.0-1.
Plant Site Location
FPL West County Energy Center, Palm Beach County, Florida

Not to Scale: 1" = ~3 miles.

Source: SFWMD website; Golder, 2005.



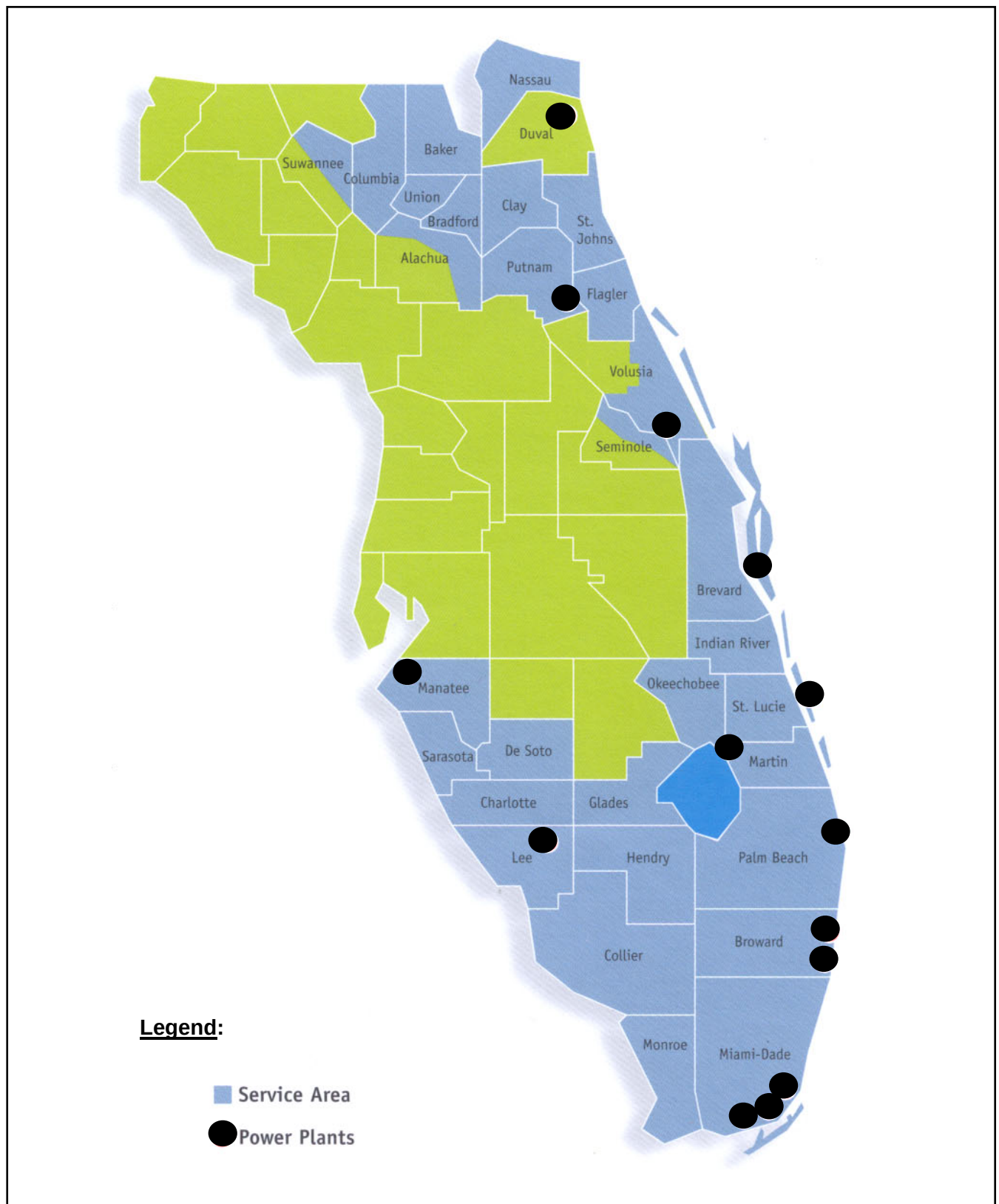


Figure 1.2.0-1. FPL Service Territory

Source: FPL, 2001; Golder, 2002.



2.0 SITE VICINITY CHARACTERIZATION

2.1 SITE AND ASSOCIATED FACILITIES DELINEATION

2.1.1 SITE LOCATION

The Site for the West County Energy Center is located on 220-acres in unincorporated Palm Beach County (Figure 2.1.1-1) north of State Road 80 (also known as State Road 441 and U.S. Highway 98) and 3 miles west of Seminole-Pratt Road in the western side of Sections 29 and 32, Township 43 South and Range 40 East. The municipality of Wellington is approximately 5 miles east of the Site. The 220-acre Site will be the location for two nominal 1,100-MW combined cycle units (i.e., the Project). By this SCA, FPL also seeks certification of the Site for an ultimate capacity of 3,300 MW.

2.1.2 EXISTING SITE USES

An aerial photograph that includes the Site, taken in January 2005, is provided as Figure 2.1.2-1. Until 2004, the entire Site was owned by Palm Beach Aggregates, Inc. (PBA). The northern 100 acres of the Site was purchased by FPL in 2004 with the remaining portion of the 220 acres optioned for purchase by FPL. All organic materials and overburden soils [15 to 20 feet (ft) in total thickness] were excavated from the Site by PBA prior to the hydraulic placement of fill materials.

The Site currently contains no structures, roads, or other improvements. There are presently no utility services to the Site. A private road borders the eastern side of the Site, allowing access to State Road 80 to the south.

2.1.3 ADJACENT PROPERTIES

The land uses surrounding the Site are predominantly agriculture (west) and mining (east). FPL's Corbett Substation is located northwest of, and adjacent to, the Site. FPL's existing 500-kV transmission corridor is located on the western boundary of the Site. Ongoing mining activities conducted by PBA are east and north of the Site. The closest residential area to the Site is a multi-acreage plotted subdivision located about 0.75 mile northeast of the Site across from the L8 Canal.

PBA has entered into an agreement with the South Florida Water Management District (SFWMD) to construct water storage ponds near the Site after mining is completed. The SFWMD water storage ponds, when complete, will extend eastward to the L-8 Canal.



2.1.4 USES WITHIN THE SITE

The Project will consist of two nominal 1,100-MW combined cycle units that will be either a 4-on-1 or 3-on-1 combined cycle configuration. The 4-on-1 configuration would consist of four GE "F" Class combustion turbines (CTs) and associated heat recovery steam generators (HRSGs), which will utilize the waste heat from the CTs to produce steam, and a new steam electric turbine-generator. The 3-on-1 configuration would consist of three "G" Class CTs and associated HRSGs and a new steam electric turbine. The steam electric turbines for each configuration will be the same nominal capacity and include a mechanical draft cooling tower for condenser cooling. The Project facilities to be located on the Site and their approximate acreages are:

Power Blocks (two nominal 1,100-MW units)	41 acres
Control/Administration Buildings, light oil tanks, and maintenance building	7 acres
Stormwater Retention Ponds	34 acres
Construction Laydown, parking, trailers, electrical yard, and open area	<u>138 acres</u>
Site	220 acres

2.1.5 ONE HUNDRED-YEAR FLOOD ZONE

The current elevation of the Site is above the 100-year flood zone.

2.1.6 PROPERTY DELINEATION

A boundary survey map of the Site is presented in Figures 2.1.6-1a, 2.1.6-1b, and 2.1.6-1c, which show the Site proposed for certification and ultimate site capacity approval.

2.2 SOCIO-POLITICAL ENVIRONMENT

2.2.1 GOVERNMENTAL JURISDICTIONS

The Site is located in unincorporated Palm Beach County. The majority of Palm Beach County's urban development lies along the eastern boundary of the county (Atlantic Coast). The municipality nearest the Site is Wellington (Figure 2.2.1-1). The eastern boundary of Wellington is approximately 4 miles east of the Site, south of State Road 80.

2.2.2 ZONING AND LAND USE PLANS

2.2.2.1 Future Land Use

The Site is located in unincorporated Palm Beach County. Palm Beach County has adopted a Comprehensive Plan to meet the requirements of the Local and Governmental Comprehensive Planning and Land Development Regulation Act, Chapter 163, Part II, Florida Statutes, and Chapter 9J-5, F.A.C. The plan was last revised in December 2004. The Comprehensive Plan utilizes three different growth management systems for future land use planning to categorize land use goals: tiers with overlays, service areas, and land use classifications.

Palm Beach County's Future Land Use Element divides the county into Managed Growth Tiers. The Tiers define distinct geographical areas within the county that currently either support or are anticipated to accommodate various types of development patterns and service delivery provisions, which together allow for a diverse range of lifestyle choices and livable, sustainable communities. Palm Beach County recognizes five geographic regions (Tiers): Urban/Suburban Tier, Exurban Tier, Rural Tier, Agricultural Reserve Tier, and the Glades Tier. The Site is located in the Glades Tier. The Site is not located in any of the overlay districts.

Objective 1.6 of Palm Beach County's Future Land Use Element addresses the Glades Tier and requires collaboration with the communities in the western areas to preserve and enhance the unique characteristics of the Glades and protect the economically viable agricultural base in this area. Future Land Use Objective 1.6-a states that Rural Residential 10 and Transportation and Utilities general land use designations are allowed in the Glades Tier, (see Appendix 10.3, page 35 of the Future Land Use Element). Utility uses allowed under this classification include a full range of utility uses including electrical transmission facilities, towers, substations, and power plants (see Appendix 10.3, page 93 of the Future Land Use Element).

Palm Beach County's Future Land Use Element has established three service areas: Urban, Limited Urban, and Rural. The service areas identify the levels and types of services needed within a Tier. These characteristics are based on the land development pattern of the community and services needed to protect health, safety, and welfare of residents and visitors and to provide cost-effective services based on the existing or future land uses. The Site is located in the Rural Service Area in Palm Beach County. The Palm Beach County Future Land Use Element Objective 3.4 requires a rural level of service, which meets the needs of rural development and uses.



The land use classification for the Site is Rural Residential (RR10) as depicted on the County's adopted future land use plan (Figures 2.2.2-1a, 2.2.2-1b, and 2.2.2-1c). The adjacent property to the north and east of the Site is also classified as Rural Residential (RR10). The property to the east of SFWMD L8 Canal and north of the 230-kV transmission line is classified as Rural Residential (RR5). The adjacent property to the west is classified Agricultural Production, and the adjacent property to the south is classified as Conservation. The Site and adjacent PBA and SFWMD properties are situated at the edge of the rural tier and provide a buffer to the Glades Tier agricultural uses.

Under Future Land Use Policy 2.2.1-d, non-residential uses allowed in Transportation and Utilities future land use designations are allowed in residential areas if criteria established in the Comprehensive Plan are met as determined by the Board of County Commissioners (see Appendix 10.3, pages 44 and 84 of the Future Land Use Element). On January 3, 2002, the Palm Beach County Board of County Commissioners (BOCC) issued a Development Order (No. DOA 1989-052F) approving use of the Site for a power plant. The applicable provisions of the County's Future Land Use element allowed electrical power plants as a Transportation and Utility use within the underlying Rural Residential (RR10) category at the time the BOCC issued the Development Order.

Subsequent to the issuance of the original Development Order for the Site, new language was added to the County's Future Land Use Element in August 2002 to exclude power plants from the Transportation and Utility uses allowed in residential and other future land use categories.

In February 2004, the BOCC amended the previous Development Order, approving the Site for up to 3,300 MW of electrical generating facilities, subject to specified conditions. The amended Development Order did not enlarge or expand the Site, and it did not increase the intensity of the approved power plant facility within the Site. This most recent action of the BOCC regarding use of the Site followed a positive recommendation from the County Planning Department staff and unanimous approval by the Palm Beach County Zoning Commission (see Appendix 10.3 for the petition, staff review and analysis, and amended Development Order with Conditions of Approval and Exhibits). The BOCC latest approval confirms that the August 2002 revision to the Future Land Use Element regarding a power plant in residential future land use designations does not apply to the use of the Site for the West County Energy Center.



2.2.2.2 Zoning

To ensure that all development in unincorporated Palm Beach County is consistent with the Comprehensive Plan, the County established a series of zoning districts and overlays to ensure that each use is compatible with surrounding uses, served by adequate public facilities, and sensitive to natural resources. Each district has its own purpose and permitted uses, conditional uses, special uses, and other regulations that control the use of land. There are 14 overlays, 18 standard zoning districts, six Planned Development Districts (PDDs), and three Traditional Development Districts (TDDs) established.

The Site is zoned in the Specialized Agriculture (SA) District. This zoning district has been eliminated by County Ordinance 2003-067, which provided that the previous SA zoning district would correspond to the Agriculture Production (AP) district in the Glades Zoning Overlay Tier. Thus, the Site is subject to AP zoning under the current zoning regulations. Electrical power plants were and remain an allowed use in the SA and AP Districts, subject to conditional use approvals. There have been several development orders that affect the Site and adjacent properties. These have been in the form of special exceptions and other development approvals to the Site through previous petitions for development approval, including approval of the proposed Site for use for electrical generating units in 2002 and in 2004. The most recent Development Order Amendment approval for the Site to allow development of the proposed FPL Project is found in Appendix 10.2.

2.2.3 DEMOGRAPHY AND ONGOING LAND USE

The Site is located in the approximate geographic center of Palm Beach County. Based upon Municipality Maps received from the Palm Beach County Planning and Zoning Department, the nearest municipality is Wellington, approximately 5 miles east of the Site. This is the only municipality located within the prescribed 5-mile search radius.

Wellington was estimated to have 43,319 residents in the year 2002, while the entire county was estimated to have 1,183,197 residents (Florida Statistical Abstract, 2003). Wellington's population increased 10.74 percent from 2000 to 2002 while during the same period the population of Palm



Beach County increased 4.6 percent. The median population projections for all of Palm Beach County for 2015 indicate continued growth, with an estimated population of about 1,400,000.

Census Tract 79.03 surrounds the Site, encompassing a large area extending into the Loxahatchee National Wildlife Refuge. The year 2000 census count for Census Tract 79.03 is 5,629. Census Tract 78.08 borders the eastern side of Census Tract 79.03, which is within the 5-mile vicinity of the Site. For Census Tract 78.08, the 2000 census count was 4,139. Census Tract 77.21 is southeast of the Site and also within 5 miles. For Census Tract 77.21, the 2000 census count was 4,781.

Land use adjacent to the Site includes mining, agricultural, and undeveloped land. The Loxahatchee National Wildlife Refuge and a public shooting range are approximately 0.5 mile south of the Site. That portion of the Loxahatchee National Wildlife Refuge closest to the Site is not open for public use. Public access is only allowed in the southern portion of the Loxahatchee National Wildlife Refuge, about 10 miles from the Site. The point of access to the Loxahatchee National Wildlife Refuge located closest to the Site is west of Boynton Beach on Lee Road, just west of U.S. 441. This public access is approximately 20 miles southeast from the Site and contains the Headquarters Area for the Refuge that includes a Visitors Center, administration office, walking trails, observation areas, a boardwalk, a boat ramp, a bike trail, and a canoe trail.

The predominant land uses out to a 5-mile radius from the Site are mining and agricultural. A residential area is located 0.75 mile to the northeast of the Site. Other land uses in this radius include the Loxahatchee National Wildlife Refuge and a public shooting range.

2.2.4 EASEMENTS, TITLE, AGENCY WORKS

The Project will require construction of an intake along the L10/L12 Canal that is owned by the SFWMD. A water supply pipeline from the intake structure to the Site will cross FDOT right-of-way for State Road 80. No other easements, title, or agency works approvals are required for the Project.

2.2.5 REGIONAL SCENIC, CULTURAL, AND NATURAL LANDMARKS

The Loxahatchee National Wildlife Refuge comprises over 221 square miles (mi²) of Everglades habitats including habitats for the American alligator and the endangered Everglades snail kite. In any given year, as many as 257 species of birds may use the Refuge's diverse wetland habitats. The Refuge offers many recreational opportunities for outdoor enthusiasts such as walking trails, a canoe

trail, a bike trail, boat ramps, a fishing platform, observation towers, a butterfly garden, and a Visitor's Center. The Refuge includes a 400-acre cypress swamp, the largest remaining remnant of a cypress strand that once separated the pine flatwoods in the east from the Everglades marshes. The nearest public access point of the Loxahatchee National Wildlife Refuge is about 20 miles from the Site.

2.2.6 ARCHAEOLOGICAL AND HISTORICAL SITES

No archeological or historical sites have been recorded on the Site, and there are no archaeological or historical sites within 5 miles of the Site (see Appendix 10.5.3). There are four historical sites and districts in Palm Beach County, all distant from the Site. Two of the historic sites, the Tindall House and the Riverbend Regional Park historic district, are located in the northeast portion of the County. The other two sites, the Cabana Club Porte Cochere and the Camino Real and Comino Real Bridge historic district, are located in the southeastern portion of the County.

2.2.7 SOCIOECONOMICS AND PUBLIC SERVICES

2.2.7.1 Labor Force

The total labor force in Palm Beach County for 2002 was 579,667 with employment of 545,707. Unemployment in 2002 was 33,960 or 5.9 percent. For the State of Florida, the unemployment rate was 5.5, and the United States unemployment rate was 5.8. Average monthly private-sector employment by major industry groups in Palm Beach County for 2001 is depicted below:

Major Industry Group	Employment	Major Industry Group	Employment
Agriculture, Forestry, and Hunting	9,460	Professional Scientific and Technical Services	29,593
Mining	16	Information	11,426
Construction	34,406	Real Estate, Rental and Leasing	12,162
Manufacturing	22,977	Management Companies and Enterprises	6,294
Transportation, Warehousing	7,433	Administration and Support	47,372
Wholesale Trade	18,776	Educational Services	5,721
Retail Trade	67,665	Other Services	21,543
Finance and Insurance	23,968		
Unclassified	294		

The healthcare and social assistance sectors provided the most employment in Palm Beach County with about 14 and 15 percent, respectively, of the total employment. The construction industry provided about 34,000 jobs. 2002 employment decreased over 2001 employment for seven of the specific major industry groups.

Employment projections for construction trades for Florida have been estimated for the year 2010. Statewide, construction employment is estimated to increase from 444,210 in 2002 to 515,396 in 2010 (Florida Statistical Abstract, 2003).

2.2.7.2 General Income

Palm Beach County had a per capita personal income of \$43,626 in 2001 compared to the State of Florida and United States per capita personal income of \$29,048 and \$30,413, respectively (Florida Statistical Abstract, 2003). This income level ranked first among the 67 counties in Florida. Approximately 99.2 percent of earned income in the County is derived from non-farm origins.

Median household income in Palm Beach County was \$40,967 in 1999. This income level ranked the county seventh out of 67 Florida counties in median household income and represents a household income level that is approximately 11 percent higher than the Statewide average (Florida Statistical Abstract, 2003). Average wage and salary earnings in Palm Beach County in 2001 were \$38,160, 14 percent higher than the Statewide average.

2.2.7.3 Housing

The total number of housing units in Palm Beach County and Wellington in 2001 is shown below by occupancy type:

	Palm Beach County	Wellington
Renter-Occupied	120,151	2,305
Owner-Occupied	354,024	10,586
Other	82,253	1,414
Total	556,428	14,305

Transient accommodation in Palm Beach County is substantial. A total of 1,623 lodgings exist, representing 85,478 lodging units. The total number of apartment building, rooming house, rental, condominium, and transient apartment building units in the County totaled 69,249 in 2002 (Florida Statistical Abstract, 2003).

2.2.7.4 Area Public Service and Utilities

Education

Public education in Florida is operated on a countywide basis. Each county's respective school district establishes educational policies and staffing requirements. According to the Florida Department of Education and the Florida Statistical Abstract (2003), Palm Beach County had a total enrollment of 170,214 for the 2002-2003 school year. Palm Beach County schools employed approximately 18,342 full-time staff employees in the fall of 2003.

A total of 162 elementary and secondary schools exist in the county. The closest public school to the Site is Loxahatchee Groves Elementary, located approximately 5.3 miles east of the Site. There are no existing public schools or planned public schools within 5 miles of the Site.

Transportation

The Site is located north of State Road 80, also known as U.S. Highways 98 and 441. State Road 80 is a major east-west corridor that traverses the middle of the Palm Beach County. U.S. 441 runs parallel to the Florida Turnpike until intersecting State Road 80 approximately 10 miles east of the Site. State Road 80, U.S. 98, and U.S. 441 run together for approximately 12 miles until they diverge 2 miles west of the Site; U.S. 98 continues northwest, while U.S. 441 and State Road 80 continue west.

Access to the West County Energy Center will be from State Road 80 and a private road constructed by PBA off of State Road 80. FPL has a service road to the Corbett Substation along the 500-kilovolt (kV) transmission corridor on the west side of the Site, which will serve as an emergency access to the Site.

A traffic count was conducted in 2003 on the annual daily traffic report from the FDOT for the intersection of State Road 80/U.S. 441-E and State Road 700/U.S. 98. The annual daily traffic count was 5,800 in an east direction and 6,100 in a west direction. The Palm Beach Metropolitan Planning Organization does not have any Project Priorities for Fiscal Years 2006-2010 in the Transportation Improvement Program (TIP) for U.S. 98 and U.S. 441.



Medical Facilities

Palm Beach County has more than 19 hospitals, which contain over 3,813 licensed beds. Emergency medical transport is provided within Palm Beach County by emergency medical technicians (EMTs) stationed at most of the county's fire stations. Licensed medical practitioners in Palm Beach County include 3,344 physicians, 1,651 dentists and dental hygienists, 4,313 health practitioners, 14,414 nurses, and 236 opticians and pharmacists (Florida Statistical Abstract, 2003).

Palms West Hospital in Loxahatchee is a health care provider located approximately 8 miles east of the Site. Palms West is a 117-bed facility and provides emergency facilities and services as well as numerous surgical and non-surgical programs. The Emergency Medical Service (EMS) Division of Palm Beach County Fire and Rescue Department provides emergency medical transport services throughout the County, including the Site.

Firefighting Facilities

The Palm Beach County Fire and Rescue Department provides service in the vicinity of the Site as well as response to hazardous material incidences. During 2004, the Palm Beach Fire and Rescue Department responded to a total of 97,526 calls. Seventy-four percent of the total service calls were for medical rescue. There are 41 stations (excluding Palm Beach Gardens and Pahokee), with a daily firefighter minimum of 216 staffing. The average response time is 6 minutes, 27 seconds.

The fire station closest to the Site, Station 20, is located 6 miles east of the Site. Station 20 has a Rescue-Engine 20 with a >1,000-gallon per minute (gpm) top-mount pump and carries 750 gallons of water. This unit also functions as an Advanced Life Support Paramedic Unit. Station 20 also has a Brush 20 all-wheel-drive truck, which is capable of pumping 500 gallons of water per minute. The truck carries 750 gallons of water.

Police Protection

Palm Beach County Sheriff's Department provides law enforcement in the unincorporated areas of the County including the Site.

Recreation Facilities

Palm Beach County and the surrounding region offer many recreational activities. The Palm Beach Parks and Recreation Department manages over 8,000 acres and 74 facilities (64 county operated and



10 leased to municipalities). According to the Palm Beach County Park and Recreation Department, there is one County-owned park within the 5-mile radius from the Site. The Public Shooting Range is located approximately 1 mile west of the Site.

State and national recreation facilities are also described in Subsection 2.2.5. The Loxahatchee National Wildlife Refuge is located approximately 1 mile south of the Site; public access is only allowed in the southern portion of the Refuge, with the closest public access about 20 miles from the Site.

Electricity and Gas

Electricity is provided to Palm Beach County businesses and residents by FPL and City of Lake Worth Utilities. Natural gas is supplied to Palm Beach County by an FGT pipeline and distributed to commercial and residential customers by TECO Peoples Gas and Florida Public Utilities Company. A natural gas lateral to the Site will be constructed and licensed by the gas supplier.

FPL's Riviera Plant is a nominal 550-MW electric generation facility, located in Riviera Beach, Palm Beach County. The Plant's newest unit was placed in commercial service in spring of 1963. It was the last FPL generating unit built in Palm Beach County. The demand for electrical power in Palm Beach County substantially exceeds the supply that is available from the Riviera Plant.

Water Supply Facilities

Potable water in Palm Beach County is obtained from the surficial and Floridan aquifers and surface water. Residents in Palm Beach County obtain potable water from a variety of water systems, including governmental or private systems or individual wells. The government and private wells are regulated by FDEP and SFWMD. The municipalities located in western Palm Beach County that supply potable water include the City of Belle Glade, City of Pahokee, City of South Bay, and other small private water supply systems. The Site is located in the Palm Beach County Water Utilities Department Service Area but has no facilities for potable water near the Site.

Palm Beach County Water Utilities Department obtains the majority of its water from the underground surficial aquifer through well fields. The well fields are located inland to prevent saltwater intrusion. To assure the safety of the drinking water, Palm Beach County monitors well



quality through the County's Sourcewater Well Field. There are four water treatment plants located in Palm Beach County. Each of the four water treatment plants has associated well fields.

Sewage Treatment Facilities

The Site is located within the Palm Beach County Water Utilities Department Service Area. Palm Beach County businesses and residents are served by septic tanks or regional facilities. Septic tanks provide service to individual residences or small developments. Regional facilities are large systems that serve areas of densely populated development. There are two regional facilities that serve the majority of business and residents in Palm Beach County; however, these regional facilities are not in proximity to the Site.

Solid Waste Disposal

The Solid Waste Authority (SWA) of Palm Beach County is responsible for solid waste collection, transport, and disposal in the unincorporated portions of the county. SWA has several facilities located throughout all parts of the county. SWA offers one landfill, five transfer stations, one waste energy facility, and several recycling centers. The North County Regional Disposal Facility is located about 15 miles northeast of the West County Energy Center at 6554-B North Jog Road, West Palm Beach.

2.3 BIO-PHYSICAL ENVIRONMENT

2.3.1 GEOHYDROLOGY

The geology and hydrogeology of the Site vicinity has been extensively studied. The general geology and hydrogeology of Palm Beach County was presented in "Hydrogeology and the Distribution of Salinity in the Floridan Aquifer System, Palm Beach County, Florida" (Reese and Memberg, 1999). Site-specific subsurface information was presented in a Preliminary Geotechnical Investigation performed at the Site (Golder, 2002) and in a letter regarding compliance with a backfill agreement between PBA and FPL (BCI, 2004).

The information presented in this section draws upon these previous studies and provides a brief summary of the geohydrologic baseline information.



2.3.1.1 Geologic Description of the Site Vicinity

The generalized geology and hydrogeology for Palm Beach County, including the Site, is shown in Figure 2.3.1-1. Based upon review of the U.S. Geological Survey (USGS) Loxahatchee, Florida, quadrangle map, dated 1971 and photo-revised 1984, the Site has a natural ground surface elevation of approximately 12 ft-msl, with respect to the NGVD of 1929. According to the Soil Survey of Palm Beach County Area, Florida, published by the U.S. Department of Agriculture, Soil Conservation Service (SCS), the Site (prior to development) was occupied by Holopaw fine sand. This is nearly level, poorly drained sand that has loamy subsoil at a depth of 40 to 72 inches. Under natural conditions, the water table (i.e., absent drainage improvements) was near the ground surface.

According to Dr. H.K. Brooks' publication "Guide to the Physiographic Divisions of Florida" (1981), the Site lies near the somewhat gradual transition between the Eastern Flatwoods District (Green Ridge-Loxahatchee Karst) and the Gold Coast and Florida Bay District (Everglades, Andytown Ridges and Sloughs). The Green Ridge-Loxahatchee Karst is described as poorly drained open flatwoods with cypress strands and heads, while the Andytown Ridges and Sloughs is a freshwater marsh with varying thickness of peat.

Rock units ranging in age from Paleocene to recent underlay the Site. Formations and groups discussed in this report include (from oldest to youngest): the Cedar Keys Formation of Paleocene age; Oldsmar Formation of early Eocene age; Avon Park Formation of middle Eocene Age; Ocala Limestone of late Eocene age; Suwannee Limestone of early Oligocene age; Hawthorn Group of Miocene and Late Oligocene age; and the Tamiami Formation of Pliocene (Reese and Memberg, 2000).

The uppermost unit underlying the Site is primarily composed of unconsolidated sand and marl, with localized lenses of shell and limestone. Previous studies indicate that these sediments are part of the Fort Thompson Formation and Pamlico Sand deposited during the Pleistocene Epoch (Miller, 1988).

The following is a summary of the lithology and approximate thickness of each geologic unit anticipated at the Site, based on well logs and cross sections completed for nearby well installations. Figures 2.3.1-2 and 2.3.1-3 show regional geologic cross sections.

In general, the Cedar Keys Formation is subdivided by lithologic character and corresponding geophysical log characteristics into six units (Winston, 1994). In descending order they are: Unit A, characterized by a preponderance of anhedral and cryptocrystalline dolomite; euhedral dolomite is subordinate. Unit B is characterized by the presence of numerous relic grain textures in chalky to microcrystalline euhedral dolomite. Unit C is predominately anhydrite, with subordinate chalky to very fine microcrystalline euhedral dolomite. Unit D is characterized by a predominance of relic grains in a chalky to very fine microcrystalline euhedral dolomite, with few thin bedded anhydrites. Units E and F are similar in texture to Unit D, but contain fewer beds of relic grain texture.

The Oldsmar Limestone is highly fractured and cavernous dolomite. The Oldsmar Formation is about 1,000 to 1,200 ft thick in the study area, and its lithology is predominantly micritic limestone. The lower, approximately 300- to -600-ft section of the Oldsmar Formation, locally called the Boulder Zone, is predominantly dolomite and contains massively bedded, cavernous, or fractured dolomite of high permeability and dense, recrystallized dolomite of low permeability. This formation is located approximately 2,800 below ground surface.

The Avon Park Formation is about 1,100 to 1,200 ft thick in the study area and is composed predominantly of micritic or chalky to fine-grained limestone with low permeability. This geologic unit is characterized on gamma-ray logs as having relatively low natural radioactivity, generally less than 20 to 30 American Petroleum Institute (API) standard units. Porosity can be as high as 50 percent at or near the top of the formation and gradually decreases with depth as shown by porosity type well logs, which indicate total porosity.

The Suwannee Limestone is moderately indurate, very porous calcarenite, interbedded with sandy phosphatic limestones and dolomites. The formation varies in thickness from 0 to 150 ft.

Rocks of Miocene age in the Site belong to the Hawthorn Group. The Hawthorn Group is divided into lower carbonate and upper clastic sequences. The carbonate sequence is composed of poorly to moderately indurate phosphatic micrites and dolomites. The upper clastic sequence is composed primarily of greenish-gray phosphatic silts interbedded with coarse sand and sandstones. The base of the Hawthorn Group occurs at the contact between the Suwannee Limestone and the Lower Hawthorn/Tampa Limestone. In Palm Beach County, the top of the Hawthorn Group occurs at a poorly consolidated sand or sandy silt beneath the biogenic limestones of the Tamiami Formation.

The Tamiami Formation in the Site is thin and difficult to distinguish from the younger biogenic limestones of the Fort Thompson Limestone, which unconformably overlies the Tamiami Formation. The formation is of Pleistocene Age and consists of alternating beds of marine shells and freshwater limestones, which are intermixed with the Pamlico Sands (Miller, 1988).

2.3.1.2 Detailed Site Lithologic Description

A detailed lithology was developed for the Site based on numerous borings made at the time of a preliminary geotechnical investigation at the Site (Golder, 2002). The preliminary investigation performed in 2002 included advancing 36 borings to depths of 15 to 80 feet below ground surface (ft-bgs). The borings included Standard Penetration Testing and soil sampling. The investigation also included performing laboratory testing, installing piezometers, conducting shallow aquifer performance tests, and performing geophysical testing.

Based on the results of the preliminary investigation, the subsurface soils at the Site consisted of topsoil and peat “muck” to a depth of approximately 6 ft-bgs. This layer was underlain by a layer of loose to very loose sand to depths of up to 15 ft-bgs. This layer was underlain by interlayered limestone and loose to very loose sand to depths of about 30 ft-bgs. A layer of dense to very dense well-graded sand was encountered for the remainder of the depth investigated.

Since the time of the preliminary geotechnical investigation, significant grading operations have been performed at the Site. As part of the grading operations, the organic soils were excavated and removed from the Site. Evaluation of the grading operations and additional borings were performed within the Site (BCI, 2004). Prior to placement of backfill material, the foundation conditions were inspected and areas of unsuitable material, consisting of either organic soils or soft clayey soils, were excavated and removed from the Site. The backfill material, consisting of well-graded sand and shell, was placed hydraulically by dredging a sand layer beneath previously mined areas adjacent to the Site (BCI, 2004).

During and subsequent to backfilling operations, 29 borings were advanced at the site to depths of 20 to 34 ft-bgs to evaluate the load-bearing capacity of the Site. The borings indicated the subsurface conditions to be relatively homogeneous, consisting of a surficial layer of medium dense to dense sand fill intermixed with shell, underlain by a very loose to loose layer of sand fill with shell. In several of the borings, a soft clay layer, up to 1 ft in thickness, was encountered at the bottom of

the sand fill. It was reported that the relative densities of the fill materials are gradually increasing with time due to consolidation as excess pore water pressure dissipates and drainage occurs (BCI, 2004).

2.3.1.3 Bearing Strength

The Site is suitable for the Project from a geotechnical standpoint. Based on the results of the Site investigations and estimates reported by BCI (2004), settlements of less than one-half inch were expected for a mat foundation 15 by 30 ft, 1 and 5 ft of embedment, and a bearing pressure of 2,500 pounds per square foot (psf). The BCI report also indicates that settlements were estimated to be less than 1 inch for a bearing pressure of 4,000 psf (same foundation dimensions and embedment) and that differential settlements should be less than 0.1-percent slope for a bearing pressure of 4,000 psf and 5 ft of foundation embedment.

Lightly loaded structures could be supported on shallow foundations established in structural fill. Paving for access roads or parking areas could also be supported by structural fill. Heavily loaded structures may have to be supported on deep foundations such as piles or drilled shafts.

2.3.2 SUBSURFACE HYDROLOGY

2.3.2.1 Subsurface Hydrologic Data for the Site Aquifers

There are three major components to the subsurface hydrogeologic framework of southern Florida: the unconfined surficial aquifer; the confined Floridan Aquifer System (FAS); and the nearly impermeable sediments of the Hawthorn Group, which separate the two aquifer units.

Surficial Aquifer System

The uppermost part of the Surficial Aquifer System (SAS) is primarily composed of unconsolidated sand and marl, with localized lenses of shell and limestone. Previous studies indicate that these sediments are part of the Fort Thompson Formation and Pamlico Sand deposited during the Pleistocene Epoch (Miller, 1988). The surficial aquifer system in the vicinity of the Site is about 200 ft thick. Sixteen slug tests were conducted at the Site in the vicinity of the power block (Golder, 2002). The tests were conducted at three locations and two depth intervals (10 to 20 ft-bgs and 45 to 50 ft-bgs). The measured hydraulic conductivities in the shallow interval ranged from 43.2 to 172.8 feet per day (ft/day), with an average value of 91.8 ft/day and a geometric mean value of

76.1 ft/day (n=9). The measured hydraulic conductivities in the deeper interval ranged from 11.5 to 126.7 ft/day, with an average value of 62.9 ft/day and a geometric mean value of 27.6 ft/day (n=7).

Intermediate Confining Beds

The Intermediate Confining Beds are present throughout the County and consist of clay-rich, fine-grained deposits of the Hawthorn Group. The clay-rich lithologies form a confining unit that separates the Surficial Aquifer System from the deeper artesian Floridan Aquifer System. The Intermediate Confining Unit (IUC) is approximately 600 ft thick at the Site and extends to approximately 800 ft-bgs. The calibrated groundwater flow model developed by Lukasiewicz (1992) used a vertical hydraulic conductivity of 3.1×10^{-4} ft/day for the IUC. This would equate to a leakance coefficient of 0.5×10^{-6} feet per day per foot (ft/day/ft), for a 600-ft-thick IUC. The calibrated groundwater flow model developed by Sepulveda (2002) suggests a range for the leakance coefficient of from 10^{-6} to 10^{-5} ft/day/ft.

2.3.2.2 Floridan Aquifer

The Floridan Aquifer System (FAS) in the vicinity of the Site consists of the Upper Floridan Aquifer (UFA), middle confining unit, and Lower Floridan Aquifer (LFA) and ranges in age from Paleocene to Oligocene. Included at its top is part of a lowermost Hawthorn Group unit referred to as the basal Hawthorn unit. The thickness of this basal unit is variable, ranging from about 30 to 355 ft; areas where this unit is thick were paleotopographic lows during deposition of the unit. The uppermost permeable zones in the UFA occur in close association with an unconformity at the base of the Hawthorn Group; however, the highest of these zones can be up in the basal unit. A dolomite unit of Eocene age generally marks the top of the LFA, but the top of this dolomite unit has a considerable altitude range: from about 1,200 to 2,300 feet below sea level (ft-bsl). Additionally, where the dolomite unit is thick, its top is high and the middle confining unit of the FAS, as normally defined, probably is not present.

Based on an aquifer test from Lake Lytal Park, which is located approximately 17 miles east of the Site, the transmissivity and storage coefficient for the UFA are 34,400 square feet per day (ft²/day) and .0036 (unitless), respectively (Lukasiewicz, *et al.*, 2001). The calibrated model developed by Lukasiewicz (1992) suggests UFA transmissivities of 100,000 ft²/day to 200,000 ft²/day in north-central Palm Beach County and a storage coefficient of 0.004. The model developed by Sepulveda (2002) used transmissivities of 50,000 to 100,000 ft²/day in the UFA.

An upper zone of brackish water and a lower zone of water with salinity similar to that of seawater (saline-water zone) are present in the LFA. The brackish-water and saline-water zones are separated by a transition zone (typically 100 to 200 ft thick) in which salinity rapidly increases with depth. The transition zone has been defined by using a salinity of 10,000 milligrams per liter (mg/L) of dissolved-solids concentration (about 5,240 mg/L of chloride concentration) at its top and 35,000 mg/L of dissolved-solids concentration (about 18,900 mg/L of chloride concentration) at its base. The base of the brackish-water zone and the top of the saline-water zone were approximately determined mostly by means of resistivity geophysical logs. The base of the brackish-water zone ranges from about 1,600 ft-bsl near the coast to almost 2,200 ft-bsl in extreme southwestern Palm Beach County. In an area that is peripheral to Lake Okeechobee, the boundary rises to perhaps as shallow as 1,800 ft-bsl. In the area of the Site, the base of the brackish-water zone is approximately 1,900 to 2,000 ft NGVD (Reese and Memberg, 2000).

In an upper interval of the brackish-water zone within the UFA, chloride concentrations range from 490 to 8,000 mg/L. Chloride concentration correlates with the altitude of the basal contact of the Hawthorn Group, with concentration increasing as the altitude of this contact decreases. Several areas of anomalous salinity where chloride concentration in this upper interval is greater than 3,000 mg/L occur near the coast. In most of these areas, salinity was found to decrease with depth from the upper interval to a lower interval within the brackish-water zone: a reversal of the normal salinity trend within the zone. These areas are also characterized by an anomalously low altitude of the base of the brackish-water zone, and a much greater thickness of the transition zone than normal. These anomalies could be the result of seawater preferentially invading zones of higher permeability in the UFA during Pleistocene high stands of sea level and incomplete flushing of this high salinity water by the present-day flow system.

Boulder Zone

The deeply buried zone of cavernous permeability, called the Boulder Zone, is developed in fractured dolomite in the LFA and underlies most of southern Florida. The top of the Boulder Zone is irregular and has been identified as shallow as about 2,000 ft-bsl and as deep as about 3,400 ft-bsl. At the Site, it is approximately 2,800 ft-bsl. The permeability of the Boulder Zone is extremely high because of its cavernous nature; transmissivity is approximately 10^7 ft²/day (Reese and Memberg, 2000). This anomalous permeability, which prevents pressure buildup in injection wells, coupled with the fact that the Boulder Zone contains saltwater, makes it a commonly used zone for receiving

injected waste waters. The Boulder Zone is overlain by between 500 to 1,000 ft of low-permeability limestone and dolomite, which retard the upward movement of injected fluids to shallower parts of the FAS that contain water that is less saline, although still brackish.

2.3.2.3 Karst Hydrogeology

Karst terrains develop in areas underlain by carbonate rocks such as limestone. They often have drainage systems that are reflected on the surface as sinkholes, springs, disappearing streams, or even caves (<http://www.dep.state.fl.us/geology/geologictopics/sinkhole.htm>).

According to Map Series No. 10, Sinkhole Type, Development, and Distribution in Florida, (William C. Sinclair and J.W. Stewart, USGS), the Site is located in Area II, where the cover is reported to be 30 to 200 ft thick. In these areas, sinkholes are reported to be few, shallow, of small diameter, and develop gradually. Furthermore, within the prior borings drilled at the Site, indicators of karst geology such as voids or loss of circulation, were not encountered.

2.3.3 SITE WATER BUDGET AND AREA USERS

2.3.3.1 Site Water Budget

Climate and Meteorology

The Site is located in south-central peninsular Florida, which has a climate characterized as mild subtropical. Temperatures in the vicinity (measured at Loxahatchee, Florida) range from an average low of about 51.6 degrees Fahrenheit (°F) in January, to an average high of about 91.6°F in August, with an annual average of about 73.1°F. The highest temperature recorded was 103°F and the lowest was 24°F at Loxahatchee.

As shown in Table 2.3.3-1, the mean total annual rainfall in Loxahatchee, Florida, is 62.64 inches; with mean monthly totals ranging from 2.33 to 9.40 inches. Generally, the period of the year with the heaviest rainfall is from June to October.

Mean total annual evaporation at Structure S5A, as shown in Table 2.3.3-1, is 61.95 inches, with mean monthly totals ranging from 3.13 to 6.98 inches (SFWMD, DBHYDRO; 2005).

Groundwater Resources

The two major aquifers in Palm Beach County are recharged by separate sources. The shallow aquifer, from the ground surface to -180 ft-msl, is primarily supplied by rainfall in Palm Beach County. A small amount of recharge to the shallow aquifer results from seepage of water used for agricultural irrigation. The Upper Floridan (artesian) Aquifer, -750 to -1,350 ft-msl at the Site, is supplied by rainfall in the topographically high areas centered in Polk and Pasco Counties. A very small amount of water flow (i.e., about 1 inch per year) recharges the surficial aquifer from the Floridan aquifer due to the artesian pressures in the Floridan aquifer.

Surface Water Resources

The Site is located approximately 20 miles east of the southern end of Lake Okeechobee and approximately 20 miles west of the Atlantic Ocean. Lake Okeechobee, which covers an area of about 740 mi², is connected ultimately to the Atlantic Ocean and the Gulf of Mexico by numerous canals including the West Palm Beach Canal.

Other surface waters in the vicinity of the Site include: the L-8 Canal, which is located east of the Site; the Cross Canal (L-13) that connects the Hillsboro and the West Palm Beach Canals; the West Palm Beach Canal (C-51); and Water Conservation Area 1. There are no surface water bodies located on the Site.

Groundwater/Surface Water Interactions

There is a complex hydrologic interaction between the surficial aquifer system and the extensive network of water supply and drainage canals in southeast Florida. These canals, levees, pumps, and water control structures were constructed by the U.S. Army Corps of Engineers (USACE) as part of the Central and South Florida Flood Control Project; they are currently operated by the SFWMD. The FAS is confined by more than 600 ft of low-permeability sediments. Therefore, there is very little interaction between the Floridan and the surficial aquifers. The upward recharge of the surficial aquifer from the FAS is approximately 1 inch per year.

2.3.3.2 Area Users

Surface water and groundwater use in the vicinity of the Site is regulated by SFWMD. Information gathered from SFWMD was used to prepare the following summary of water uses near the Site.



Figure 2.3.3-1 and Table 2.3.3-2 show the surface and groundwater uses within 5 miles of the Site, most of which are for agricultural irrigation and industrial purposes. Sources of water used for these purposes include Canals L10 and L12, the shallow water aquifer, and the Floridan aquifer. SFWMD provided the permit data. The known potable water wells located within 5 miles of the Site are shown in Figure 2.3.3-1. The closest well using water from the UFA is approximately 15 miles from the Site.

2.3.4 SURFICIAL HYDROLOGY

2.3.4.1 Hydrologic Characterization

Prominent surface water drainage features near the Site include Lake Okeechobee, the L10/L12 Canal, the S5A Pump Station, the L8 Canal, the C51 (West Palm Beach) Canal, and Water Conservation Area 1.

According to an agreement with the SFWMD, PBA mining activities will create a water storage reservoir east of the Site. PBA will mine down to an elevation sufficient to provide the water volume desired by SFWMD. The SFWMD L-8 Reservoir, when complete, will extend eastward to the L-8 Canal, and will pump water from and to the L-8 Canal.

An Environmental Resource Permit (ERP) from SFWMD (Permit No. 52-00281-S), which includes the Site, was issued to PBA on January 15, 2004. The original permit (issued on July 8, 1976) included the operation of a water management system serving 2,303 acres of agricultural lands by internal ditches. One 18,000-gpm pump and one 25,000-gpm pump were permitted to discharge into the L12 Canal through a FDOT box culvert located 4,700 ft west of the L8 Canal.

The latest modification to the PBA ERP is for the construction and operation of 1,007 additional acres of adjacent property. The overall surface water management system has been designed to retain all runoff onsite for a design 100-year storm event.

2.3.4.2 Streamflow Data

The L10/L12 Canal is the nearest major surface water to the Site and is designated by the State of Florida as a Class III water. It runs southeast from Lake Okeechobee and connects to Water Conservation Area 1 and the C51 Canal near Pump Station S5A, which is located less than 1 mile southeast of the Site. Based on USGS data from Station No. 02278450, the average flow for the

L10/L12 Canal for the period of record from 1957 to 2003 was approximately 409 cubic feet per second (cfs). Maximum flows in the Canal exceeded 4,000 cfs. Table 2.3.4-1 shows the mean monthly discharge in the L10/L12 Canal for the period of record. The canal system is managed by the SFWMD to provide water supply, flood control, and environmental protection. Because the L10/L12 Canal is part of the SFWMD system, the District manages flow and water levels in the canal 1) by releasing water from Lake Okeechobee, 2) by water control structures on the West Palm Beach Canal, and 3) by pumping at the S5A pump station. Consequently, about 40 percent of the time, the flow in the L10/L12 Canal is zero or negative (i.e., the flow is west toward Lake Okeechobee).

The L-8 Canal, which is a Class III water, also originates in Lake Okeechobee and flows southeast to control structure 5A at the West Palm Beach Canal. East of the Site, the L8 Canal runs in a north-south direction. Table 2.3.4-1 shows the mean monthly discharge in the L8 Canal, for the period of record, at USGS Station No. 02278550.

2.3.4.3 Water Quality

Extensive water quality analyses are available from SFWMD for samples taken at Pump Station S5A. In addition, samples were recently taken from the L10/L12 Canal near S5A. Table 2.3.4-2 presents the historical water quality data available from SFWMD for the L10/L12 Canal from December 1998 through November 2003. Table 2.3.4-3 presents most recent water quality data from SFWMD for the L10/L12 Canal taken near the proposed intake location, and the analytical results of three samples obtained from the proposed intake location on the L10/L12 Canal. The cooling tower will receive makeup water from the L10/L12 Canal. Consequently, the parameter concentrations in the cooling tower will be similar to the average quality in the L10/L12 Canal, though somewhat more concentrated primarily due to evaporation.

2.3.5 VEGETATION/LAND USE

A vegetation/land use survey of the Site and surrounding areas was completed in January 2005 utilizing the Florida Land Use, Cover and Forms Classification System (FLUCFCS) (FDOT, 1999). The resulting vegetation/land use map of the Site is found in Figure 2.3.5-1. Vegetative communities in and adjacent to the Site are discussed in detail in Subsection 2.3.6.1.



Vegetation/land use within the 220-acre Site consists solely of cleared open land (FLUCFCS Code 190). The surrounding vicinity includes improved pasture (FLUCFCS Code 211), the existing Corbett substation (FLUCFCS Code 831), canals (FLUCFCS Code 510), ditches (FLUCFCS Code 511), Brazilian pepper (FLUCFCS Code 422), and herbaceous wetlands (FLUCFCS Code 641). The Site was previously utilized for mining, is currently devoid of vegetation, and has been covered with fill material to an elevation approximately 15 ft above the surrounding area (approximately 23 ft NGVD).

The Power Blocks will occupy approximately 41 acres, and an additional 138 acres is available to be used for temporary construction laydown, parking, and trailers. Approximately 34 acres will be used for the permanent stormwater retention ponds. Of the overall 220-acre Site, approximately 40 acres will be unaffected by the development of all three combined cycle units, constituting the ultimate site capacity.

2.3.6 ECOLOGY

2.3.6.1 Species-Environmental Relationships

The following subsections include descriptions of important flora and fauna within the Site and the surrounding vicinity. This discussion includes information related to the abundance of important species found and the value of the habitats present. Representative photographs of vegetative communities within the Site and vicinity are found in Appendix 10.5.1.

Terrestrial Ecology Systems—Flora

The following descriptions of the flora and fauna at or near the site follow the FLUCFCS-Level III codes.

Open Land (FLUCFCS Code 190)

The entire Site has been cleared of vegetation during historical agricultural and mining activities, graded, and filled to an elevation of approximately 23 ft NGVD with clean shelly sand fill (Appendix 10.5.1 – Photographs 1 and 2). No vegetative communities have become established on the cleared Site. Almost the entire Site is classified as Open Land.

Vegetative Communities Adjacent to the Site

Outside of the Site, the surrounding vicinity includes improved pasture (FLUCFCS Code 211), the existing FPL Corbett Substation (FLUCFCS Code 831), canals (FLUCFCS Code 510), ditches (FLUCFCS Code 511), Brazilian pepper (FLUCFCS Code 422), and herbaceous wetlands (FLUCFCS Code 641). Dominant species and quality of each vegetative community/land use type are described below. Beyond the immediate vicinity of the Project, the dominant land use is agriculture, specifically sugar cane.

Improved Pasture (FLUCFCS 211)

Improved pasture is located to the west of the Site, within the transmission line right-of-way (ROW) (Appendix 10.5.1, Photograph 3). Portions of the pasture are actively utilized for cattle grazing. The vegetation is dominated by bahia grass (*Paspalum notatum*), Bermuda grass (*Cynodon dactylon*), with occasional Brazilian pepper (*Schinus terebinthifolius*) and agricultural weeds, including ragweed (*Ambrosia artemisiifolia*) and shrubby false buttonweed (*Spermacoce verticillata*).

Canals (FLUCFCS 510)

The SFWMD L-10/L-12 canal is located immediately south of State Road 80 (Appendix 10.5.1, Photograph 4). Vegetation along the banks of the canal include cabbage palm (*Sabal palmetto*), Brazilian pepper, elderberry (*Sambucus canadensis*), torpedo grass (*Panicum repens*), and common reed (*Phragmites australis*).

Ditches (FLUCFCS 511)

Man-made drainage ditches are found on the western boundary of the filled Site (Appendix 10.5.1, Photograph 5) and within the cattle pasture located within the transmission line ROW west of the substation access road (Appendix 10.5.1, Photograph 6).

Vegetation occurring in these areas include Brazilian pepper, leather fern (*Acrostichum danaeifolium*), sedges (*Cyperus* spp.), common reed, elderberry, cabbage palm, maidenhair sedge (*Eleocharis* sp.), paragrass (*Urochloa mutica*), primrose willow (*Ludwigia peruviana* and *L. octovalvis*), and maidencane (*Panicum hemitomon*).

Brazilian Pepper (FLUCFCS 422)

The disturbed area between the filled Site and the FPL Corbett Substation access road contains the exotic invasive species Brazilian pepper (Appendix 10.5.1, Photograph 7), as well as a variety of weedy species including ragweed, shrubby false buttonweed, dogfennel (*Eupatorium capillifolium*), groundsel tree (*Baccharis halimifolia*), sandmat (*Chamaesyce* sp.), Juba's bush (*Iresine diffusa*), and beggarticks (*Bidens alba*).

Herbaceous Wetland (FLUCFCS 641)

Disturbed, low-quality herbaceous wetland areas are found between the filled Site and the FPL Corbett Substation access road (Appendix 10.5.1, Photograph 8). Although no standing water was present and soils are disturbed, these areas support wetland vegetation dominated by common reed, elderberry, maidencane, and primrose willow, with subdominant species including cattail (*Typha latifolia*), leather fern, Brazilian pepper, climbing hempvine (*Mikania scandens*), and bushy bluestem (*Andropogon glomeratus*).

Electrical Utilities (FLKUCFCS 831)

The existing FPL Corbett Substation is located north of the Site and includes transformers and switch gear for the 230- and 500-kV transmission systems.

Terrestrial Ecology Systems—Fauna

The wildlife habitat within the Site has been severely altered by past agricultural, mining excavation and filling activities. Vegetation within the Site has been cleared and the entire Site covered with fill material to an elevation of approximately 23 ft and about 15 ft above the surrounding vicinity, which does not provide suitable habitat for wildlife. Vegetative communities in the vicinity of the Site are also disturbed and do not provide quality wildlife habitat. Species observed within the vicinity of the Site are described below.

Common avian species were observed within the improved pasture and Brazilian pepper area west of the Site. These include cattle egret, eastern meadowlark (*Sturnella magna*), killdeer (*Charadrius vociferous*), yellow-rumped warbler (*Dendroica coronata*), and mourning dove (*Zenaida macroura*). Ditches associated with the improved pasture area, while containing no canopy component, still do provide foraging areas for wading birds. Species observed on the banks of these man-made ditches include little blue heron (*Egretta caerulea*) and great blue heron (*Ardea herodias*). Although not

observed during the field reconnaissance, it is expected that the L10/L12 Canal is utilized by wading birds for foraging and also provides habitat for the American alligator (*Alligator mississippiensis*).

Threatened and Endangered Species—Flora and Fauna

Plant and animal species designated by the U.S. Fish and Wildlife Service (USFWS), the Florida Fish and Wildlife Conservation Commission (FWCC), and the Florida Department of Agriculture and Consumer Services (FDACS) as endangered, threatened, species of special concern, commercially exploited, or under review, were included in this category.

No threatened or endangered species were observed or are expected to utilize the cleared and filled Site. A number of wetland dependent animal species (e.g., wading birds) have the potential to use the drainage ditches and canals in the vicinity of the Site for resting and feeding. These species are common to the area and use other similar habitats that are found throughout the surrounding region.

Threatened and Endangered Species—Methodology

Prior to the field surveys, literature and agency surveys were undertaken to determine the species that could potentially be present in the habitats found on the Site. Primary sources of information are the Florida Natural Areas Inventory (FNAI) database (1997); Florida Committee on Rare and Endangered Plants and Animals (FCREPA) reports; Preservation of Native Flora of Florida Law, Rule Chapter 5B-40, F.A.C.; the Regulated Plant Index (5B-40.0055); and Notes on Florida's Endangered and Threatened Plants, FDACS, Division of Plant Industry, Bureau of Entomology, Nematology and Plant Pathology - Botany Section, Contribution No. 38, Addition 2, Gainesville. In addition, previous reports of surveys conducted in and near the Site were reviewed.

Plant and Animal Surveys

Because of the rareness and seasonality of threatened and endangered species, either multiseason surveys or an evaluation of threatened and endangered species habitat conditions are necessary to determine their presence or absence on the Site. For this study, an evaluation of the habitat conditions was used to determine the presence or absence of threatened and endangered species. Based on the literature review, federally and state listed species whose ranges include the Site were identified.

Flora—Threatened, endangered, and/or plant species of special concern that occur within Palm Beach County are listed in Table 2.3.6-1. Due to the impacted nature of the Site, no suitable habitat for listed plant species exists within the Site. The FNAI database review did not result in any occurrences of listed plant species in the vicinity of the Site.

Fauna—Threatened, endangered, and/or animal species of special concern that occur within Palm Beach County are listed in Table 2.3.6-1. No unique habitats for threatened and endangered species occur on the Site. The surrounding improved pasture and associated ditches provide low-quality, but suitable habitat for wading birds, including the little blue heron, which is not listed federally by the USFWS but is classified as a species of special concern by the FFWCC. In addition to the little blue heron, it is likely that other wading birds classified by the State as species of special concern may occasionally utilize the pasture ditches and canal to forage, including the white ibis (*Eudocimus alba*), snowy egret (*Egretta thula*), and tricolor heron (*Egretta tricolor*). The L10/L12 Canal provides suitable habitat for the American alligator, classified by the FFWCC as a species of special concern and classified as threatened by the USFWS due to similarity in appearance with the federally endangered American crocodile (*Crocodylus acutus*).

The FNAI database review did not result in any occurrences of listed animal species at the Site. However, several documented occurrences of listed species were noted in the vicinity of the Site. The closest documented occurrence of listed species according to the FNAI database is approximately 3 miles to the west on the north side of State Road 80, where a colony of wading birds was identified by the FFWCC Breeding Bird Atlas Project during 1986-1991. The Project will not adversely impact any listed species in the vicinity of the Site.

2.3.6.2 Pre-Existing Stresses

Terrestrial Systems

The greatest pre-existing stress to terrestrial systems of the Site and surrounding area is the result of past agricultural and mining activities. The natural topography, soils, and hydrology of the Site are extensively altered as a result of the addition of fill material and topographic grading. The natural ecosystems and wildlife habitat previously located at the Site have been lost, and natural drainage features have been modified.

Aquatic Systems

Aquatic systems in the vicinity of the Site are subjected to stress from numerous sources.

Pre-existing stresses include:

1. Channelization and dredging,
2. Water management practices for the L10/L12 Canal,
3. Agricultural development,
4. Mining, and
5. Highway construction and operation.

Historical agricultural and mining activities in the area have resulted in the loss of wetlands through ditching and dewatering.

2.3.6.3 Measurement Programs

Terrestrial Ecology

Terrestrial ecological resources were evaluated through Site reconnaissance, agency review, previous studies, and literature searches. Vegetative communities, wildlife utilization, and potential for threatened and endangered wildlife occurrence were addressed during the Site reconnaissance conducted in 2004 and 2005.

Threatened and Endangered Species—Methodology

Prior to the field surveys, literature and agency surveys were undertaken to determine the species that could potentially be present in the habitats found on the Site. Primary sources of information are the FNAI database, FCREPA reports, Preservation of Native Flora of Florida Law, Rule Chapter 5B-40, F.A.C., the Regulated Plant Index (5B-40.0055), and Notes on Florida's Endangered and Threatened Plants, FDACS.

Wetland Methodology

Three agencies, USACE, FDEP, and SWFMD have rules that apply to wetlands. To be jurisdictional, a wetland must ascribe to three characteristics defined by rule: presence of vegetation listed as belonging in wetlands, having a certain defined hydrology, and the presence of hydric soils. The applicable characteristics for wetland determination as prescribed by the regulatory agencies were used.

2.3.7 METEOROLOGICAL AND AMBIENT AIR QUALITY

2.3.7.1 Meteorology

Meteorological data collected at existing monitoring stations were used to describe the local and regional climatology in the vicinity of the proposed Site. The closest existing meteorological station to this proposed plant Site with complete data is the National Weather Service (NWS) station located at the Palm Beach International Airport, situated approximately 30 kilometers (km) (18 miles) east of the Site. The NWS has recorded weather observations for more than 50 years at this station. These data are the most complete for and representative of the region surrounding the Site. FDEP has approved the use of these meteorological data in previous air permit applications for this area.

The climate in the vicinity of the Site is subtropical with a marine influence from the Atlantic Ocean. The monthly and annual average temperatures for this area are presented in Table 2.3.7-1. The annual average temperature is approximately 75 degrees Fahrenheit (°F) with monthly average temperatures varying from a maximum of 90°F to a minimum of 57°F. Record extreme temperatures range from a low of 27°F to a record high of 101°F. During the summertime, temperatures rarely exceed 100°F due to the high relative humidity with subsequent cloud cover formation and the abundant convective-type (e.g., thunderstorms) precipitation.

The monthly and annual average precipitation data are presented in Table 2.3.7-2. Approximately 64 percent of the annual precipitation falls during the six warmest months, May through October. The average annual precipitation is approximately 61 inches, but this has varied from as little as 39 inches to more than 86 inches in the past 30 years. The majority of rain is in the form of short-lived convection showers (e.g., thunderstorms). Large amounts of rain are also produced during the late summer or fall when tropical storms or hurricanes may pass near the Site. These events may result in heavy downpours that reach torrential proportions; 24-hour amounts of from 6 to more than 10 inches are not uncommon.

Monthly and annual average relative humidities, which indicate the amount of moisture in the air at a given temperature, are presented in Table 2.3.7-2 for the morning hours of 1:00 a.m. and 7:00 a.m. and early afternoon and evening hours of 1:00 p.m. and 7:00 p.m. The highest humidities are coincident with the coolest ambient temperatures, which generally occur at 7:00 a.m., or near dawn. The lowest humidities coincide with the highest ambient temperatures.

Annual and seasonal windroses for the 5-year period from 1987 through 1991 are given in Figures 2.3.7-1 through 2.3.7-5. A summary of the seasonal and annual average wind direction and wind speed, including calm conditions, is presented in Table 2.3.7-3. As shown in these figures, the predominant winds during the year are from the east, with predominant winds from the northwest winds occurring during the winter months. The predominant easterly winds occur because the Site lies entirely within the trade wind belt (i.e., below 30 degrees N latitude). Also, because of the location of the Atlantic Ocean, the easterly winds are reinforced due to the moderate to strong late afternoon sea breezes that occur on days with strong land heating and produce localized onshore winds. The data for this period were also used in the air quality impact analyses.

Except during the passage of tropical storms or hurricanes, high wind speeds generally do not occur. During the winter and spring, there are usually a few days when wind speeds are greater than 20 to 30 miles per hour (mph).

Atmospheric stability is a measure of the atmosphere's capability to disperse pollutants and potentially reduce ground-level concentrations. During the daytime with strong solar heating, the atmosphere can disperse pollutants very quickly for a relatively short period of time. This condition is considered as very unstable and generally occurs infrequently during the year. During the nighttime under clear skies and light wind speeds, the atmosphere is considered stable with minimal potential to disperse pollutants. During the day or night when wind speeds are moderate to high, pollutants are dispersed at moderate rates (i.e., dispersion rates that are lesser than those during unstable conditions but greater than those during stable conditions). This condition is considered neutral and occurs frequently throughout the year. The seasonal and annual average occurrences of atmospheric stability classes for this area for 1987 to 1991 are shown in Table 2.3.7-4. During the summer months, unstable conditions occur nearly 28 percent of the time due to strong solar heating, whereas unstable stability occurs only 7 percent of the time in the winter months. Neutral stability occurs most frequently during the winter months due to the higher wind speeds that occur in this season. The occurrence of stable stability is nearly uniform throughout the year.

The mixing height is a parameter used to define the vertical height to which pollutants can disperse and, therefore, is used in estimating the volume of air in which pollutants are emitted and can be dispersed. In general, the higher the mixing height, the greater the potential for pollutants to be dispersed and for ground-level concentrations to be reduced.

The seasonal and annual average morning and afternoon mixing heights for this area for 1987 to 1991 determined using the Holzworth method are listed in Table 2.3.7-5. The highest afternoon mixing heights occur in the spring and the lowest morning mixing heights occur in winter.

Thunderstorms are the most frequent of severe storms, occurring an average of 79 days per year as reported by the NWS at Palm Beach International Airport. These storms occur throughout the year, but about 87 percent occur from May through October.

Hurricanes and tornadoes are other types of severe weather that can occur at the Site, but the probability of a hurricane or tornado passing over the Site is low.

In the 80-km (50-mile) coastal strip from West Palm Beach to Fort Lauderdale, there is about a 20-percent chance that a tropical storm will pass over the area during any given year (Gale Research Co., 1980). For storms of hurricane strength (i.e., wind speeds exceeding 73 mph), the chance decreases to about 16 percent with a 7-percent chance that the winds will be greater than 124 mph (i.e., wind speeds of a great hurricane).

Statistics compiled by the severe local storms branch of the national severe storms forecast center (Paulz, 1969) show that three tornadoes were spotted within the 1 degree latitude by 1 degree longitude square centered near the Site from 1955 to 1967. This averages less than one tornado per year. The tornado recurrence interval for any specific point location within the 1 degree square was estimated by the methodology of Thom (1963). The recurrence interval, r , is equal to $1/p$ where p is the probability of a tornado striking within the 1 square area and is estimated as follows:

$$p = (2.8209 \times t)/a$$

where: t = mean annual frequency of tornadoes occurring, and

a = area of the 1°square (mi²).

In this analysis, t was assumed to be 1.3 based on data collected from 1953 to 1962 and was estimated to be 4,240 mi². Therefore, the mean recurrence interval for a tornado striking a point within this square is more than 1,000 years. The month during which tornadoes occur most frequently is June.



2.3.7.2 Ambient Air Quality

Ambient Standards

The National and Florida Ambient Air Quality Standards (AAQS) are presented in Table 2.3.7-6. Primary National AAQS were promulgated to protect the public health, and secondary National AAQS were promulgated to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. Areas of the country in compliance with AAQS are designated as attainment areas. Pollutants for which AAQS have been established are referred to as criteria pollutants. These pollutants include particulate matter with an aerodynamic particle size of 10 micrometers (μm) or less (PM_{10}), sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and lead (Pb).

Palm Beach County is classified as an attainment area for all criteria pollutants (Rule 62-204.340, F.A.C.). Adjacent counties, such as Martin and Broward Counties, are also classified as attainment areas for all criteria pollutants.

On July 18, 1997 the U.S. Environmental Protection Agency (EPA) promulgated revisions to the National AAQS for O_3 and particulate matter (PM) (62 Federal Register No. 138). The O_3 standard was modified to be 0.08 parts per million (ppm) for an 8-hour average concentration. This standard is achieved when the 3-year average concentration of the 4th highest value is 0.08 ppm or less. The 1-hour average AAQS will no longer apply to an area 1 year after the effective date of the designation of that area for the 8-hour ozone AAQS. The effective date for most areas is June 15, 2004 [Federal Register, April 30, 2004 (69 FR 23996)].

The revised PM AAQS included two new $\text{PM}_{2.5}$ standards ($\text{PM}_{2.5}$ represents PM with an aerodynamic diameter of 2.5 μm or less); a short-term 24-hour average standard and an annual average standard. The $\text{PM}_{2.5}$ standards are based on a 3-year average of the 98th percentile of 24-hour average concentrations that must not exceed 65 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) (from population-orientated monitors) and a 3-year average of annual average concentrations that must not exceed 15 $\mu\text{g}/\text{m}^3$ (from a single or community-orientated monitor). A change to the form of compliance with the annual PM_{10} standard was proposed but the change has since been rescinded. The form of compliance for the annual standard remains in the form of an expected exceedance that must not be exceeded more than once per year averaged over 3 years.

The FDEP has not yet adopted the revised O₃ or PM_{2.5} AAQS. Based on evaluations performed by FDEP and EPA, Palm Beach County has been designated an attainment area for the revised O₃ AAQS [Federal Register, April 30, 2004 (69 FR 23996)] as well as an attainment area for the new PM_{2.5} AAQS [Federal Register, January 5, 2005 (70 FR 944)]. These standards must be implemented in the 2007 to 2008 timeframe with a revision to the State Implementation Plan.

In promulgating the 1977 Clean Air Act (CAA) Amendments, congress specified that certain increases above an air quality *baseline concentration* level of SO₂ and PM concentrations would constitute *significant deterioration* for sources located in attainment areas. The magnitudes of the allowable increases, or prevention of significant deterioration (PSD) increments, depend on the classification of the area in which a new source (or modification) will be located or have an impact. Three PSD increment classifications were designated based on criteria established in the 1977 CAA Amendments. Initially, Congress designated areas as either Class I (national 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 be allowed greater deterioration than Class II areas, were designated. EPA then promulgated as regulations the requirements for classifications and area designations.

On October 17, 1988, EPA promulgated regulations to prevent significant deterioration due to NO_x emissions and established PSD increments for NO₂ concentrations. The EPA class designations and allowable PSD increments are presented in Table 2.3.7-6. Florida has adopted the EPA allowable increments for PM₁₀, SO₂, and NO₂.

Palm Beach County is classified as a Class II area (Rule 62-204.340, F.A.C.) since it is an attainment area for all pollutants. The nearest Class I area to the Site is the Everglades National Park (ENP) located about 107 km (64 miles) to the south.

Existing Air Pollutant Sources

The Site is located in a rural area of Palm Beach County, which has a minimal number of air pollution sources. Existing major sources with SO₂, PM, or NO_x emissions greater than 100 tons per year (TPY) and within 25 km (16 miles) of the Site include Pratt & Whitney (United Technologies), Palm Beach Resource Recovery, Atlantic Sugar Association, and Osceola Farms. In general, other major air pollution sources are located more than 30 km (19 miles) from the Site.



Ambient Air Quality Data

Air monitoring data have been collected in Palm Beach County for more than 20 years. Air monitoring data currently are collected for SO₂, PM₁₀, NO₂, O₃, and CO. These data are generally representative of air quality for areas in the County with more industrial development than that around the proposed Site. Thus, the measured air quality data from these sites provide a conservative indication of air quality around the Site.

A summary of the maximum pollutant concentrations measured in Palm Beach County from 2001 through 2004 is presented in Table 2.3.7-7. These data indicate that the maximum air quality concentrations measured in the region are well below applicable standards.

2.3.7.3 Measurement Programs

All information (i.e., meteorology and air quality data) was compiled from offsite monitoring stations maintained and operated by FDEP or cooperating governmental agencies (i.e., NWS). No significant changes in these programs are anticipated after the construction of the West County Energy Center.

Meteorological data were obtained from the NWS surface and upper-air station at the Palm Beach International Airport. These data were obtained for a 5-year period from 1987 through 1991 from which the joint frequency of wind direction, wind speed, and atmospheric stability and a 5-year average of mixing heights were developed. Since 1986, the wind sensors at the Palm Beach International Airport have been located 33 ft above grade. Regular surface observations are taken just before each hour, 7 days per week. Upper-air soundings are conducted twice per day at 7:00 a.m. and 7:00 p.m., Eastern Standard Time.

A PSD preconstruction ambient air monitoring analysis was developed as part of the licensing planning to satisfy PSD requirements. Since the estimated increase in potential emissions due to the Project exceeds the significant emission rates for regulated pollutants, including SO₂, PM₁₀, NO_x, CO, and volatile organic compounds (VOCs), an ambient air monitoring analysis is required for these pollutants (O₃ in the case of VOC emissions). However, monitoring is not required since the facility's impacts of applicable pollutants are predicted to be below the *de minimis* impact levels for certain pollutants (e.g., CO). For those pollutants, an exemption from monitoring is provided for impacts less than *de minimis* impact levels [Rule 62-212.400(3)(e), F.A.C.].

Available monitoring data recently collected from regional monitoring sites were used to support the impact evaluation and are included in the Air Permit/PSD Application (Appendix 10.1.5).

2.3.8 NOISE

2.3.8.1 Background

Sound propagation involves three principal components: a noise source, a person or a group of people, and the transmission path. While two of these components, the noise source and the transmission path, are easily quantified (i.e., by direct measurements or through predictive calculations), the effect of noise on humans is the most difficult to determine due to the varying responses of humans to the same or similar noise patterns. The perception of sound (noise) by humans is very subjective, and just as for odors and taste, it is very difficult to predict a response from any particular individual to another.

The magnitude of noise levels or loudness 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:

$$\text{SPL} = 20 \log_{10} (P_e/P_o)$$

where: P_e = measured effective pressure of sound wave in micropascals (μPa), and

P_o = reference effective pressure of 20 pascals (Pa).

To account for the effect of how the human ear perceives sound pressure, at moderate to low levels, SPLs are adjusted for frequency (or pitch). One of the most commonly used frequency filters is the 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 State of Florida noise regulations that are applicable for the construction and operation to the proposed Project. There are noise standards in the Palm Beach County Land Development Code (Article 5, Chapter E, Section 3, Subsection B) that prohibit noise levels from any source of sound above specified sound level limits. These noise standards apply to residential and commercial lands that receive the noise and are specified based on whether the receiving land use is in the Rural Service Area (RSA) or Urban Service Area (USA); the Site is located in the RSA of Palm Beach County. For residential land uses in the RSA and USA, the sound level limit is 60 dBA when the noise source is fixed mechanical equipment. Other sound sources impacting residential receiving

land in the RSA are limited to 55 dBA between 7 a.m. and 8 p.m., and 50 dBA from 8 p.m. to 7 a.m. For commercial land uses in the USA and RSA, the sound level limit is 70 dBA. These sound level limits are exceeded if measurements exceed the specified value for more than 10 percent of the measurement period, which shall not be less than 10 minutes. Measurements must be measured within the boundary of the receiving land use by a Type 2 or equivalent sound level meter. The maximum sound levels apply to the source of the sound.

2.3.8.2 Noise Measurement Procedures

Ambient noise monitoring was performed in August 2001 and December 2004 to assess the existing ambient noise levels in the Site and its vicinity. The noise monitoring conducted in August 2001 was for the initial planning of an electric generating power facility at the Site. The noise monitoring conducted in December 2004 was performed to obtain noise measurements at similar locations as the earlier study. Together, these noise measurements provide information on the baseline noise levels in the area during both the daytime and nighttime periods. The equipment used to monitor the baseline noise levels operated in the slow response mode to obtain accurate, integrated, A-weighted sound pressure levels. A windscreen was used because all measurements were taken outdoors. The microphone was positioned so that a random incidence response, as specified by the American National Standard Institute (ANSI), was achieved. The sound level meter and octave band analyzer were calibrated immediately prior to and just after the sampling period to provide a quality control check of the sound level meter's operation during monitoring.

Integrated SPL data consisting of the following noise parameters were collected at each location:

- L_{eq} The sound pressure level averaged over the measurement period; this parameter is the continuous steady sound pressure level that would have the same total acoustic energy as the real fluctuating noise over the same time period.
- L_{90} The sound level exceeded 90 percent of the time during the monitoring period.
- L_{10} The sound level exceeded 10 percent of the time during the monitoring period.

The SPL data were analyzed and reported in both dB and dBA. The louder the sound, the higher the decibel value.

The SPL averages were calculated using the following formula:

$$\text{Average SPL} = 10 \log \frac{\sum_{i=1}^N 10^{(\text{SPL}_i/10)}}{N}$$

where: N = number of observations.

SPL_i = individual sound pressure level in data set.

The SPLs and octave band data were collected during each monitoring event, using measurement techniques set forth by American National Standards Institute (ANSI) S12.9-1993/Part 3, 1993).

The noise monitoring equipment used during the study included:

1. Continuous Noise Monitoring Equipment
 - a. Larson Davis Model 824 Precision Integrating Sound Level Meter with Real Time Frequency Analyzer
 - b. Larson Davis Model PRM902 Microphone Preamplifier
 - c. Larson Davis Model 2560 Prepolarized ½-inch Condenser Microphone
 - d. Windscreen, tripod, and various cables
2. Sound Level Meter Calibration Unit
 - a. Larson Davis Model CAL200 Sound Level Calibrator, 94/114 dB at 1,000 Hz.

Monitoring was conducted using the sound level meter mounted on a tripod at a height of 1.2 meters [(m) 4 ft] above grade. Local meteorological conditions (wind speed, wind direction, temperature, and relative humidity) were measured during the monitoring periods. The operator recorded detailed field notes during monitoring and included major noise sources in the area. The Larson Davis sound level meter complies with Type I--Precision requirements set forth for sound level meters and for one-third octave filters.

2.3.8.3 Noise Monitoring Locations

The SPLs and octave band data were collected at four locations within the Site and two locations offsite. The four onsite monitoring locations (Noise Monitoring Locations 1, 2, 3, and 4) were selected to delineate the noise levels at or near the proposed Project's Power Block boundary. Noise Monitoring Location 5 is east of the northern portion of the Site on Canal L8. This site is located along Canal L8 and adjacent to the closest residential community. Monitoring Location 6 was

located south of the Site on the right-of-way for State Road 80. Noise monitoring was performed at the six sites during the daytime and nighttime.

2.3.8.4 Existing Ambient Sound Pressure Level Conditions

The L_{eq} (equivalent sound pressure level averaged for the sampling period), as well as the L_{90} and L_{10} , during each monitoring event at each location are presented in Table 2.3.8-1. Figure 2.3.8-1 presents the location of the monitoring locations. Charts of the octave band measurements and noise levels as a function of time are provided in Appendix 10.5.2 along with the calibration certificates for the monitoring equipment.

The daytime and nighttime ambient noise levels, measured as L_{eq} , L_{90} , and L_{10} for each of the monitoring sites are summarized in Table 2.3.8-1. The L_{eq} noise levels for the onsite monitoring locations ranged from 44.1 to 48.5 dBA. The highest L_{eq} noise level of 48.5 dBA was observed in December 2004 and was a result of truck traffic along a non-paved road constructed along the eastern boundary of the Site. This road was not present when the 2001 noise measurements were obtained. The daytime L_{eq} observed at Noise Monitoring Location 5 was 44.1 dBA in 2001 and 54.8 dBA in 2004. The latter was also a result of truck traffic at a weighting station for the PBA operations. The L_{eq} noise levels along State Road 80 were 73.1 dBA and reflect traffic along the four-lane divided highway. The onsite nighttime L_{eq} noise levels ranged from 41.7 to 48.3 dBA. The observed L_{eq} at Noise Monitoring Location 5 was 44.1 dBA. The 24-hour L_{eq} noise level observed at Noise Monitoring Location 4 was 52.8 dBA.

The L_{eq} noise levels reflect the total noise energy over the monitoring periods at each location. As a result, loud transient noises such as noise from traffic, aircraft, gunshots, and barking dogs all influence the observed values. The more persistent the transient loud noises the higher the L_{eq} noise levels. For this reason, a more appropriate indicator of background noise levels is the L_{90} , which is the noise level exceeded 90 percent of the time. Transient noise is generally excluded unless almost continuous, as along a heavily traveled highway. The L_{90} noise levels for the onsite monitoring locations ranged from 39.7 to 45.3 dBA. The daytime L_{90} at Monitoring Location 5 were 42.7 dBA in 2001 and 45.3 dBA in 2004. The L_{90} noise levels along State Road 80 were 69.5 dBA and reflect almost continuous traffic. The onsite nighttime L_{90} noise levels ranged from 39.9 to 46.2 dBA. The nighttime L_{90} noise level observed at Monitoring Location 5 was 49.9 dBA and due primarily to

noise from frogs and insects along the adjacent L-8 Canal. The 24-hour L_{90} noise level measured onsite was 42.8 dBA.

The results of the noise monitoring indicated that there are transient sounds influencing the observed sound pressure levels in the vicinity of Site 5, which is the monitoring site nearest the residential area northeast of the Site. The L_{90} observed in 2001 better reflects a background noise level than that observed in 2004. In 2004, heavy truck traffic and mining activities were occurring during the measurement period and resulted in a L_{90} of 52.6 dBA. In contrast, the observed L_{90} in 2001 was 42.8 or almost 10 dBA lower than that observed in 2004. For this reason, the daytime background used in the noise impact analyses was 42.8 dBA. As mentioned previously, the observed L_{90} for nighttime was heavily influenced by insects and frogs. This influence can be observed in the frequency spectrum obtained during monitoring and resulted in an L_{90} of 49.9 dBA or about 7 dBA higher than the daytime. Sound pressure levels in the octave ranges of 800, 1,000, and 1,250 hertz represent noise from frogs, while noise in the octave ranges from 2,500 to 6,300 hertz represent noise from insects (see Appendix 10.5.3 for Octave Band Spectra). Indeed, the sound pressure levels in these frequency bands during the daytime were much lower. To better represent a background noise level without transient noises, the sound pressure levels in the octave bands influenced by frogs and insects were made equal to the daytime observations. The background noise level in dBA was then recalculated without these transient noises. The resulting nighttime L_{90} is 40 dBA, which is generally more representative of nighttime conditions in a primarily rural area. A nighttime background of 40 dBA was used in the noise impact analyses.

Table 2.3.3-1. Mean Monthly Temperature, Precipitation, and Evaporation

Month	Temperature ¹ (1948-1988)	Precipitation ¹ (1948-1988)	Evaporation ¹ (1957-2004)
January	63.9	2.48	3.35
February	65.0	2.57	3.84
March	68.3	3.20	5.58
April	71.6	2.94	6.60
May	76.0	5.65	6.98
June	79.4	9.40	6.27
July	80.8	7.77	6.36
August	81.2	7.30	6.23
September	80.1	9.35	5.22
October	76.0	6.49	4.71
November	70.1	3.14	3.69
December	65.5	2.33	3.13
Annual	73.1	5.22	61.95

Notes: ¹ Loxahatchee monitoring station is approximately 5 miles east of the Site.

Source: SFWMD, 2005.

Table 2.3.3-2. Existing Water Use Permits Within 5 Miles of FPL West County Energy Center

(Page 1 of 4)

SFWMD Permit No.	Project Name	Source	Use	Location(s)
50-00021-W	Seminole Water Control District	SFWMD Canal (C-51)	Agricultural	S34-36/T42/R40
				S1-4,11,12/T43/R40
				S4-9/T43/R41
50-00072-W	West Side Farms	SFWMD Canal (L-12)	Agricultural	S25,36 /T43/R39
				S19,20,29-31/T43/R40
50-00143-W	Sucrose Growers	SFWMD Canal (C-51)	Agricultural	S32-34/T43/R43
				S3-5,9,10,15/T44/R40
50-00161-W	New Hope Sugar Company	SFWMD Canal (L-12)	Agricultural	S2,11-15,22-27,36/T43/R39
				S18,31/T43/R39
50-00281-W	L-8 Division	SFWMD Canal (L-12)	Agricultural	S8,16-21,28-32/T43/R40
				S31/T43/R40
50-00307-W	Brida-Nordine-Resmondo Farm	SFWMD Canal (L-12)	Agricultural	S1,2/T44/R39
				S6/T44/R40
				S35,36/T43/R40
50-00324-W	Green Pepper Farms, Inc	SFWMD Canal (C-51)	Agricultural	S1,2,11,12/T44/R40
				S25,36/T43/R40
50-00372-W	Conrad Farms, Inc	SFWMD Canal (C-51)	Agricultural	S25,36/T43/R40
50-00374-W	Chimp Management Facility	SFWMD Canal (C-51)	Industrial	S23/T43/R40
	Lion Country Safari	Surficial Aquifer System	Landscape	S13-15,22-24/T43/R40
50-00458-W	Diamond C Sugar Company	SFWMD Canal (C-51)	Agricultural	S34,35/T43/R40
				S2,3,10-15,22-25/T44/R40
50-00548-W	Acme Improvement District	On-Site Lake(S) SFWMD Canal (C-51)	Diversion and Impoundment	S36/T43/R40
				S31-35/T43/R41
				S1,12,25/T44/R40
				S2-23,25-34/T44/R41
50-00566-W	Seminole Ranch	SFWMD Canal (L-8)	Agricultural	S36/T42/R39
				S31/T42/R40
				S1/T43/R39
				S5-8,16-18/T43/R40
50-00574-W	Palm Beach Aggregates	SFWMD Canal (C-51)	Agricultural	S27,28,33,34/T43/R40
	Double D Division			S21,22,27-29,32-34/T43/R40
50-00894-W	Leonard Land Company	SFWMD Canal (C-51)	Agricultural	S22,26,27,34,35/T43/R40
50-00913-W	Green Pepper Farms, Inc	Canal	Agricultural	S24/T43/R40
				S19/T43/R41
50-01207-W	Deer Run Iii-White Fences	SFWMD Canal (L-8)	Agricultural	S15,16/T43/R40
50-01629-W	Palm Beach Aggregates Limestone Sand Mining Facility	On-Site Lake(S)	Dewatering Industrial	S17,20,27-29,32-34/T43/R40
	Limestone/Sand Mining Facility	On-Site Lake(S)	Dewatering Industrial	S17,20,27-29,32-34/T43/R40
50-01630-W	Roth Farms	SFWMD Canal (L-13)	Agricultural	S31/T43/R40
				S6/T44/R40
	Knight Twenty Mile Bend Farm	Unspecified	Agricultural	S1,2,3/T44/R39
				S31/T43/R40
				S6,7/T44/R40
				S6/T44/R40

Table 2.3.3-2. Existing Water Use Permits Within 5 Miles of FPL West County Energy Center

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SFWMD Permit No.	Project Name	Source	Use	Location(s)
50-01854-W	Fleming Property	SFWMD Canal (C-51)	Agricultural	S22,27,34/T43/R40
50-02564-W	Indian Trail Groves	On-Site Lake(S)	Agricultural	S14-16,22-26,36/T42/R39
		SFWMD Canal (L-8)		S15-22,26-35/T42/R40
50-02852-W	Callery-Judge Grove Packing Plant	Surficial Aquifer System	Industrial	S12/T43/R40
			Landscape	
	Seminole Water Control District	Surficial Aquifer System	Public Water Supply	S12/T43/R40
			Public Water Supply	S1/T43/R40
50-03276-W	Pbso Law Enforcement Training Facility	Surficial Aquifer System	Public Water Supply	S31/T43/R40
50-03458-W	West Palm Beach Field Station	On-Site Lake(S)	Landscape	S31/T43/R40
			Public Water Supply	S6/T44/R40
50-03624-W	Tropical Fish Farm	Surficial Aquifer System	Aquaculture	S9/T43/R40
50-03829-W	Southern Landscape and Nursery Inc	On-Site Lake(S)/Pond(S)	Nursery	S36/T43/R40
50-04189-W	Downers Drive Park	Surficial Aquifer System	Landscape	S24/T43/R40
50-04220-W	Meadowlands Nursery	SFWMD Canal (L-8) Tieback	Agricultural	S9/T43/R40
		Surficial Aquifer System		
50-04242-W	Jehovahs Witnesses	On-Site Lake(S)/Pond(S)	Landscape	S36/T43/R40
		Surficial Aquifer System	Public Water Supply	
50-04360-W	Research and Evaluation Facility	On-Site Canal(S)	Landscape	S36,6,31,34/T42/R42
		On-Site Lake(S)/Pond(S)	Public Water Supply	S20,25,28,26/T43/R40
				S6,25,1,27,4/T44/R41
50-04523-W	Kim Leang Yi lth Property	On-Site Canal(S)	Agricultural	S9/T43/R40
50-04551-W	Apostolic Church	Surficial Aquifer System	Public Water Supply	S36/T43/R40
50-04627-W	Alfonso Nodal	SFWMD Canal (L-8)	Agricultural	S8/T43/R40
50-04654-W	Pbso Training Facility and Comm Tower	Surficial Aquifer System	Landscape	S31/T43/R40
50-04685-W	Temporary Concrete Batch Plant	SFWMD Canal (L-8)	Industrial	S32/T43/R40
		Surficial Aquifer System	Landscape	
50-04888-W	Chelby Farms	Biscayne Aquifer System	Nursery	S14/T43/R40
50-04985-W	Temple Blvd Park and Sycamore Lane Park	Surficial Aquifer System	Public Water Supply	S26/T42/R40
				S11/T43/R40
50-05285-W	Loxahatchee Groves Water Control District	SFWMD Canal (C-51)	Diversions and Impoundment	S7,8,17-22,27-34/T42/R40
				S12,13,24,25,35,36/T43/R40
50-05901-W	Lot 17 Of White Fences Equestrian Estates	On-Site Canal(S)	Landscape	S16,17/T43/R40
50-05941-W	High School Nnn	On-Site Lake(S)/Pond(S)	Landscape	S12/T43/R40
50-06150-W	Palm Beach Aggregates	Surficial Aquifer System	Public Water Supply	S17,20,28,29,32,33/T43/R40

Table 2.3.3-2. Existing Water Use Permits Within 5 Miles of FPL West County Energy Center

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SFWMD Permit No.	Project Name	Source	Use	Location(s)
50-06194-W	Kjellecup Barn	Surficial Aquifer System	Industrial	S16/T43/R40
50-06271-W	Dalwhinnie South	On-Site Canal(S)	Public Water Supply	S16/T43/R40
		Surficial Aquifer System	Landscape	
			Livestock	
50-06321-W	Sanctuary Gardens	Surficial Aquifer System	Nursery	S36/T43/R40
50-06583-W	Adonel Concrete Batch Plant	On-Site Canal(S)	Industrial	S32/T43/R40
		Surficial Aquifer System	Public Water Supply	
86-00205-W	Loxahatchee Groves Community School	Surficial Aquifer System	Public Water Supply	S25/T43/R40
50-0031-W	Glades Corrections Institute 20 Mile Bend	SFWMD Canal (C-51)	Agricultural	S15-17,21,22,27/T43/R39
50-00290-W	Dirr Ranch Farm	SFWMD Canal (L-12)	Agricultural	S7,8,16-21/T43/R39
50-00319-W	Sugar Farm Co-Op	Unspecified	Agricultural	S17-22,27,28,33,34/T43/R39 S3/T44/R39
50-00435-W	Hundley John L & Patricia K Hundley & Hundley Farms Inc	Cross Canal	Agricultural	S31-34/T43/R39 S38417/T44/R39
50-00436-W	Basore	L-12 Canal	Agricultural	S3,4,9/T43/R39
50-00437-W	New Hope Sugar Company	SFWMD Canal (L-12)	Agricultural	S3,10/T43/R39
50-00143-W	Sucrose Growers	SFWMD Canal (C-51)	Agricultural	S32-34/T43/R40
				S3-5,9,10,15/T44/R40
50-00307-W	Brida-Nordine-Resmondo Farms	SFWMD Canal (L-12)	Agricultural	S25-27,35,36/T43/R39
				S31/T43/R40
				S1,2/T44/R39
				S6/T44/R40
50-00324-W	Green Pepper Farms, Inc	SFWMD Canal (C-51)	Agricultural	S35,36/T43/R40 S1,2,11,12/T44/R40
50-00458-W	Diamond Sugar C Sugar Company	SFWMD Canal (C-51)	Agricultural	S34,35/T43/R40
				S2,3,10-15,22-25/T44/R40
				S30/T44/R41
50-00548-W	Acme Improvement District	On-Site Lake(S) SFWMD Canal (C-51)	Diversion and Impoundment	S36/T43/R40
				S31-35/T43/R41
				S1,12,25/T44/R40
				S2-23,25,25-34/T44/R41 S3,4/T45/R41
50-00600-W	Macklen Enterprises	SFWMD Canal (C-51)	Agricultural	S2,11,14/T44/R40
		SFWMD Canal C-51		
50-01630-W	Roth Farms	SFWMD Canal (L-13)	Agricultural	S31/T43/R40
				S6/T44/R40
	Knight Twenty Mile Bend Farm	Unspecified	Agricultural	S1,2,3/T44/R39
				S31/T43/R40 S6,7/T44/R40 S6/T44/R40
50-01929-W	Citrus Grove	SFWMD Canal (C-51)	Agricultural	S2,11/T44/R40
50-02941-W	Plants for Tomorrow, Inc	Surficial Aquifer System	Nursery	S13/T44/R40

Table 2.3.3-2. Existing Water Use Permits Within 5 Miles of FPL West County Energy Center

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SFWMD Permit No.	Project Name	Source	Use	Location(s)
50-03276-W	Pbso Law Enforcement Training Facility	Surficial Aquifer System	Public Water Supply	S31/T43/R40 S6/T44/R40
50-03458-W	West Palm Beach Field Station	On-Site Lake(S)	Landscape Public Water Supply	S32/T43/R42 S32/T43/R40 S3/T46/R39 S33/T44/R39 S2/T47/R38
50-03460-W	Research and Evaluation Facility	On-Site Canal(S) On-Site Lake(S)/Pond(S)	Landscape Public Water Supply	S36,6,31,34/T42/R42 S20,25,28,26/T43/R40 S6,25,1,27,4/T44/R41
50-05217-W	Pump Station 319	Surficial Aquifer System	Public Water Supply	S1/T44/R40
50-00307-W	Brida-Nordine-Resmondo Farms	SFWMD Canal (L-12)	Agricultural	S25-27,35,36/T43/R39 S31/T43/R40 S1,2/T44/R39 S6/T44/R40
50-00319-W	Sugar Farm Co-Op	Unspecified	Agricultural	S17-22,27,28,33,34/T43/R39 S3/T44/R39
50-00435-W	Hundley John L & Patricia K Hundley & Hundley Farms Inc	Cross Canal	Agricultural	S31-34/T43/R39 S3-6/T44/R39
50-00559-W	Baker Farm	Gladeview Canal	Agricultural	S4,8,9/T44/R39
50-01630-W	Roth Farms	SFWMD Canal (L-13)	Agricultural	S31/T43/R40 S6/T44/R40 S1,2,3/T44/R39
50-03007-W	D & D Farms Site	Surficial Aquifer System	Industrial	S2,3/T44/R39
50-03458-W	West Palm Beach Field Station	On-Site Lake(S)	Landscape Public Water Supply	S32/T43/R40

Source: SFWMD, 2005.



Table 2.3.4-1. Mean Monthly Flow in L10/L12 Canal and L8 Canal

Month	<u>Mean Monthly Flows (cfs)</u>	
	L10/L12 Canal ¹	L8 Canal ²
January	333	117
February	271	71
March	295	105
April	234	98
May	288	86
June	513	119
July	536	166
August	671	178
September	762	248
October	502	251
November	265	134
December	233	74
Annual Average	409	138

¹ Source: USGS Station No. 02278450, West Palm Beach Canal, Above S-5a, Near Loxahatchee, Florida. Period of Record October 1957 through September 2003.

² Source: USGS Station No. 02278550, Levee 8 Canal at West Palm Beach Canal, Near Loxahatchee, Florida. Period of Record October 1957 through September 2003.

Source: SFWMD, 2005.

Table 2.3.4-2. Historical Water Quality for L10/L12 Canal

Constituent (units)	No. of Samples	Average	Std. Dev.	Maximum	Minimum
Alkalinity as CaCO ₃ (mg/l)	124	232	88	447	101
Ammonia as N (mg/L)	286	<0.217	0.307	2.305	<0.009
Arsenic (ug/L)	27	<2.87	1.5	5.9	<1.5
Cadmium (ug/L)	33	<0.45	0.47	2.95	<0.3
Calcium (mg/L)	96	82	31	140	35
Chloride (mg/L)	123	145	59	345	44
Color (PCU)	118	105	53	232	30
Copper (ug/L)	32	<2.1	1.6	9.6	<1
Dissolved Oxygen (mg/L)	271	4.25	2.41	13.51	0.16
Hardness (mg/L as CaCO ₃)	88	292	115	501	123
Iron Total (ug/L)	79	548	677	4119	44
Lead (ug/L)	26	<0.9	0.4	2.7	<0.8
Magnesium (mg/L)	90	23.3	9.6	43.0	7.4
Mercury (ug/L)	17	<0.2	0.00	<0.2	<0.2
Nitrate as N (mg/L)	119	0.441	0.351	2.060	0.006
Nitrate + Nitrite as N (mg/L)	288	<0.458	0.440	2.818	<0.004
Nitrite as N (mg/L)	124	<0.065	0.061	0.315	<0.004
O-Phosphate as P (mg/L)	158	0.068	0.041	0.243	0.004
pH (SU)	270	7.53	0.30	8.48	6.21
Phosphate, Total as P (mg/l)	432	0.13	0.07	0.46	0.02
Potassium (mg/L)	82	8.28	2.27	13.78	3.12
Silica (mg/L)	78	18.3	8.3	36.8	0.7
Silver (ug/L)	9	<0.05	0.01	0.07	<0.05
Specific Conductance (uS/cm)	271	1013	366	1940	24
Sodium (mg/L)	82	94	43	254	31
Sulfate (mg/L)	119	71	29	155	16
TDS (mg/l)	117	678	233	1190	274
Temperature (C)	271	25.0	4.2	32.7	13.8
TKN as N (mg/L)	294	2.59	1.16	8.46	0.89
TSS (mg/L)	81	18	22	134	1
Turbidity (NTU)	124	14.1	18.4	136.5	1.3
Zinc (ug/L)	31	<4.3	1	8	<2.4

Note:

Non detects are included in average at detection limit.

5-year period of record: December 1998 through November 2003.

Data source: SFWMD DBHYDRO.

Table 2.3.4-3. Most Recent Water Quality Data for L10/L12 Canal

Constituent (units)	SFWMD Data ¹	1/4/2005	1/28/2005	2/10/2005
Alkalinity as CaCO ₃ (mg/l)	307		210	130
Alkalinity (Bicarbonate) (mg/L)			210	130
Aluminum (mg/L)		0.97	0.43	1.8
Ammonia as N (mg/L)	0.026		<1	<1
Antimony (ug/L)		<5.0	<5.0	<5.0
Arsenic (ug/L)	5.9		8.1	4.8
Barium (ug/L)		39	45	40
Beryllium (ug/L)		<1	<1	<1
BOD (5-day) (mg/L)		<2	4.3	<2
BOD - Soluble (mg/L)		<2	<2	<2
Cadmium (ug/L)	0.77		<5	<6
Calcium (mg/L)		101	63	45
Chloride (mg/L)	214		110	58
Chromium (ug/L)		<5	<5	<5
COD (mg/L)		54	97	24
Copper (ug/L)	9.6		<5	<5
Cyanide (mg/L)		<.005	<.005	<.005
Dissolved Oxygen (mg/L)	3.03			7.92
Fluoride (mg/L)		0.24	0.34	0.2
Hardness (mg/L as CaCO ₃)	200		250	170
Iron - Dissolved (ug/L)			410	2200
Iron Total (ug/L)	1080		530	2000
Lead (ug/L)	<.8		3.1	3.6
Lead - Dissolved (ug/L)		<3	<3	<3
Magnesium (mg/L)		13	19	15
Manganese (mg/L)			0.008	0.018
Mercury (ug/L)	<.02		<.13	<.13
Molybdenum (ug/L)		<5	<5	<5
Nickel (ug/L)		<2	<2	2.3
Nitrate as N (mg/L)	0.548		1.8	1
Nitrate + Nitrite as N (mg/L)			0.89	0.79
Nitrite as N (mg/L)		0.83	0.1	<.02
Nitrogen as N (total) (mg/L)		1.76	5.59	2.19
O-Phosphate as P (mg/L)	0.081		0.12	0.13
Oil & Grease (mg/L)		<1.7	<1.7	<1.7
pH (SU)	7.56		8.1	7.65
Phenols (mg/L)			<.01	<.01
Phosphate, Total as P (mg/l)	0.11		0.17	0.17
Potassium (mg/L)		7.2	8.1	6
Selenium (ug/L)		12	<5	<5
Silica (mg/L)	14.7		0.7	8
Silver (ug/L)	0.07		<2	
Sulfate (mg/L)	106		59	36
Sulfide (mg/L)			<1	<2
TDS (mg/l)	921		550	380
Temperature (F)	74.12			64.11
Thallium (ug/L)		<10	<10	<10
TKN as N (mg/L)		0.93	4.7	1.4
TSS (mg/L)	38		<3	11
Turbidity (NTU)	3.2		23	46
Vanadium (ug/L)		<5		6.9
Zinc (ug/L)	<4		7	5.8

Note:

¹ SFWMD data consists of the most recent results from SFWMD data collected from SSA sampling point between January 2000 and November 2003

Blanks indicate no data available.



Table 2.3.6-1. Threatened, Endangered, and Species of Special Concern Known to Occur Within Palm Beach County, Florida (Page 1 of 4)

Scientific Name	Common Name	Federal Status	State Status
AMPHIBIANS AND REPTILES			
<i>Rana capito</i>	gopher frog	N	LS
<i>Alligator mississippiensis</i>	American alligator	T(S/A)	LS
<i>Caretta caretta</i>	loggerhead	LT	LT
<i>Chelonia mydas</i>	green turtle	LE	LE
<i>Crocodylus acutus</i>	American crocodile	LE	LE
<i>Dermochelys coriacea</i>	leatherback	LE	LE
<i>Drymarchon corais couperi</i>	eastern indigo snake	LT	LT
<i>Eretmochelys imbricata</i>	hawksbill	LE	LE
<i>Gopherus polyphemus</i>	gopher tortoise	N	LS
<i>Lepidochelys kempii</i>	Kemp's ridley	LE	LE
<i>Pituophis melanoleucus mugitus</i>	Florida pine snake	N	LS
BIRDS			
<i>Aphelocoma coerulescens</i>	Florida scrub-jay	LT	LT
<i>Aramus guarana</i>	limpkin	N	LS
<i>Caracara plancus</i>	crested caracara	LT	LT
<i>Charadrius melodus</i>	pipin plover	LT	LT
<i>Egretta caerulea</i>	little blue heron	N	LS
<i>Egretta thula</i>	snowy egret	N	LS
<i>Egretta tricolor</i>	tricolored heron	N	LS
<i>Eudocimus albus</i>	white ibis	N	LS
<i>Falco peregrinus</i>	peregrine falcon	LE	LE
<i>Falco sparverius paulus</i>	southeastern American kestrel	N	LT
<i>Grus canadensis pratensis</i>	Florida sandhill crane	N	LT

Table 2.3.6-1. Threatened, Endangered, and Species of Special Concern Known to Occur Within Palm Beach County, Florida (Page 2 of 4)

Scientific Name	Common Name	Federal Status	State Status
<i>Haematopus palliatus</i>	American oystercatcher	N	LS
<i>Haliaeetus leucocephalus</i>	bald eagle	LT	LT
<i>Mycteria americana</i>	wood stork	LE	LE
<i>Pelecanus occidentalis</i>	brown pelican	N	LS
<i>Picoides borealis</i>	red-cockaded woodpecker	LE	LT
<i>Rostrhamus sociabilis plumbeus</i>	snail kite	LE	LE
<i>Rynchops niger</i>	black skimmer	N	LS
<i>Speotyto cunicularia floridana</i>	Florida burrowing owl	N	LS
<i>Sterna antillarum</i>	least tern	N	LT
MAMMALS			
<i>Felis concolor coryi</i>	Florida panther	LE	LE
<i>Podomys floridanus</i>	Florida mouse	N	LS
<i>Sciurus niger shermani</i>	Sherman's fox squirrel	N	LS
<i>Trichechus manatus</i>	manatee	LE	LE
<i>Ursus americanus floridanus</i>	Florida black bear	C	LT
PLANTS			
<i>Acrostichum aureum</i>	golden leather fern	N	LE
<i>Actinostachys pennula</i>	ray fern	N	LE
<i>Argusia gnaphalodes</i>	sea lavender	N	LE
<i>Asclepias curtissii</i>	Curtiss' milkweed	N	LE
<i>Asimina tetramera</i>	four-petal pawpaw	LE	LE
<i>Asplenium trichomanes-dentatum</i>	slender spleenwort	N	LE
<i>Chamaesyce cumulicola</i>	sand-dune spurge	N	LE
<i>Cheiroglossa palmata</i>	hand fern	N	LE

Table 2.3.6-1. Threatened, Endangered, and Species of Special Concern Known to Occur Within Palm Beach County, Florida (Page 3 of 4)

Scientific Name	Common Name	Federal Status	State Status
<i>Coccothrinax argentata</i>	silver palm	N	LE
<i>Conradina grandiflora</i>	large-flowered rosemary	N	LE
<i>Crossopetalum rhacoma</i>	rhacoma	N	LE
<i>Cucurbita okeechobeensis</i> ssp <i>okeechobeensis</i>	Okeechobee gourd	LE	LE
<i>Cyrtopodium punctatum</i>	cow-horned orchid	N	LE
<i>Dennstaedtia bipinnata</i>	hay scented fern	N	LE
<i>Epidendrum nocturnum</i>	night-scented orchid	N	LE
<i>Euphorbia pinetorum</i>	rockland painted-leaf	N	LE
<i>Glandularia maritima</i>	coastal vervain	N	LE
<i>Ionopsis utricularioides</i>	delicate ionopsis	N	LE
<i>Jacquemontia reclinata</i>	beach jacquemontia	LE	LE
<i>Lantana depressa</i> var <i>floridana</i>	Atlantic Coast Florida lantana	N	LE
<i>Lechea cernua</i>	nodding pinweed	N	LT
<i>Lechea divaricata</i>	pine pinweed	N	LE
<i>Linum carteri</i> var <i>smallii</i>	Carter's large-flowered flax	N	LE
<i>Myrcianthes fragrans</i> var <i>simpsonii</i>	twinberry	N	LT
<i>Nemastylis floridana</i>	fall-flowering ixia	N	LE
<i>Okenia hypogaea</i>	burrowing four-o'clock	N	LE
<i>Oncidium bahamense</i>	dancing-lady orchid	N	LE
<i>Panicum abscissum</i>	cutthroat grass	N	LE
<i>Polygala smallii</i>	tiny polygala	LE	LE
<i>Polyrrhiza lindenii</i>	ghost orchid	N	LE
<i>Pteris bahamensis</i>	Bahama brake	N	LE
<i>Spiranthes torta</i>	southern ladies'-tresses	N	LE
<i>Tephrosia angustissima</i> var <i>curtissii</i>	coastal hoary-pea	N	LE

Table 2.3.6-1. Threatened, Endangered, and Species of Special Concern Known to Occur Within Palm Beach County, Florida (Page 4 of 4)

Scientific Name	Common Name	Federal Status	State Status
<i>Thrinax morrisii</i>	brittle thatch palm	N	LE
<i>Tillandsia flexuosa</i>	banded wild-pine	N	LE
<i>Zephyranthes simpsonii</i>	rain lily	N	LT
<i>Cladonia perforata</i>	perforate reindeer lichen	LE	LE

Federal and State Status

C = Candidate for listing.

LE = Listed as Endangered.

LS = Listed as Species of Special Concern.

LT = Listed as Threatened.

N = Not listed.

T(S/A) = Threatened due to Similarity of Appearance.

Source: Florida Natural Areas Inventory, 1997.

Table 2.3.7-1. Monthly and Annual Average Temperatures Measured at Palm Beach International Airport

Month	Daily Temperatures (°F) ^a			Extremes (°F) ^b	
	Average	Maximum	Minimum	Maximum	Minimum
January	66.2	75.1	57.3	89	27
February	67.2	76.3	58.2	90	32
March	70.6	79.2	61.9	94	30
April	73.8	82.1	65.4	99	43
May	78.2	85.9	70.5	96	51
June	81.2	88.5	73.8	98	61
July	82.5	90.1	75.0	101	66
August	82.8	90.1	75.4	98	65
September	81.7	88.7	74.7	97	66
October	78.1	85.0	71.2	95	46
November	73.1	80.4	65.8	91	36
December	68.3	76.4	60.1	90	28
Annual	75.3	83.2	67.4	101	27

^a 30-year period of record, climatological normal, 1971 to 2000.

^b 66-year period of record, 1938 to 2003.

Source: National Oceanic and Atmospheric Administration (NOAA), 2003.

Table 2.3.7-2. Monthly and Annual Average Precipitation and Relative Humidity Measured at Palm Beach International Airport

Month	Precipitation (inches)			Humidity (%) hour (LT) ^a			
	Average ^a	Maximum ^b	Minimum ^b	1 a.m.	7 a.m.	1 p.m.	7 p.m.
January	3.75	11.18	0.22	82	84	59	73
February	2.55	8.71	0.29	81	84	57	70
March	3.68	16.78	0.33	79	82	56	68
April	3.57	18.26	0.04	77	80	55	66
May	5.39	15.22	0.39	80	80	59	71
June	7.58	20.09	1.07	85	84	65	76
July	5.97	17.74	1.22	85	85	64	75
August	6.65	13.52	1.73	85	86	64	76
September	8.10	24.86	1.77	85	87	66	78
October	5.46	18.74	0.56	81	84	62	75
November	5.55	14.63	0.23	81	84	62	74
December	3.14	11.69	0.06	82	84	61	74
Annual	61.39	24.86	0.04	82	84	61	73

Note: LT = local time.

^a 30-year period of record, climatological normal, 1971 to 2000.

^b 64-year period of record, 1940 to 2003.

Source: NOAA, 2003.

Table 2.3.7-3. Seasonal and Annual Average Wind Direction and Wind Speed Measured at Palm Beach International Airport ^a

Season	Average Wind Speed (mph)	Calm (%)	Prevailing Wind	
			Direction	Average Wind Speed (mph)
Winter	11.9	1.9	Northwest	10.7
Spring	12.4	1.5	Southeast	14.0
Summer	9.3	4.8	East-southeast	11.7
Fall	11.3	2.8	East	13.6
Annual	11.2	2.7	Southeast	12.8

^a 5-year period of record, 1987 to 1991. The data for this period were also used in the air quality impact analyses for the Project.

Source: NOAA, 1987-1991.

Table 2.3.7-4. Seasonal and Annual Average Atmospheric Stability Classes Determined at Palm Beach International Airport ^a

Season	Occurrence (%) of Stability Class					
	Very Unstable	Moderately Unstable	Slightly Unstable	Neutral	Slightly Stable	Moderately Stable
Winter	0.0	1.0	5.7	62.7	18.1	12.5
Spring	0.1	2.2	13.9	57.3	16.9	9.6
Summer	0.5	6.1	20.9	35.0	19.1	18.5
Fall	0.0	2.3	11.3	53.8	18.4	14.2
Annual	0.2	2.9	13.0	52.1	18.1	13.7

^a 5-year period of record, 1987 to 1991. The data for this period were also used in the air quality impact analyses for the Project.

Source: NOAA, 1987-1991.

Table 2.3.7-5. Seasonal and Annual Average Morning and Afternoon Mixing Heights Determined at Palm Beach International Airport ^a

Season	Mixing Height (m)	
	Morning	Afternoon
Winter	756	1,279
Spring	893	1,438
Summer	830	1,365
Fall	797	1,281
Annual	819	1,341

^a 5-year period of record, 1987 to 1991. The data for this period were also used in the air quality impact analyses for the Project. Mixing heights based on surface temperatures and upper-air data from the NWS station at Palm Beach International Airport.

Source: NOAA, 1987-1991.

Table 2.3.7-6. National and State AAQS, Allowable PSD Increments, and Significant Impact Levels

Pollutant	Averaging Time	National AAQS ($\mu\text{g}/\text{m}^3$)		Florida AAQS ^a ($\mu\text{g}/\text{m}^3$)	PSD Increments ($\mu\text{g}/\text{m}^3$) ^a		Significant Impact Levels ^b ($\mu\text{g}/\text{m}^3$)	
		Primary Standard	Secondary Standard		Class I	Class II	Class I	Class II
Particulate Matter ^c (PM ₁₀)	Annual Arithmetic Mean	50	50	50	4	17	0.2	1
	24-Hour Maximum	150	150	150	8	30	0.3	5
Sulfur Dioxide	Annual Arithmetic Mean	80	NA	60	2	20	0.1	1
	24-Hour Maximum	365	NA	260	5	91	0.2	5
	3-Hour Maximum	NA	1,300	1,300	25	512	1.0	25
Carbon Monoxide	8-Hour Maximum	10,000	10,000	10,000	NA	NA	NA	500
	1-Hour Maximum	40,000	40,000	40,000	NA	NA	NA	2,000
Nitrogen Dioxide	Annual Arithmetic Mean	100	100	100	2.5	25	0.1	1
Ozone ^c	1-Hour Maximum ^d	235	235	235	NA	NA	NA	NA
Lead	Calendar Quarter Arithmetic Mean	1.5	1.5	15	NA	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, except for PM₁₀ and O₃ AAQS which are based on expected exceedances.

^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, PM_{2.5} standards were introduced with a 24-hour average standard of 65 $\mu\text{g}/\text{m}^3$ (based on the 3-year averages of the 98th percentile values) and an annual standard of 15 $\mu\text{g}/\text{m}^3$ (3-year averages at community monitors). The O₃ standard was modified to be 0.08 ppm (160 $\mu\text{g}/\text{m}^3$) for the 8-hour average; achieved when the 3-year average of 99th percentile values is 0.08 ppm or less. These standards must be implemented in the 2007-2008 timeframe. The FDEP has not yet adopted the revised standards.

^d 0.12 ppm; achieved when the expected number of days per year with concentrations above the standard is fewer than 1.

Sources: Federal Register, Vol. 43, No. 118, June 19, 1978.
40 CFR 50; 40 CFR 52.21.
Florida Chapter 62.204, F.A.C.



Table 2.3.7-7. Summary of Maximum PM₁₀, O₃, NO₂, CO and SO₂ Concentrations Measured in Palm Beach County and Representative of the West County Energy Center Project, 2001 to June, 2004

AIRS/ Saroed Site No.	Operator	Location ^a	Measurement Period		Concentration										
					1-Hour		3-Hour		8-Hour		8-Hour 3-year Average		24-Hour		Annual
					Highest	2nd Highest	Highest	2nd Highest	Highest	2nd Highest	4th Highest	Highest	2nd Highest	Average	
<u>PM₁₀</u> ^b		Florida AAQS			NA	NA	NA	NA	NA	NA	NA	NA	150 µg/m ³	50 µg/m ³	
12-099-0008 0240-008-G01	FDEP	Belle Glade/ 3875 State Road 80	2004	Jan-Jun	NA	NA	NA	NA	NA	NA	NA	31	30	18	
			2003	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	30	28	16	
			2002	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	34	28	15	
			2001	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	48	40	19	
<u>Ozone</u> ^b		Florida AAQS			NA	0.12 ppm	NA	NA	NA	NA	0.08 ppm	NA	NA	NA	
12-099-0009	FDEP	Royal Palm beach/ 980 Crestwood Blvd. N. Wastewater Treatment Plant	2004	Jan-Jun	0.080	0.077	NA	NA	NA	NA	0.066	NA	NA	NA	
			2003	Jan-Dec	0.081	0.078	NA	NA	NA	NA	0.067	NA	NA	NA	
			2002	Jan-Dec	0.082	0.075	NA	NA	NA	NA	0.067	NA	NA	NA	
<u>Nitrogen dioxide</u>		Florida AAQS			NA	NA	NA	NA	NA	NA	NA	NA	NA	0.053 ppm	
12-099-1004 4760-004-G01	FDEP	West Palm Beach/ 3730 Belvedere Road	2004	Jan-Jun	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.011	
			2003	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.014	
			2002	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.017	
			2001	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.017	
<u>Carbon monoxide</u>		Florida AAQS			NA	35 ppm	NA	NA	NA	9 ppm	NA	NA	NA	NA	
12-099-1004 4760-004-G01	FDEP	West Palm Beach/ 3730 Belvedere Road	2004	Jan-Jun	3.2	3.0	NA	NA	2.5	1.8	NA	NA	NA	NA	
			2003	Jan-Dec	3.0	2.7	NA	NA	1.8	1.6	NA	NA	NA	NA	
			2002	Jan-Dec	3.9	3.8	NA	NA	3.3	2.3	NA	NA	NA	NA	
			2001	Jan-Dec	3.3	3.2	NA	NA	2.5	2.2	NA	NA	NA	NA	
12-099-1008	FDEP	West Palm Beach/ 1930 Military Trail	2004	Jan-Jun	4.2	3.7	NA	NA	1.6	1.4	NA	NA	NA	NA	
			2003	Jan-Dec	4.5	4.2	NA	NA	2.1	1.8	NA	NA	NA	NA	
<u>Sulfur dioxide</u>		Florida AAQS			NA	NA	NA	0.5 ppm	NA	NA	NA	NA	0.1 ppm	0.02 ppm	
<u>Palm Beach County</u>															
12-099-3004 4760-004-G01	FDEP	Riviera Beach/ 1050 15th Street	2004	Jan-Jun	NA	NA	0.002	0.002	NA	NA	NA	0.001	0.001	0.001	
			2003	Jan-Dec	NA	NA	0.004	0.003	NA	NA	NA	0.002	0.002	0.001	
			2002	Jan-Dec	NA	NA	0.008	0.005	NA	NA	NA	0.002	0.002	0.001	
			2001	Jan-Dec	NA	NA	0.008	0.004	NA	NA	NA	0.003	0.003	0.001	

Note: NA = not applicable.

AAQS = ambient air quality standard.

^a See Figure 2.3.7-3 for station locations^b On July 18, 1997, EPA promulgated revised AAQS for particulate matter and ozone. For particulate matter, PM_{2.5} standards were introduced with a 24-hour average standard of 65 µg/m³ (based on the 3-year averages of the 98th percentile values) and an annual standard of 15 µg/m³ (3-year averages at community monitors).The O₃ standard was modified to be 0.08 ppm for the 8-hour average; achieved when the 3-year average of 99th percentile values is 0.08 ppm or less.

Florida DEP has not yet adopted the revised standards.



Table 2.3.8-1. Baseline Noise Monitoring, FPL West County Energy Center

Date	Monitoring Site		Period	Sound Levels			Comments/Notes
	ID*	Descriptor		L ₉₀	L _{eq}	L ₁₀	
8/29/2001	1	PA, West of Unit 1	Day	41.0	46.8	51.1	Aircraft high above site, distant traffic noise on State Road 80, distant thunder.
8/29/2001	1	PA, West of Unit 1	Night	42.7	45.4	46.8	Distant traffic on State Road 80, insects, aircraft high above Site.
	2	PA, West of Unit 2	Day	41.6	45.5	48.1	Aircraft high above site, distant traffic on State Road 80, PBA truck/equipment noise.
8/29/2001	2	PA, West of Unit 2	Night	46.2	48.3	50.0	Distant traffic on State Road 80, insects, aircraft high above Site.
	3	PA, East of Unit 1	Day	40.3	44.6	47.6	Aircraft high above site, birds, dogs barking, PBA truck/equipment noise.
	3	PA, East of Unit 1	Night	42.2	43.9	45.6	Distant traffic on State Road 80, insects, equipment beeper, aircraft high above Site.
8/29/2001	4	PA, East of Unit 1	Day	39.7	44.1	44.3	Distant traffic on State Road 80, PBA truck noise, aircraft high above Site.
8/29/2001	4	PA, East of Unit 1	Night	39.9	41.7	42.9	Distant traffic on State Road 80, insects.
	5	Canal L-8/T-Line	Day	42.7	44.1	45.8	Aircraft high above Site, birds, traffic/equipment noise in residential area.
	5	Canal L-8/T-Line	Night	49.9	52.0	53.2	Frogs, Distant traffic on State Road 80, insects, aircraft high above Site, dog barking.
8/29/2001	4	PA, East of Unit 1	24-hour	42.8	52.8	56.8	Refer to noise spectrum in Appendix 10.5.2.
12/10/2004	1-2 (A)	PA, Center for Unit 1	Day	45.3	48.5	51.0	Traffic along non-paved road, gunshots from shooting range, aircraft.
12/10/2004	6 (B)	State Road 80, North ROW	Day	59.5	73.1	78.2	Heavy traffic along State Road 80.
12/10/2004	5 (C)	Canal L-8/T-Line	Day	52.6	54.8	55.5	Birds, distant truck traffic, mining south of Indian Trails Subdivision.

*Letters in parentheses are the monitoring site ID used in Appendix 10.5.2 for the monitoring conducted in 2004.

Note: PA = Project Area; PBA = Palm Beach Aggregates.



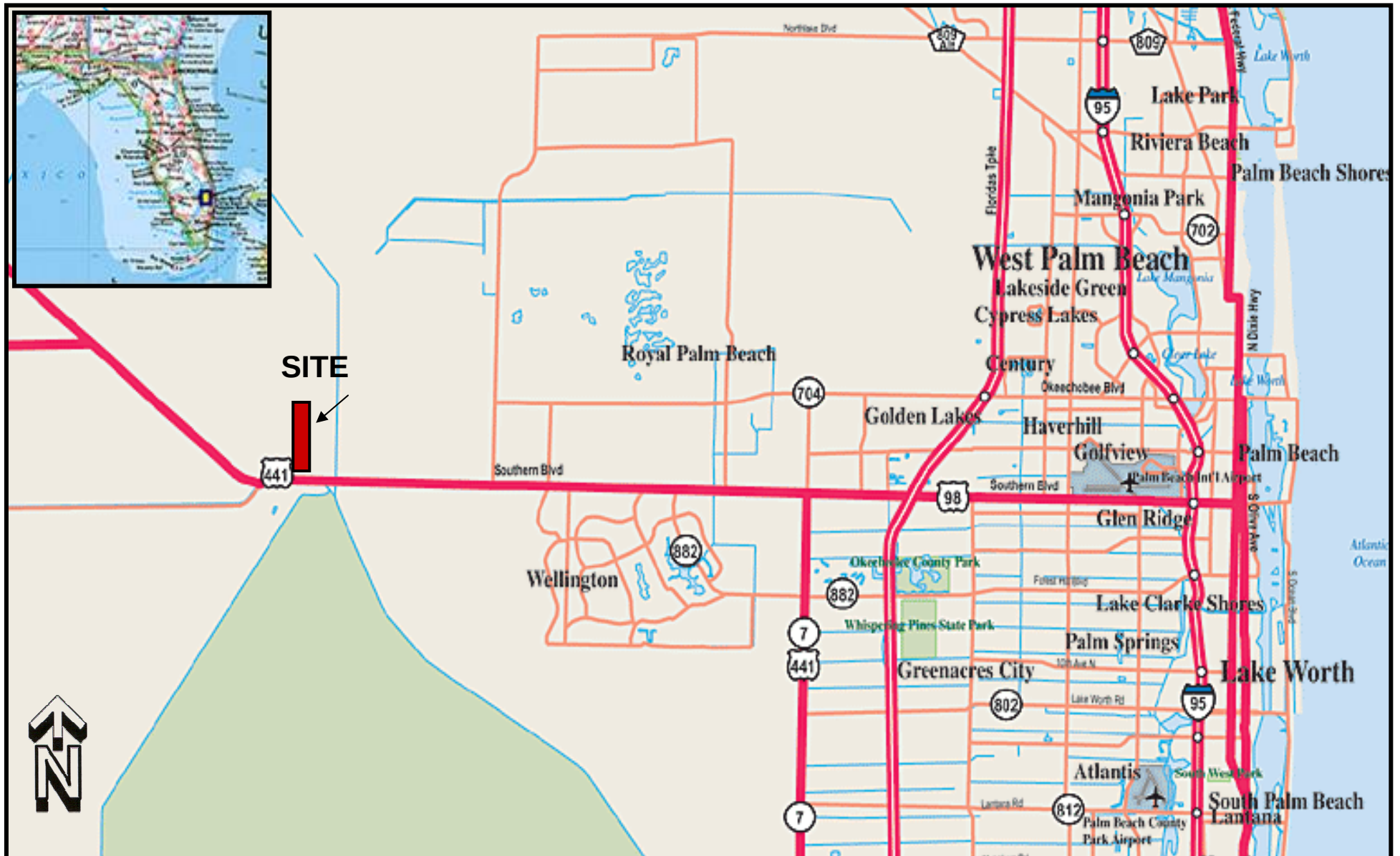


Figure 2.1.1-1.
Plant Site Location
FPL West County Energy Center, Palm Beach County, Florida

Not to Scale: 1" = ~3 miles.

Source: SFWMD website; Golder, 2005.



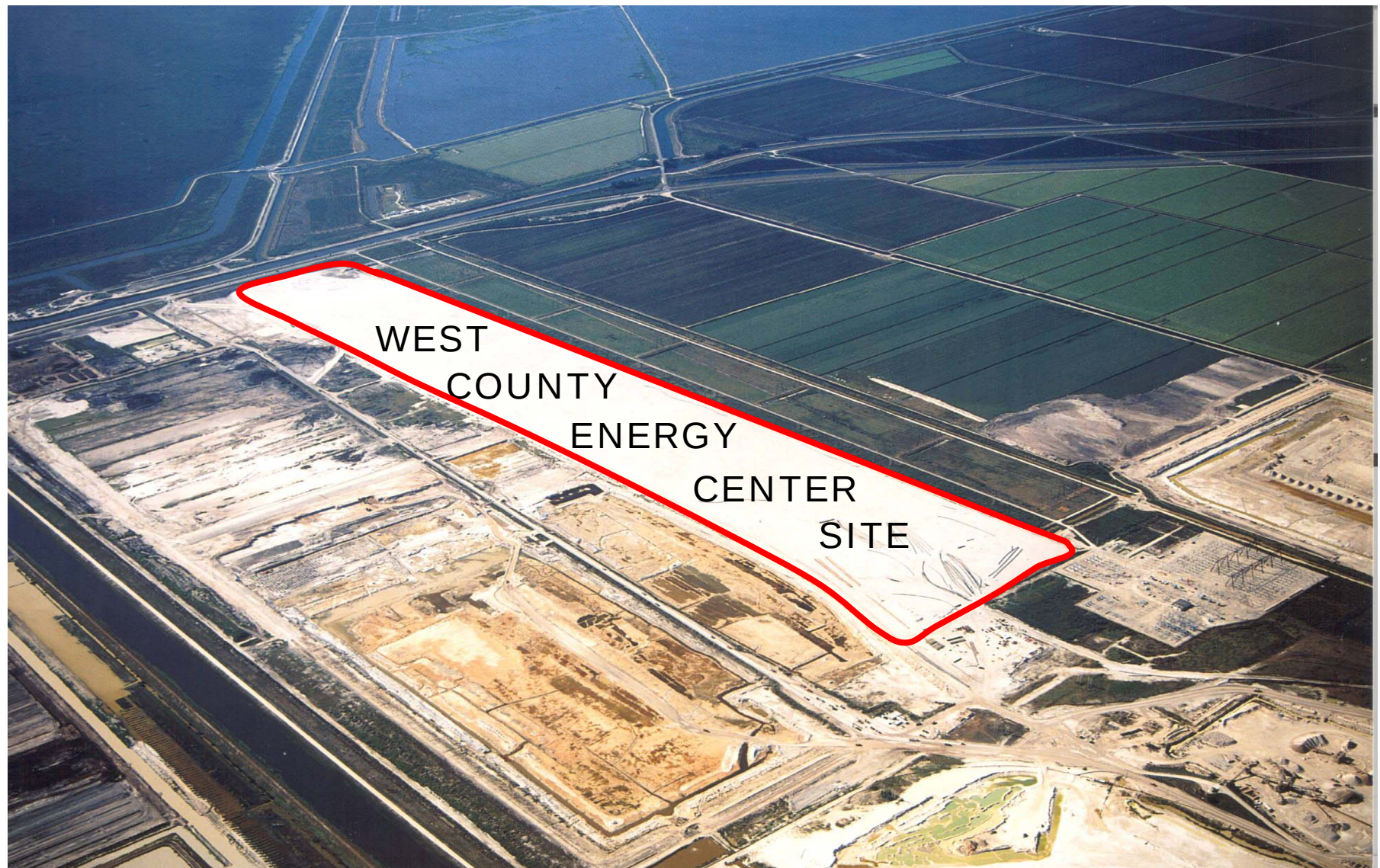
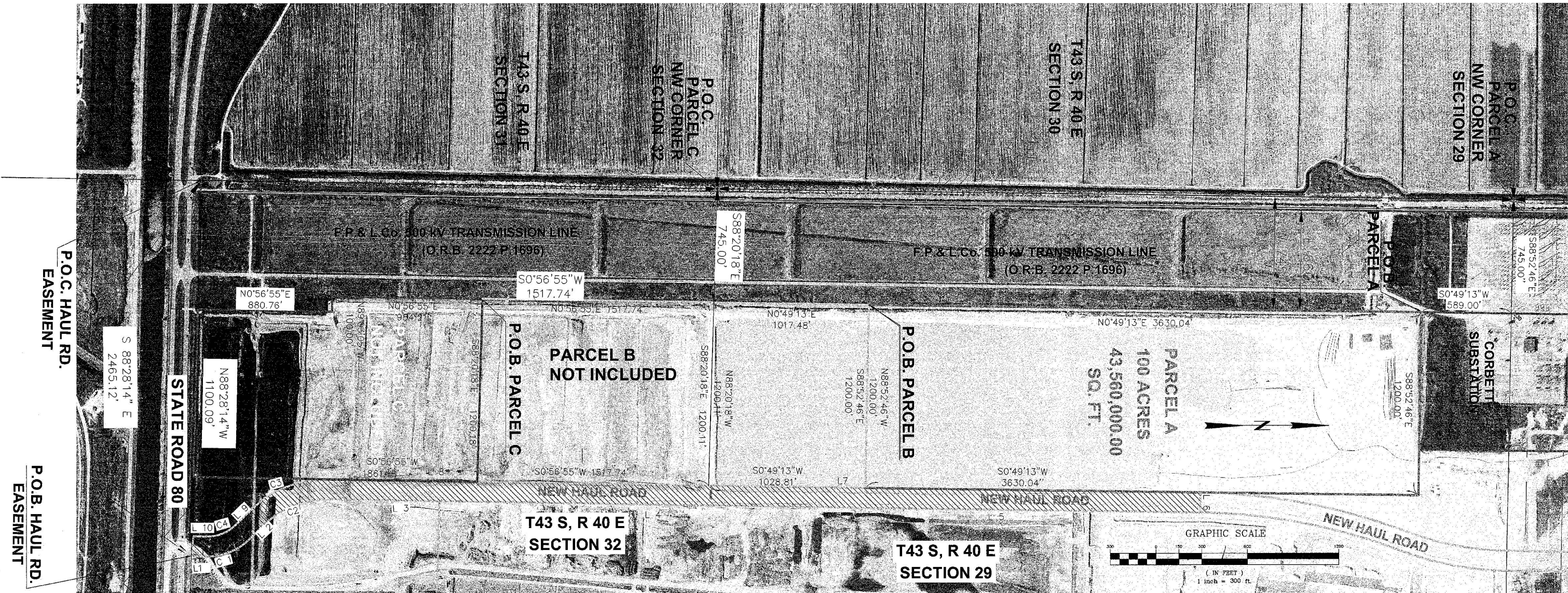


Figure 2.1.2-1
Aerial Photograph of Site
FPL West County Energy Center
Palm Beach County, Florida
Source: Golder, 2005.





- ABBREVIATIONS:**
- (c) indicates computed quantity
 - (cl) indicates closure
 - (d) indicates description
 - (m) indicates measured quantity
 - (p) indicates plat
 - C/L indicates centerline
 - R/W indicates right-of-way
 - T indicates Township
 - R indicates Range
 - O.R.B. indicates Official Record Book
 - P.O.B. indicates point of beginning
 - P.O.C. indicates point of commencement
 - P --- indicates power line
 - T --- indicates telephone line
- CURVE DATA**
- R indicates radius
 - T indicates tangent
 - CH indicates chord
 - L indicates arc length
 - Δ indicates central angle

DESCRIPTION: PART OF THE 130 FEET WIDE EASEMENT FOR THE NEW HAUL ROAD, TO PROVIDE INGRESS AND EGRESS TO PARCELS 04111A, 04111B AND 04111C.

Commencing at the Intersection of the West line of Section 32, Township 43 South, Range 40 East with the North right-of-way line of State Road 80, thence South 88° 28' 14" East 2465.12 feet along said right-of-way line to the Point of Beginning on the East line of the 130 feet wide easement, thence North 0° 56' 55" East 100.00 feet along a line parallel with the West line of said Section 32, to the beginning of a curve concave to the West having a radius of 389.97 feet, thence Northwesterly 306.28 feet along the arc of said curve through a central angle of 45° 00' 00" to the end of said curve, at a tangent line to said curve, thence North 44° 03' 05" West 150.14 feet along a tangent to the preceding curve, to the beginning of a curve concave to the Northeast having a radius of 579.00 feet, thence Northwesterly and North 454.75 feet along the arc of said curve through a central angle of 45° 00' 00" to the end of said curve, at a tangent line to said curve, thence North 0° 56' 55" East 729.83 feet along a tangent to said curve, thence North 0° 56' 55" East 1761.41 feet along a line parallel with the West line of said Section 32 to the South line of Section 29, Township 43 South, Range 40 East, thence North 0° 49' 13" East 3230.44 feet along a line parallel with the West line of said Section 29 to the beginning of a curve concave to the East, having a radius of 3856.26 feet, thence North 89° 10' 47" West 130.00 feet along a radial line, to the West line of the 130.00 feet wide easement, thence South 0° 49' 13" West 3228.53 feet along a line parallel with the West line of said Section 29, to the North line of Section 32, Township 43 South, Range 40 East, thence South 0° 56' 55" West 2492.86 feet along a line parallel with the West line of said Section 32, to the beginning of a curve concave to the Northeast, having a radius of 709.00 feet, thence Southeasterly 556.85 feet along the arc of said curve through a central angle of 45° 00' 00" to the end of said curve and a tangent line to said curve, thence South 44° 03' 05" East 150.14 feet along said tangent, to the beginning of a curve concave to the Southwest having a radius of 259.97 feet, thence Southwesterly 204.18 feet along the arc of said curve through a central angle of 45° 00' 00" to the end of said curve and a tangent line to said curve, thence South 0° 56' 55" West 100.00 feet to the North right-of-way line of State Road 80, thence South 88° 28' 14" East 130.01 feet along said right-of-way line to the Point of Beginning.

LINE TABLE		
LINE	BEARING	LENGTH
L1	N0°56'55"E	100.00
L2	N44°03'05"W	150.14
L3	N0°56'55"E	729.83
L4	N0°56'55"E	1761.41
L5	N0°49'13"E	3230.44
L6	N89°10'47"W	130.00
L7	S0°49'13"W	3228.53
L8	S0°56'55"W	2492.86
L9	S44°03'05"E	150.14
L10	S0°56'55"W	100.00
L11	S88°28'14"E	130.01

CURVE TABLE HAUL ROAD			
CURVE	LENGTH	RADIUS	DELTA ANGLE
C1	306.28	389.97	45°00'00"
C2	454.75	579.00	45°00'00"
C3	556.85	709.00	45°00'00"
C4	204.18	259.97	45°00'00"

PAG SURVEYORS, INC.
CERTIFICATE OF AUTHORIZATION NO. LB 3411
1016 SOUTHEAST 4TH STREET
BELLE GLADE, FL 33430-4330
DESCRIPTIONS FOR: PALM BEACH AGGREGATES, INC.
DATE: 5-17-04, WORK ORDER No. 04-111 A
PARCEL A
DESCRIPTION: A parcel of land lying in Section 29, Township 43 South, Range 40 East, Palm Beach County, Florida, described as follows:
Commencing at the Northwest corner of said Section 29, Township 43 South, Range 40 East, Thence South 88° 52' 46" East 745.00 feet along the North line of said Section 29 to the East line of Florida Power & Light Company 500 Kv transmission line corridor as recorded in ORB 2222, P 1696, public records of Palm Beach County, Florida, thence South 0° 49' 13" West 589.00' along said East line, which is the same the West line of the Florida Power & Light Company's Corbett Substation to the Southwest corner of said Corbett Substation, thence South 88° 52' 46" East 1200.00 feet along the South line of said Corbett Substation and its Easterly extension to a point on a line parallel with the West line of Section 29, Township 43 South, Range 40 East, thence South 0° 49' 13" West 3630.04 feet along said parallel line to a point on a line parallel with the North line of said Section 29, thence North 88° 52' 46" West 1200.00 feet along said line parallel with the North line of Section 29, to the East line of the Florida Power & Light Co. 500Kv transmission line corridor, thence North 0° 49' 13" East 3630.04 feet along said F & L Co. East line to the Point of Beginning. Containing: 100.00 Acres (4,356,000 Acres)
BASIS OF BEARINGS: Bearings shown on this plat of survey and description are Grid Bearings of the Florida State Plane Coordinate System, East Zone, on the 1983 North American Datum, 1998 Adjustment derived from our GPS survey using as control Palm Beach County GPS Monument SQUP. The West line of Section 29, Township 43 South Range 40 East bears North 0° 49' 13" East and all other bearings are relative thereto.

Fernando Gonzalez, P.S.M.
Florida License No. 4994

PAG SURVEYORS, INC.
1016 SOUTHEAST 4TH STREET
BELLE GLADE, FL 33430-4330 PHONE (561) 996-6615
L.B. 3411

SEAL

DATE	5-17-04				
SCALE	1"=300'				
DRAWN	PAG				
FB No.	43-40	1	ADDED EASEMENT DESCRIPTION	PAG	6-11-04
CHECKED	FG	NO.	REVISIONS	BY	DATE

DESCRIPTIONS FOR:

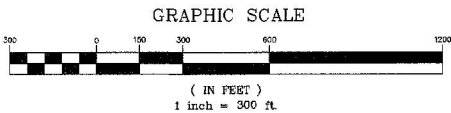
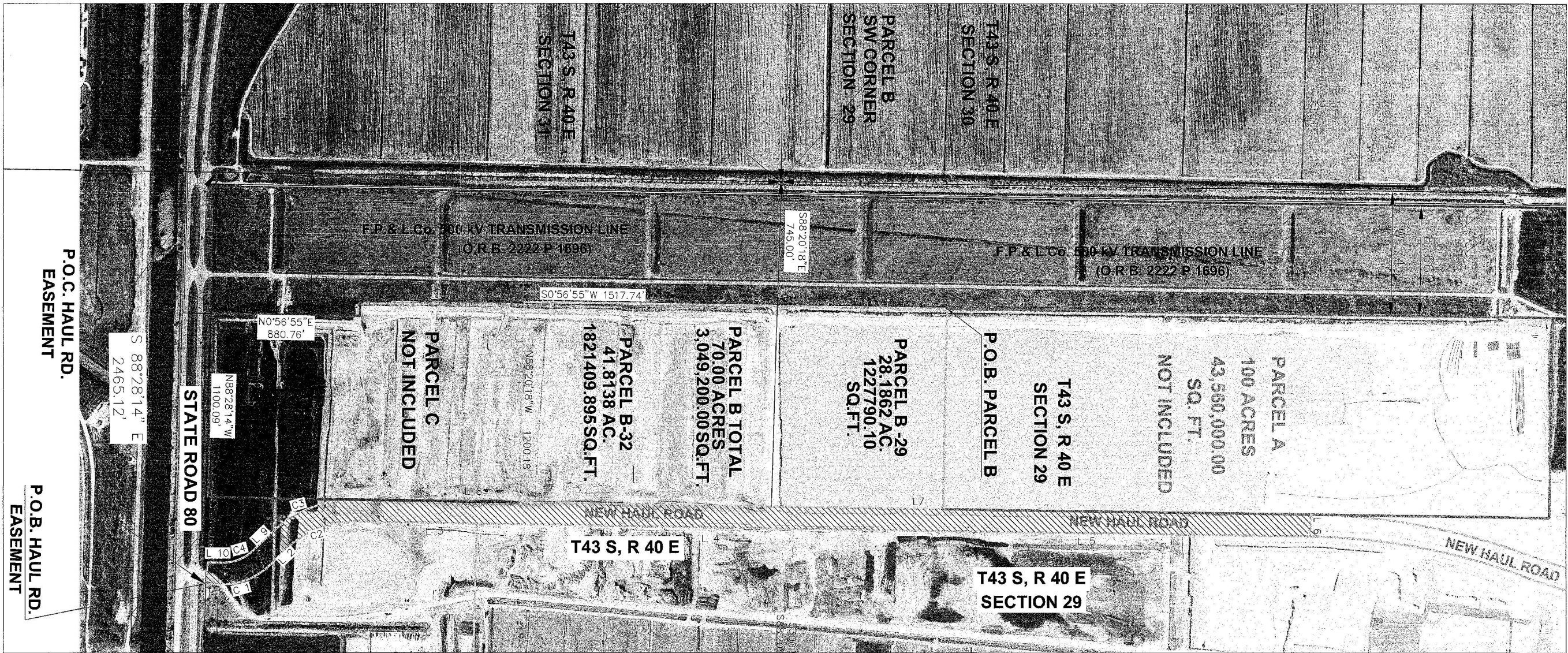
PALM BEACH COUNTY

PALM BEACH AGGREGATES, INC.
20125 STATE ROAD 80
LOXAHATCHEE, FL 33470

FLORIDA

SHEET NO.	1	1
OF		
WORK ORDER NO.	04-3-111A	

Figure 2.1.6-1a



ABBREVIATIONS:
(c) indicates computed quantity
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L3	N0°56'55"E	729.83'
L4	N0°56'55"E	1761.41'
L5	N0°49'13"E	3230.44'
L6	N89°10'47"W	130.00'
L7	S0°49'13"W	3228.53'
L8	S0°56'55"W	2492.86'
L9	S44°03'05"E	150.14'
L10	S0°56'55"W	100.00'
L11	S88°28'14"E	130.01'

CURVE TABLE HAUL ROAD			
CURVE	LENGTH	RADIUS	DELTA ANGLE
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DESCRIPTION: PART OF THE 130 FEET WIDE EASEMENT FOR THE NEW HAUL ROAD, TO PROVIDE INGRESS AND EGRESS TO PARCELS 04111A, 04111B AND 04111C.

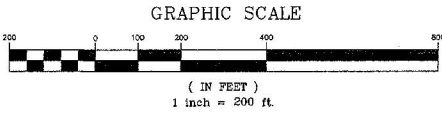
Commencing at the intersection of the West line of Section 32, Township 43 South, Range 40 East with the North right-of-way line of State Road 80, thence South 88° 28'14" East 2465.12 feet along said right-of-way line to the Point of Beginning on the East line of the 130 feet wide easement, thence North 0° 56'55" East 100.00 feet along a line parallel with the West line of said Section 32, to the beginning of a curve concave to the West having a radius of 389.97 feet, thence Northwesterly 306.28 feet along the arc of said curve through a central angle of 45°00'00" to the end of said curve, at a tangent line to said curve, thence North 44°03'05" West 150.14 feet along a tangent to the preceding curve, to the beginning of a curve concave to the Northeast having a radius of 579.00 feet, thence Northwesterly and North 454.75 feet along the arc of said curve through a central angle of 45°00' 00" to the end of said curve, at a tangent line to said curve, thence North 0°56'55" East 729.83 feet along a tangent to said curve, thence North 0°56'55" East 1761.41 feet along a line parallel with the West line of said Section 32 to the South line of Section 29, Township 43 South, Range 40 East, thence North 0° 49'13" East 3230.44 feet along a line parallel with the West line of said Section 29 to the beginning of a curve concave to the East, having a radius of 3856.26 feet, thence North 89°10'47" West 130.00 feet along a radial line, to the West line of the 130.00 feet wide easement, thence South 0°49'13" West 3228.53 feet along a line parallel with the West line of said Section 29, to the North line of Section 32, Township 43 South, Range 40 East, thence South 0°56'55" West 2492.86 feet along a line parallel with the West line of said Section 32, to the beginning of a curve concave to the Northeast, having a radius of 709.00 feet, thence Southeasterly 556.85 feet along the arc of said curve through a central angle of 45°00'00" to the end of said curve and a tangent line to said curve, thence South 44° 03'05" East 150.14 feet along said tangent, to the beginning of a curve concave to the Southwest having a radius of 259.97 feet, thence Southwesterly 204.18 feet along the arc of said curve through a central angle of 45°00'00" to the end of said curve and a tangent line to said curve, thence South 0°56'55" West 100.00 feet to the North right-of-way line of State Road 80, thence South 88° 28'14" East 130.01 feet along said right-of-way line to the Point of Beginning.

PAG SURVEYORS, INC.
CERTIFICATE OF AUTHORIZATION NO. LB 3411
1016 SOUTHEAST 4TH STREET
BELLE GLADE, FL 33430-4330
DESCRIPTIONS FOR: PALM BEACH AGGREGATES, INC.
DATE 5-17-04, WORK ORDER NO. 04- 111 B
PARCEL B
DESCRIPTION: A parcel of land lying in Sections 29 and 32, Township 43 South, Range 40 East, Palm Beach County, Florida, described as follows:
Commencing at the Southwest corner of said Section 29, Township 43 South, Range 40 East, Thence South 88°20'18" East 745.00 feet along the South line of said Section 29 to the East line of Florida Power & Light Company's 500 Kv transmission line corridor as recorded in ORB 2222, P 1696, public records of Palm Beach County, Florida, thence North 0°49'13" East 1017.48' along said East line, to the Point of Beginning of the hereinafter Parcel B, thence South 88°52'46" East 1200.00 feet along a line parallel with the North line of Section 29, Township 43 South, Range 40 East, said line being the same as the South line of Parcel A to a point, thence South 0°49'13" West 1028.81 feet along a line parallel with the East line of said Florida Power & Light Co. corridor, to a point on the South line of said Section 29, thence into Section 32, Township 43 South, Range 40 East, South 0°56'55" West 1517.74 feet along a line parallel with the East line of the Florida Power & Light Co. corridor, thence North 88°20'18" West 1200.18 feet along a line parallel with the North line of Section 32, to the East line of the Florida Power & Light Co. 500Kv transmission line corridor, thence North 0°56'55" East 1517.74 feet along said F.P. & L. Co. East line to a point on the South line of Section 29, Township 43 South, Range 40 East, thence into Section 29, Township 43 South, Range 40 East, thence North 0°49'13" East 1017.48 feet along the East line of the Florida Power & Light Co. corridor, to the Point of Beginning. Containing: 70.00 Acres (3,049,200 square feet).
BASIS OF BEARINGS: Bearings shown on this plat of survey and description are Grid Bearings of the Florida State Plane Coordinate System, East Zone, on the 1983 North American Datum, 1998 Adjustment derived from our GPS survey using as control Palm Beach County GPS Monument SOUP. The West line of Section 29, Township 43 South Range 40 East bears North 0°49'13" East and all other bearings are relative thereto.

Fernando Gonzalez, P.S.M.
Florida License No. 4996

Figure 2.1.6-1b

PAG SURVEYORS, INC. 1016 SOUTHEAST 4TH STREET BELLE GLADE, FL 33430-4330 PHONE (561) 996-6615	SEAL	DATE	5-17-04			DESCRIPTIONS FOR: PALM BEACH AGGREGATES, INC. 20125 STATE ROAD 80 LOXAHATCHEE, FL 33470	SHEET NO. 1 OF 1 WORK ORDER NO. 04-3-111B
		SCALE	1"=300'				
		DRAWN	PAG				
		FB No.	43-40	1			
CHECKED	FG	NO.		ADDED EASEMENT DESCRIPTION	PAG	6-11-04	FLORIDA
				REVISIONS	BY	DATE	



ABBREVIATIONS:

- (c) indicates computed quantity
(cl) indicates closure
(d) indicates description
(m) indicates measured quantity
(p) indicates plat
C/L indicates centerline
R/W indicates right-of-way
T indicates Township
R indicates Range
O.R.B. indicates Official Record Book
P.O.B. indicates point of beginning
P.O.C. indicates point of commencement
--- P- indicates power line
---T- indicates telephone line

CURVE DATA

- R indicates radius
T indicates tangent
CH indicates chord
L indicates arc length
Δ indicates central angle

LINE TABLE		
LINE	BEARING	LENGTH
L1	N0°56'55"E	100.00
L2	N44°03'05"W	150.14
L3	N0°56'55"E	729.83
L4	N0°56'55"E	1761.41
L5	N0°49'13"E	3230.44
L6	N89°10'47"W	130.00'
L7	S0°49'13"W	3228.53'
L8	S0°56'55"W	2492.86'
L9	S44°03'05"E	150.14'
L10	S0°56'55"W	100.00'
L11	S88°28'14"E	130.01'

CURVE TABLE HAUL ROAD			
CURVE	LENGTH	RADIUS	DELTA ANGLE
C1	306.28	389.97	45°00'00"
C2	454.75	579.00	45°00'00"
C3	556.85	709.00'	45°00'00"
C4	204.18'	259.97'	45°00'00"

DESCRIPTION: PART OF THE 130 FEET WIDE EASEMENT FOR THE NEW HAUL ROAD, TO PROVIDE INGRESS AND EGRESS TO PARCELS 04111A, 04111B AND 04111C.

Commencing at the intersection of the West line of Section 32, Township 43 South, Range 40 East with the North right-of-way line of State Road 80,
thence South 88° 28'14" East 2485.12 feet along said right-of-way line to the Point of Beginning on the East line of the 130 feet wide easement,
thence North 0° 56'55" East 100.00 feet along a line parallel with the West line of said Section 32, to the beginning of a curve concave to the West having a radius of 389.97 feet,
thence Northwesterly 306.28 feet along the arc of said curve through a central angle of 45° 00'00" to the end of said curve, at a tangent line to said curve,
thence North 44°03'05" West 150.14 feet along a tangent to the preceding curve, to the beginning of a curve concave to the Northeast having a radius of 579.00 feet,
thence Northwesterly and North 454.75 feet along the arc of said curve through a central angle of 45° 00' 00" to the end of said curve, at a tangent line to said curve,
thence North 0°56'55" East 729.83 feet along a tangent to said curve,
thence North 0°56'55" East 1761.41 feet along a line parallel with the West line of said Section 32 to the South line of Section 29, Township 43 South, Range 40 East,
thence North 0° 49'13" East 3230.44 feet along a line parallel with the West line of said Section 29 to the beginning of a curve concave to the East, having a radius of 3856.26 feet,
thence North 89°10'47" West 130.00 feet along a radial line, to the West line of the 130.00 feet wide easement,
thence South 0°49'13" West 3228.53 feet along a line parallel with the West line of said Section 29, to the North line of Section 32, Township 43 South, Range 40 East,
thence South 0°56'55" West 2492.86 feet along a line parallel with the West line of said Section 32, to the beginning of a curve concave to the Northeast, having a radius of 709.00 feet,
thence Southeasterly 556.85 feet along the arc of said curve through a central angle of 45° 00'00" to the end of said curve and a tangent line to said curve,
thence South 44° 03'05" East 150.14 feet along said tangent, to the beginning of a curve concave to the Southwest having a radius of 259.97 feet,
thence Southwesterly 204.18 feet along the arc of said curve through a central angle of 45° 00'00" to the end of said curve and a tangent line to said curve,
thence South 0°56'55" West 100.00 feet to the North right-of-way line of State Road 80,
thence South 88° 28'14" East 130.01 feet along said right-of-way line to the Point of Beginning.

PAG SURVEYORS, INC.
CERTIFICATE OF AUTHORIZATION NO. LB 3411
1016 SOUTHEAST 4TH STREET
BELLE GLADE, FL 33430-4330
DESCRIPTIONS FOR: PALM BEACH AGGREGATES, INC.
DATE : 5-17-04, WORK ORDER No. 04- 111 C
PARCEL C
DESCRIPTION: A parcel of land lying in Section 32, Township 43 South, Range 40 East, Palm Beach County, Florida, described as follows:
Commencing at the Northwest corner of said Section 32, Township 43 South, Range 40 East, Thence South 88°20'18" East 745.00 feet along the North line of said Section 32 to the East line of Florida Power & Light Company 500 Kv transmission line corridor as recorded in ORB 2222, P. 1696, public records of Palm Beach County, Florida.
thence South 0°56'55" West 1517.74' along said East line, to the Point of Beginning of Parcel C,
thence South 88°20'18" East 1200.18' feet along a line parallel with the North line of said Section 32 to a point,
thence South 0°56'55" West 1861.18 feet along a line parallel with the East line of the Florida Power & Light Co. corridor to a point on the North right-of-way line of State Road 80, Section 93120-2515 sheet 5 of 14 sheets, dated 5-4-84, no revisions shown,
thence North 88°28'14" West 1100.09 feet along said right-of-way line to the East right-of-way line of the Florida Power & Light Company's 500Kv transmission line corridor as recorded in ORB 2222, P. 1696, public records of Palm Beach County, Florida.
thence North 0°56'55" East 880.76 feet along said right-of-way line,
thence North 89°03'05" West 100.00 feet along said right-of-way line,
thence North 0°56'55" East 984.21 feet along said right-of-way line to the Point of Beginning, Containing: 49.292 Acres (2,147,145.06 square feet)
BASIS OF BEARINGS: Bearings shown on this plat of survey and description are Grid Bearings of the Florida State Plane Coordinate System, East Zone, on the 1983 North American Datum, 1998 Adjustment derived from our GPS survey using as control Palm Beach County GPS Monument SOUP. The West line of Section 32 Township 43 South Range 40 East bears North 0°56'55" East and all other bearings are relative thereto.

Fernando Gonzalez, P.S.M.
Florida License No. 4994

Figure 2.1.6-1c

PAG SURVEYORS, INC. 1016 SOUTHEAST 4TH STREET BELLE GLADE, FL 33430-4330 PHONE (561) 996-6615	DATE 5-17-04	SCALE 1"=200'	DRAWN PAG	FB No. 43-40	1	ADDED EASEMENT DESCRIPTION	PAG	6-11-04	DESCRIPTORS FOR: PALM BEACH AGGREGATES, INC. 20125 STATE ROAD 80 LOXAHATCHEE, FL 33470	SHEET NO. 1 OF WORK ORDER NO. 04-3-111C
SEAL	CHECKED FG	NO.	REVISIONS	BY	DATE	PALM BEACH COUNTY		FLORIDA		

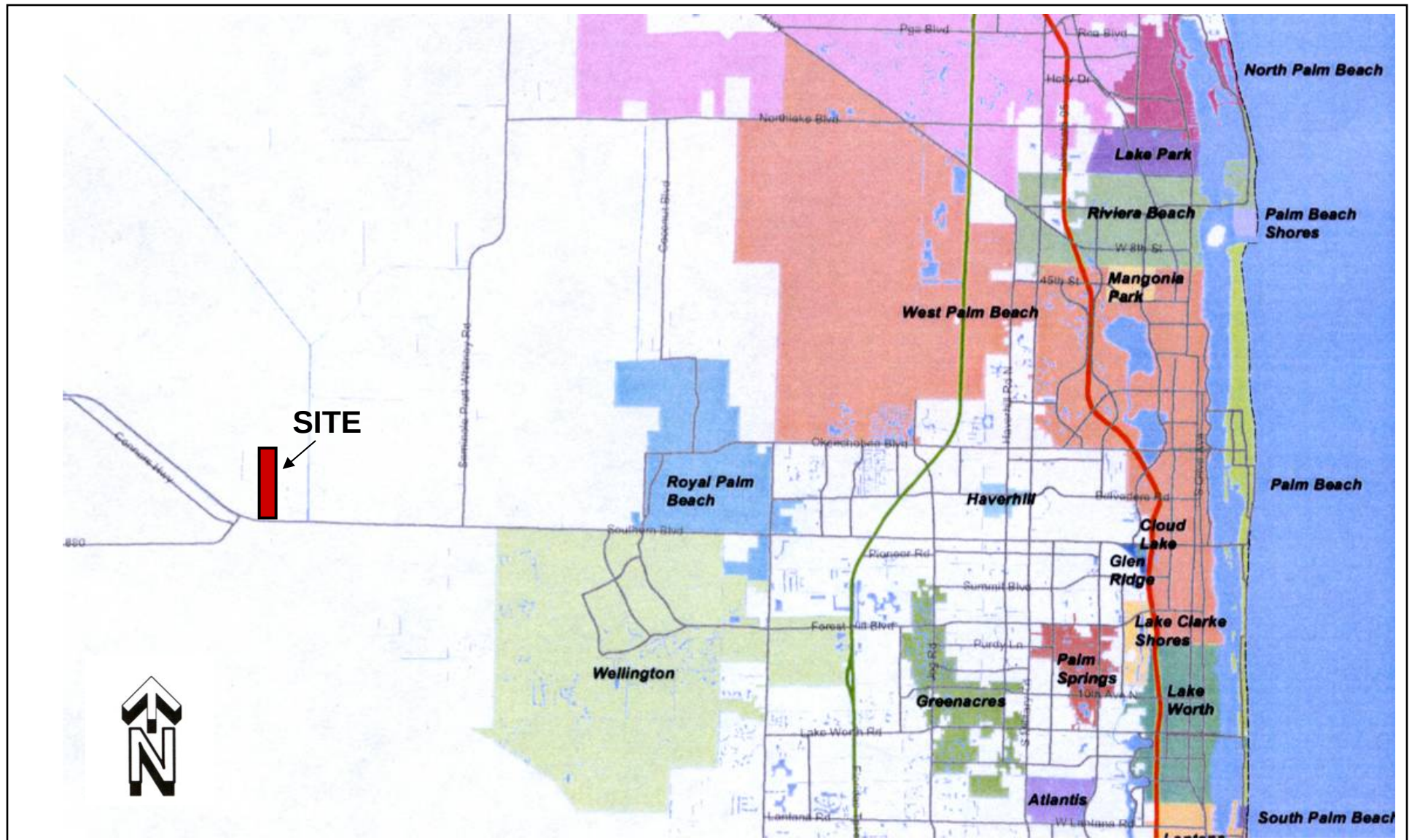


Figure 2.2.1-1
Municipalities in the Vicinity of the Project
FPL West County Energy Center, Palm Beach County, Florida

Note to Scale – 1" = ~3 miles.

Source: Palm Beach Dept. of Planning/Zoning website; Golder, 2005.



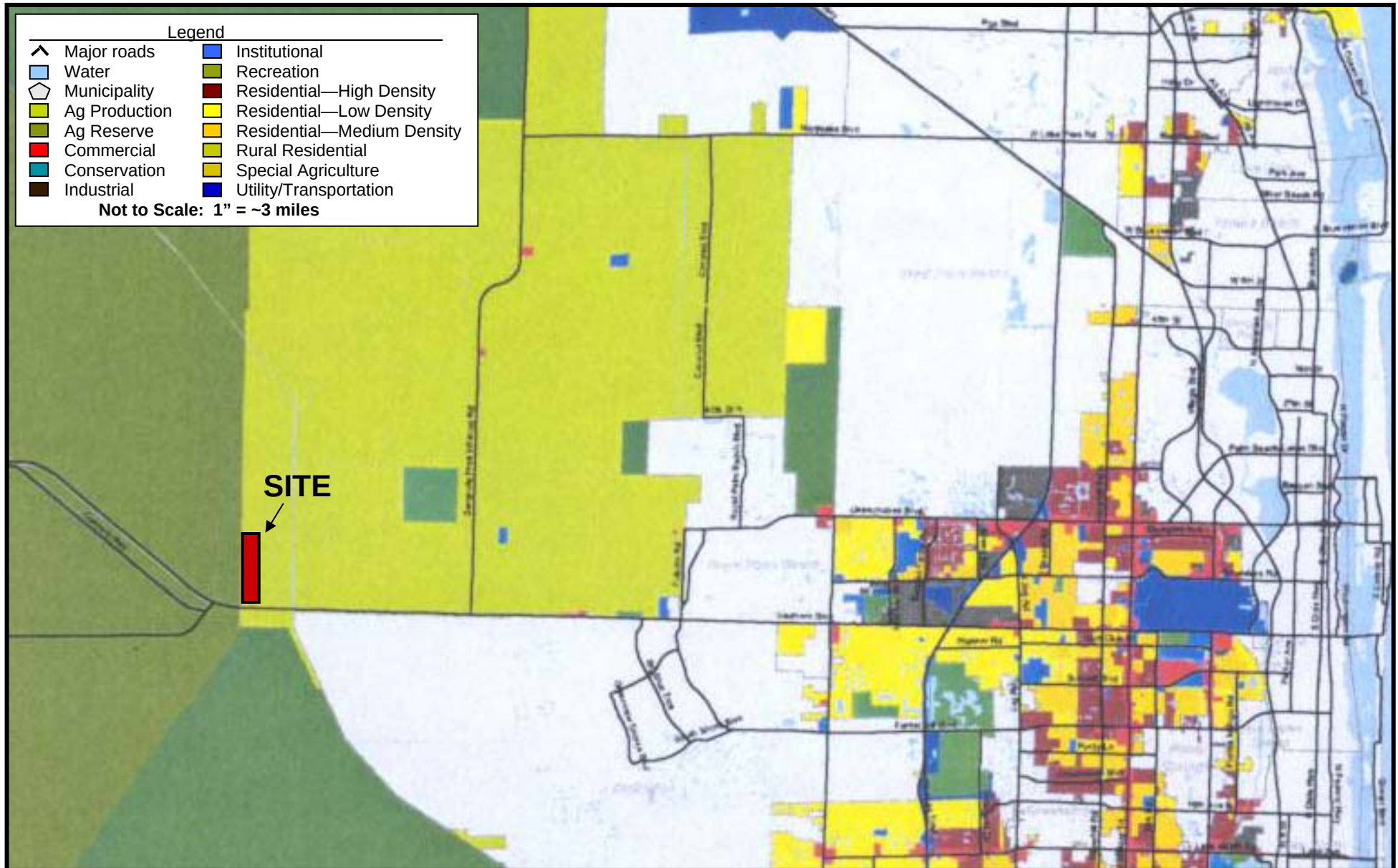


Figure 2.2.2-1a.
Generalized Future Land Use
FPL West County Energy Center, Palm Beach County, Florida

Source: Palm Beach County website, 2004; Golder, 2005.



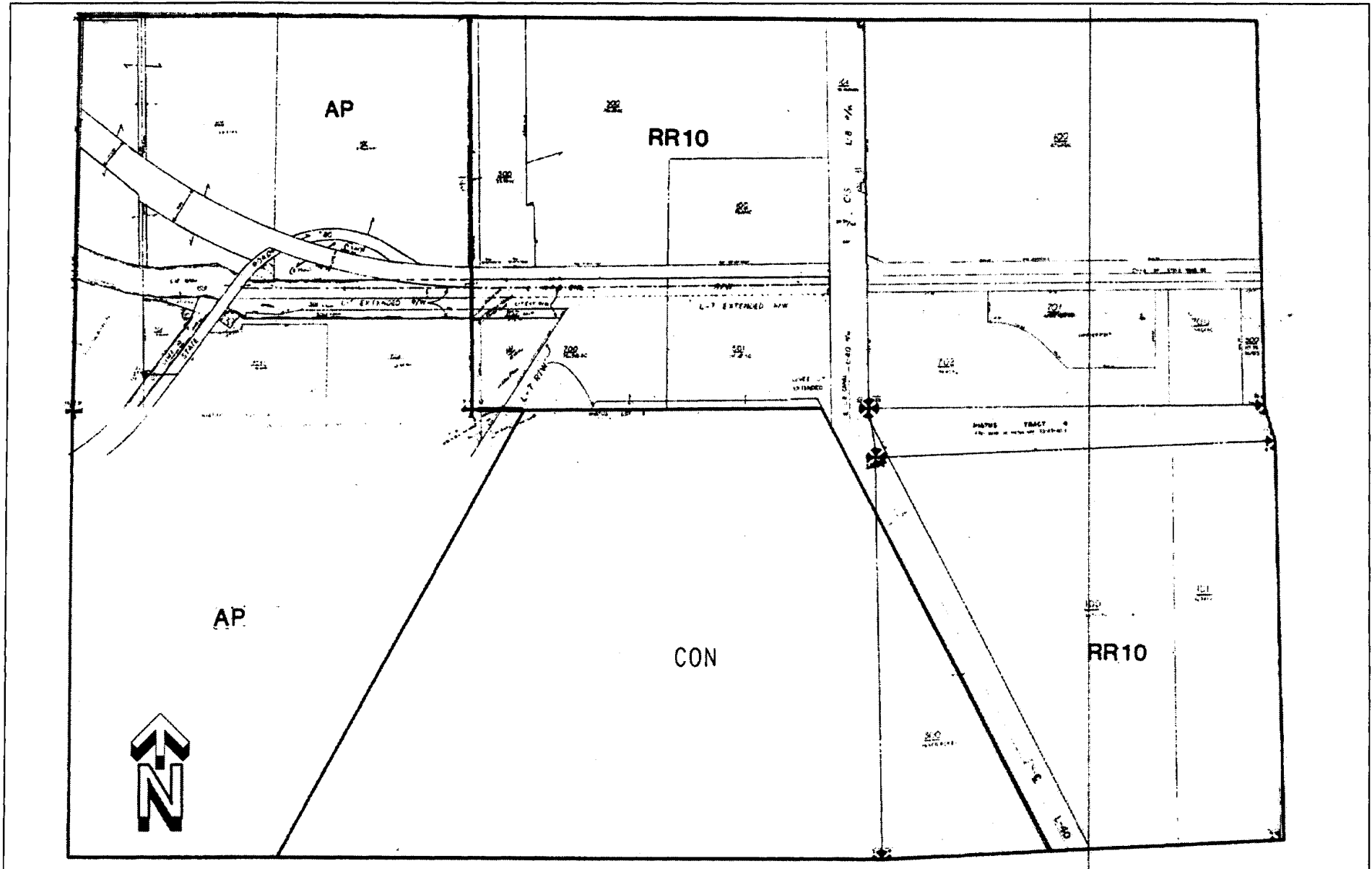


Figure 2.2.2-1b.
Future Land Use Classifications
FPL West County Energy Center, Palm Beach County, Florida

Source: Palm Beach County website, 1989; Golder, 2005.



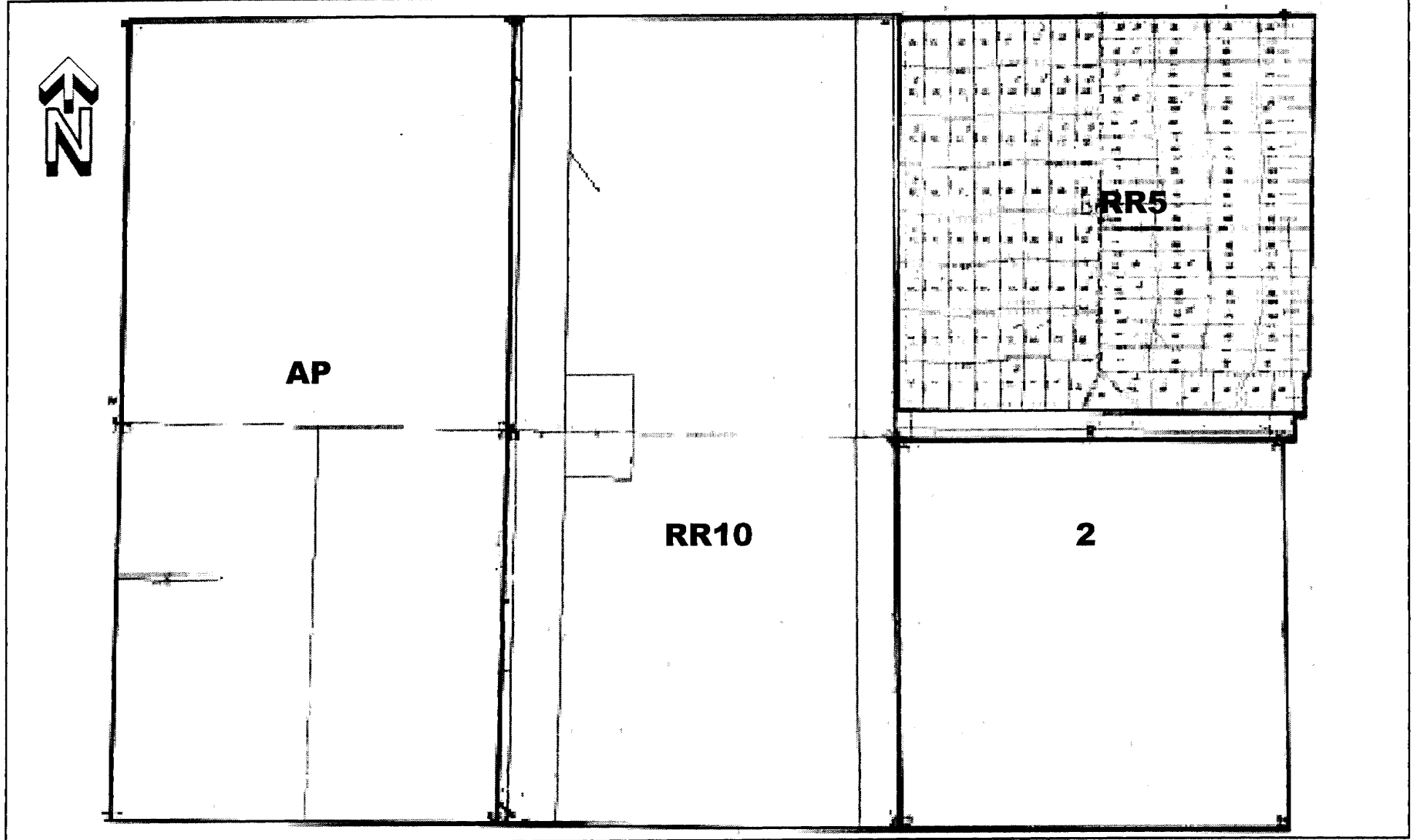


Figure 2.2.2-1c.
Future Land Use Classifications
FPL West County Energy Center, Palm Beach County, Florida

Source: Palm Beach County website, 1989; Golder, 2005.

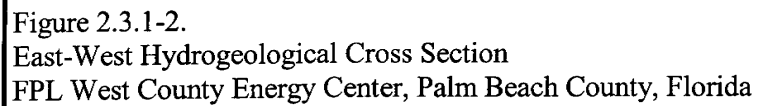


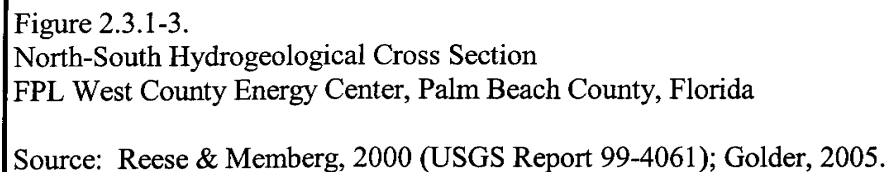
Series	Geologic Unit	Approximate thickness (feet)	Lithology	Hydrogeologic unit	Approximate thickness (feet)
HOLOCENE	PAMLICO SAND	0-50	Quartz sand with shelly intervals	SURFICIAL AQUIFER SYSTEM	150-380
PLEISTOCENE	ANASTASIA FORMATION	0-200	Quartz sand, shell, and coquina		
	FT THOMPSON FORMATION	0-40	Alternating massive micritic limestone and freshwater marl		
PLIOCENE	TAMIAMI FORMATION	0-200	Sandy, shelly limestone; calcareous sandstone; quartz sand, and clayey sand	INTERMEDIATE CONFINING UNIT	600-700
MIOCENE AND LATE OLIGOCENE	HAWTHORN GROUP	500-800	Clay, marl, dolosilt, micritic limestone, clayey sand, silt, and phosphate grains		
		90-130	Micritic limestone to marl, chert nodules, some phosphate grains		
		30-355	Limestone, dolomite, shell, sand, sandstone, and calcareous clay or silt, abundant phosphate grains in places		
?	MARKER UNIT			FLORIDAN AQUIFER SYSTEM	LOWER HAWTHORN PRODUCING ZONE
	BASAL HAWTHORN UNIT				
EARLY OLIGOCENE	SUWANNEE LIMESTONE	0-150	Fossiliferous, calcarenitic limestone		UPPER FLORIDAN AQUIFER
EOCENE	OCALA LIMESTONE	0-300	Chalky to fossiliferous, calcarenitic limestone		500-700 ?
	AVON PARK FORMATION	900-1,200	Fine-grained, micritic to fossiliferous limestone and dolomite		MIDDLE CONFINING UNIT
	?	?			0?-900
	OLD SMAR FORMATION	1,100-1,500	Fine-grained, micritic to fossiliferous limestone, dolomitic limestone, and dense dolomite		LOWER FLORIDAN AQUIFER
PALEOCENE	CEDAR KEYS FORMATION	500-600	Dolomite and dolomitic limestone		BOULDER ZONE
		1,500?	Massive anhydrite beds		300-650
					1,800
					SUB-FLORIDAN CONFINING UNIT
					1,500?

Figure 2.3.1-1.
Generalized Geology and Hydrogeology of Palm Beach County
FPL West County Energy Center, Palm Beach County, Florida

Source: Reese & Memberg, 2000 (USGS Report 99-4061); Golder, 2005.







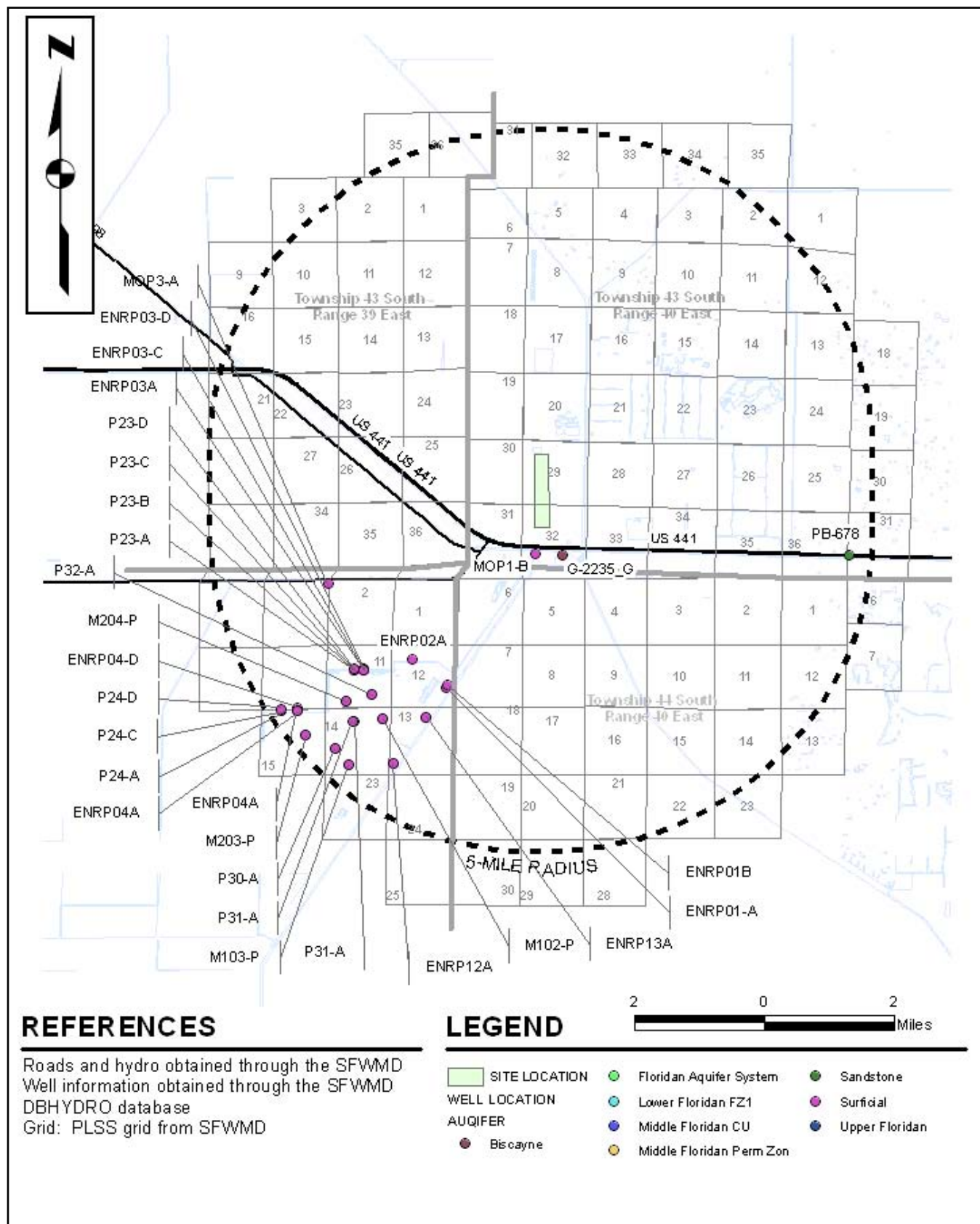


Figure 2.3.3-1.
 Potable Wells Located Within a 5-mile Radius of the Site
 FPL West County Energy Center, Palm Beach County, Florida

Source: SFWMD; Golder, 2005.





Figure 2.3.5-1. Vegetation/Land Use Map of Project Area
[Classified using the Florida Land Use, Cover and Forms Classification System (FDOT, 1999).]
FPL West County Energy Center, Palm Beach County, Florida

Source: USGS, 2005; Golder, 2005.



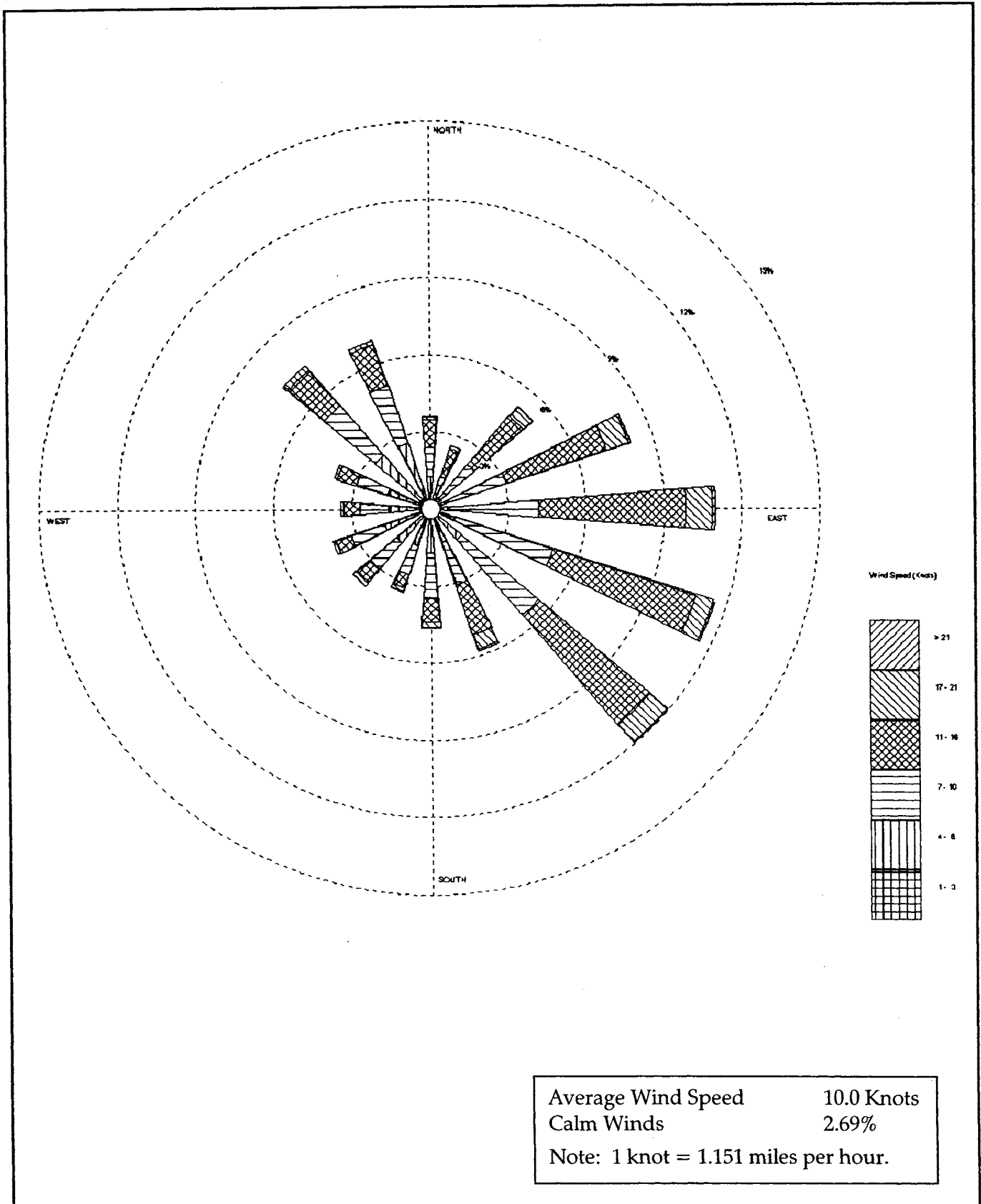


Figure 2.3.7-1.

Annual Wind Rose for 1987 to 1991

At Palm Beach International Airport, Florida (Station No. 12844)

FPL West County Energy Center, Palm Beach County, Florida

Source: National Climatic Data Center, 1987-1991; Golder, 2005.



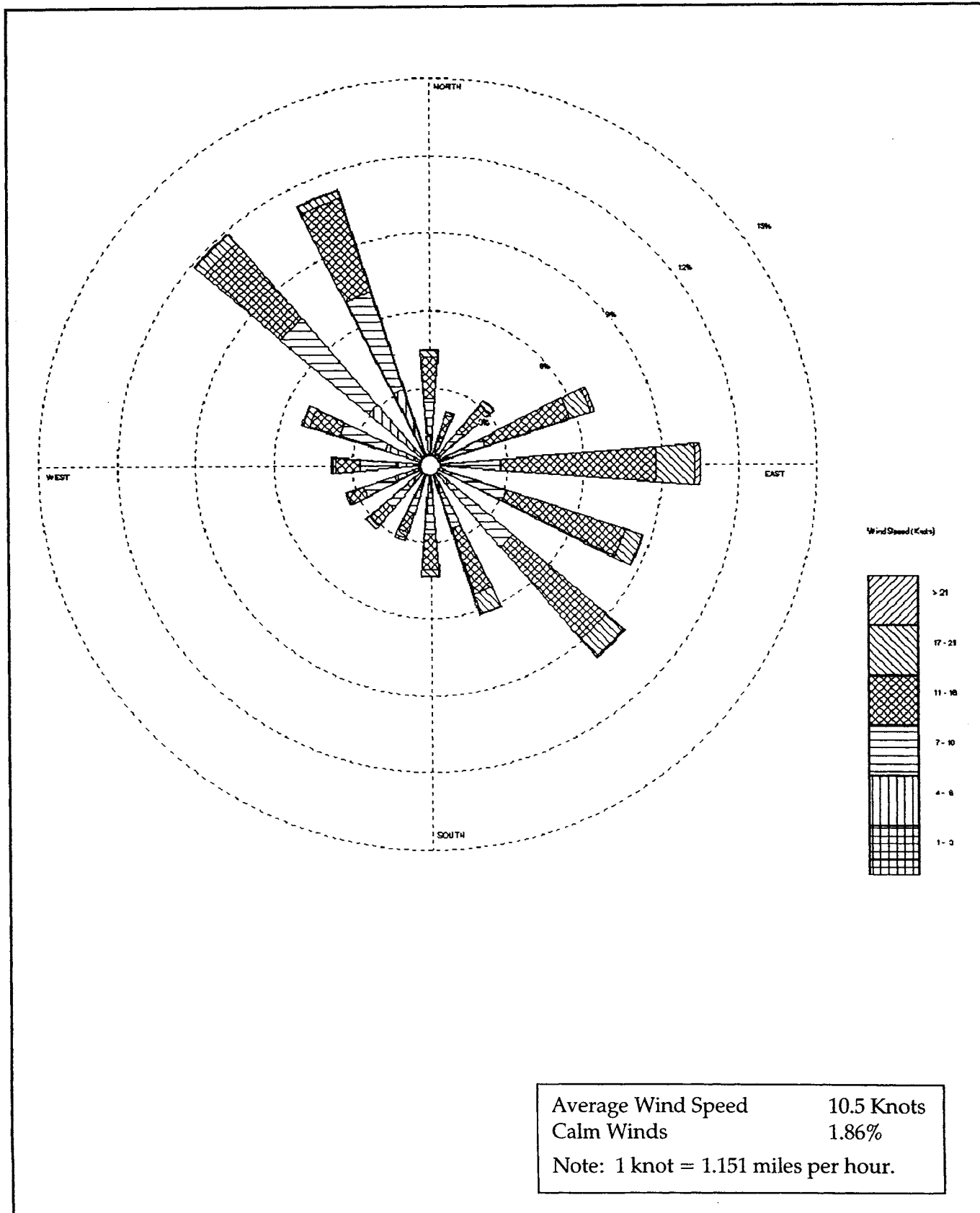


Figure 2.3.7-2.

Winter Wind Rose for December through February 1987 to 1991
 At Palm Beach International Airport, Florida (Station No. 12844)
 FPL West County Energy Center, Palm Beach County, Florida

Source: National Climatic Data Center, 1987-1991; Golder, 2005.



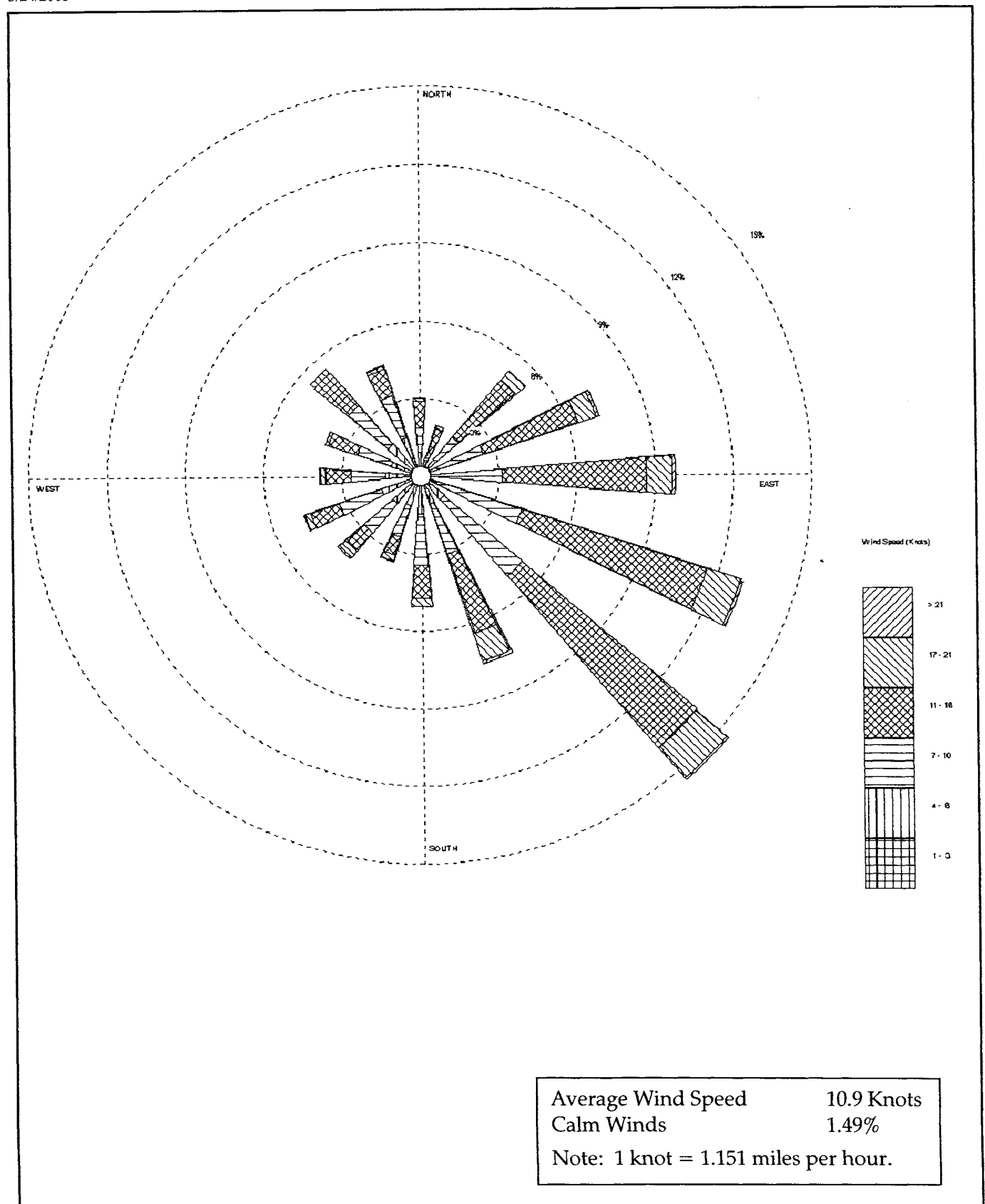


Figure 2.3.7-3.

Spring Wind Rose for March through May 1987 to 1991

At Palm Beach International Airport, Florida (Station No. 12844)

FPL West County Energy Center, Palm Beach County, Florida

Source: National Climatic Data Center, 1987-1991; Golder, 2005.



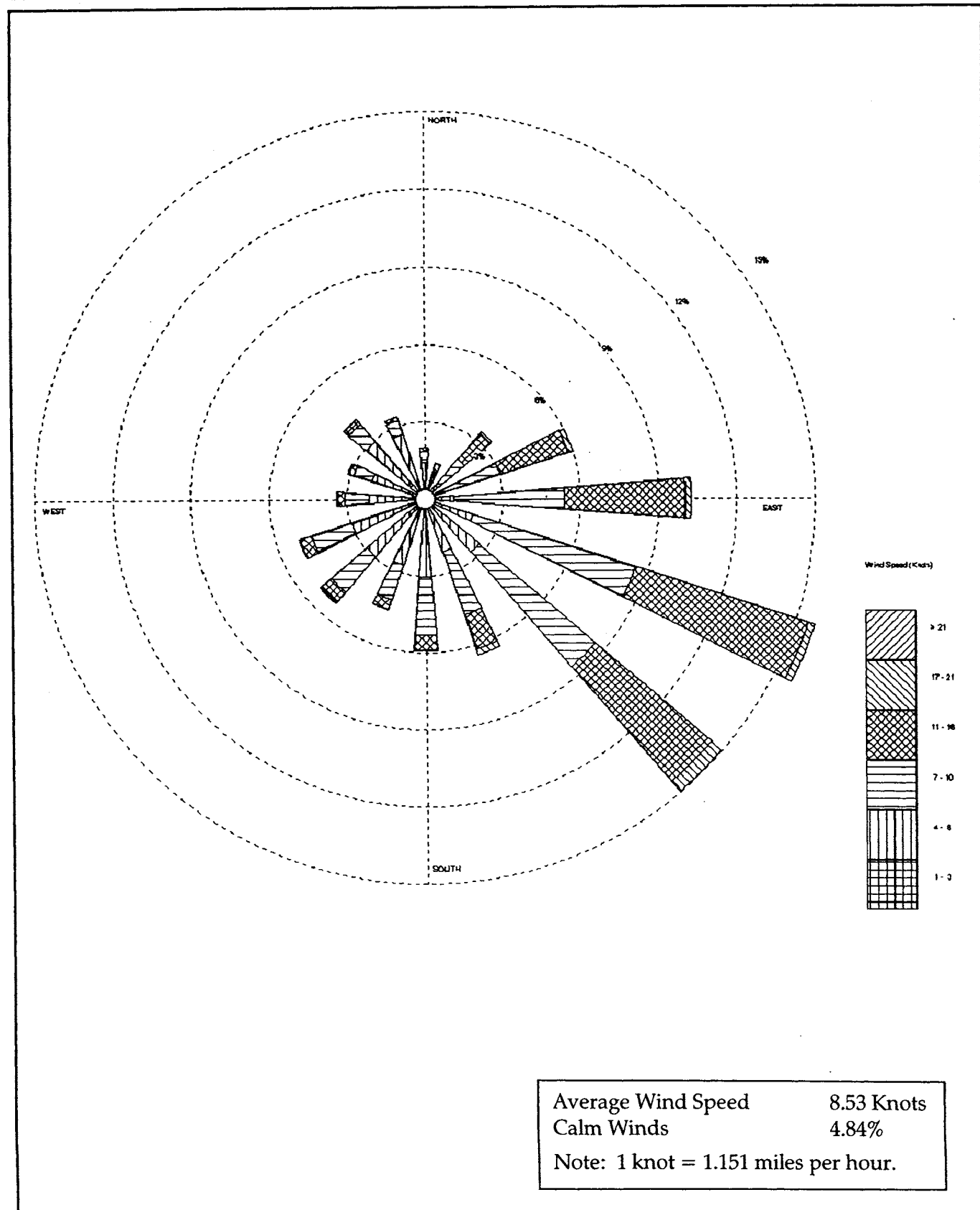


Figure 2.3.7-4.
 Summer Wind Rose for June through August 1987 to 1991
 At Palm Beach International Airport, Florida (Station No. 12844)
 FPL West County Energy Center, Palm Beach County, Florida

Source: National Climatic Data Center, 1987-1991; Golder, 2005.



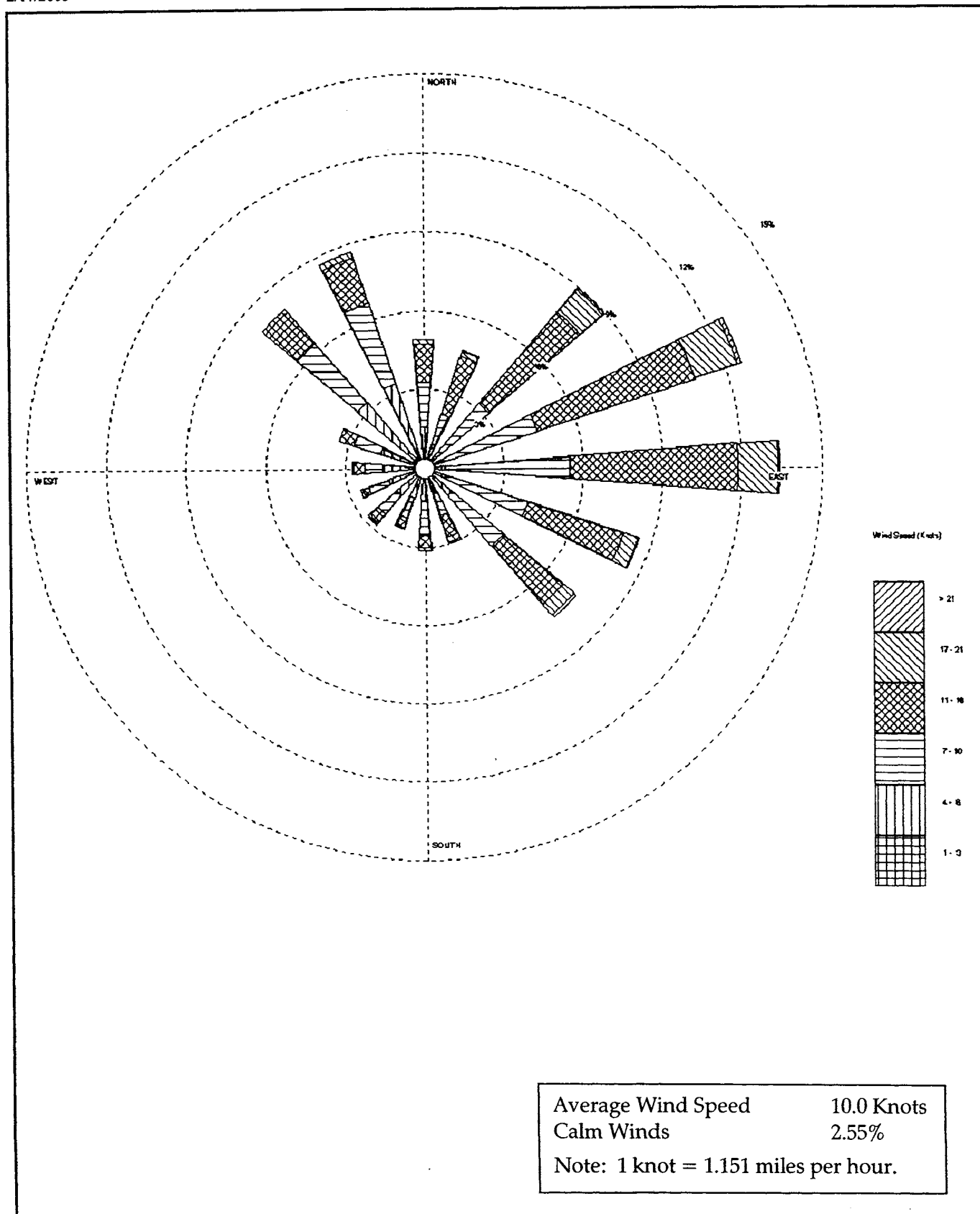


Figure 2.3.7-5.

Fall Wind Rose for September through November 1987 to 1991
 At Palm Beach International Airport, Florida (Station No. 12844)
 FPL West County Energy Center, Palm Beach County, Florida

Source: National Climatic Data Center, 1987-1991; Golder, 2005.



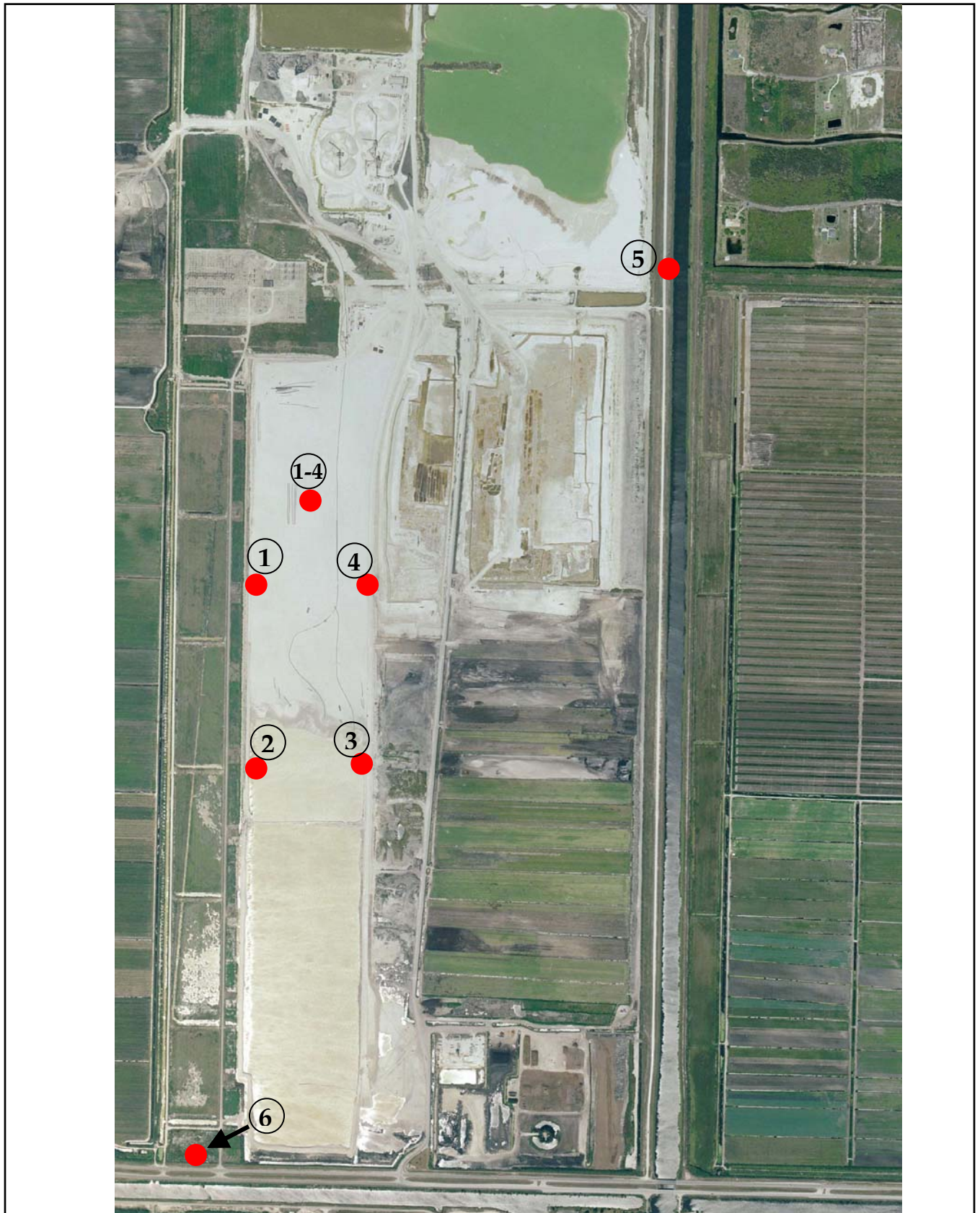


Figure 2.3.8-1
Noise Monitoring Locations
FPL West County Energy Center, Palm Beach, Florida

Source: Golder, 2005.



3.0 THE PLANT AND DIRECTLY ASSOCIATED FACILITIES

3.1 BACKGROUND

This chapter provides a description of the 2,200-MW Project and the 3,300-MW ultimate site capacity, including the overall Site layout, key components of the facility and their operation, and proposed controls for air emissions and water discharges. Fuel specifications are provided for natural gas and ultra low-sulfur light oil. Estimates of the expected character, quality, and quantity of discharges and emissions from the Project, and where possible for the ultimate site capacity, are provided.

Location of the new combined cycle units at the Site and selection of the combined cycle technology will maximize the beneficial use of the Site while minimizing environmental, land use, and cost impacts otherwise associated with development of the Project and the ultimate capacity of a 3,300-MW electric-generating plant. The 220-acre Site, previously associated with mining activities has resulted in a disturbed, backfilled property. The Site is also adjacent to FPL's Corbett Substation, thereby minimizing the need for new transmission facilities.

The Project, for which full Site Certification is being sought, consists of two nominal 1,100-MW combined cycle units. There are two potential configurations for each unit.

The first configuration is referred to as a "4-on-1" combined cycle unit. The "4-on-1" unit will consist of four GE "F" Class advanced CTs and four heat recovery steam generators (HRSGs), which will utilize the waste heat from the CTs to produce steam to be utilized in a single steam turbine generator. The GE "F" Class turbines being considered for the Project include the nominal 170-MW Frame 7FA CT and the nominal 190-MW Frame 7FB CT.

The second configuration is referred to as a "3-on-1" combined cycle unit. The "3-on-1" unit will consist of three nominal 250-MW "G" Class advanced CTs and three HRSGs, which will utilize the waste heat from the CTs to produce steam to be utilized in a single steam turbine generator. The "G" Class CTs being considered for the Project are the Siemens 501G CTs and the Mitsubishi Heavy Industries (MHI) M501G CTs.

Each of the "4-on-1" or "3-on-1" configurations will have a total nominal generating capacity of 1,100 MW, firing gas at an annual average ambient condition of 75°F and 60-percent relative



humidity. Duct burners are also proposed for each HRSG and are fired during peak demand periods to achieve the total nominal generating capacity. Duct firing will be limited to an equivalent of 2,880 hours per CT per year at the maximum firing rate.

Each CT unit will utilize inlet air cooling such as evaporative cooling or chillers. Evaporative cooling systems achieve adiabatic cooling using water either in the form of fine droplets (fog) or water evaporated from a woven material. The evaporated water extracts the latent heat of vaporization from the inlet air stream when the water droplet is converted to water vapor. Heat is removed at a rate of 1,075 British thermal units per pound (Btu/lb) of water. The result is a cooler, more moisture-laden air stream. This allows additional power to be produced more efficiently. An 8°F average decrease in temperature would result in a 3.0 percent increase in power and an associated 1.2 percent decrease in heat rate. Thus, while power increases, the production of power is more efficient with concomitant lower emissions per MW-hour generated.

If the GE Frame 7FA CTs are selected, they will be capable of operation in “peak” and power augmentation modes. In peak mode, the firing temperature of the turbine is increased resulting in increased power. In power augmentation mode, steam is injected into the CT resulting in increased power.

The CTs will use natural gas as the primary fuel with ultra low-sulfur distillate “light oil” used as a backup fuel. The HRSG duct burners will fire natural gas only. Gas will be transported to the Project through new lateral(s) connected to one or more pipelines. The lateral will be connected to a new onsite gas yard (e.g., meters, regulators, and compression), and ultra low-sulfur light oil will be trucked to the Site. When firing natural gas, NO_x emissions will be controlled using dry low-NO_x (DLN) combustion technology and selective catalytic reduction (SCR). Demineralized water is utilized during firing of ultra low-sulfur light oil to reduce the combustion temperature and the generation of NO_x emissions from the CT. Water injection and SCR will be used to reduce NO_x emissions when firing ultra low-sulfur light oil. This design maximizes control of air emissions while balancing economic, environmental, and energy impacts [see Section 3.4 for a description of the control technology and a summary of best available control technology (BACT)].

Primary water uses for the Project will be for condenser cooling, CT inlet air cooling, NO_x injection water, power augmentation, steam cycle makeup, and service water.



Condenser cooling for the steam cycle portion of the Project will be accomplished using two mechanical draft cooling towers with makeup from the L10/L12 Canal. The secondary/emergency backup source for cooling tower makeup water will be from wells in the Floridan aquifer. When available, stormwater runoff collected in the retention ponds will be diverted for use as cooling tower makeup water. Service and process water for the Project will come from the L10/L12 Canal.

Additional facilities to be constructed as part of the Project will be the intake structure on L10/L12 Canal and the water pipeline from the intake structure to the Site. Electrical interconnections will be made with the existing FPL Corbett Substation.

The Project has been designed to avoid direct discharge to surface waters. Non-contact stormwater runoff in the power block area will be routed to the onsite stormwater retention ponds. Non-contact stormwater outside the power block will also be collected and routed to a stormwater pond, which will be designed to meet federal, state, regional, and local requirements (see Section 3.8). All non-hazardous wastewaters will be treated as appropriate and discharged to the Boulder Zone of the lower Floridan aquifer (injection zone) through Class I injection wells.

The Project will be connected to the existing transmission network through a connection to the FPL Corbett Substation. No new transmission lines are required to connect the Project to the existing transmission network.

3.2 SITE LAYOUT

The Project will be located on the 220-acre Site, with the first unit constructed in the northern portion of the Site and subsequent units constructed toward the south. Figures 3.2.0-1 and 3.2.0-2 present the boundary of the Site as well as the areas identified for the 4-on-1 and 3-on-1 combined cycle unit configurations, respectively. Figures 3.2.0-3 and 3.2.0-4 present overall plot plans for the 4-on-1 and 3-on-1 combined cycle unit configurations, respectively (i.e., arrangement for combined cycle units). A typical profile of a CT/HRSG train is shown in Figure 3.2.0-5. Within the Site, approximately 41 acres will be utilized for the Power Blocks containing the CT/HRSG trains, steam turbine/electric generator, cooling tower, and other facilities. About 7 acres will be utilized for the control/administration buildings, maintenance building, ultra low-sulfur light oil tanks and emergency diesel generators. About 28 acres north and east of Unit 1 will be used for the construction of Unit 1 (laydown, parking, and construction trailers). Over 100 acres south of the

Unit 2 area is available for construction laydown and parking for Units 1 and 2. About 34 acres will be used to construct the two stormwater retention ponds.

Non-contact stormwater runoff from the Site will be drained into the stormwater retention ponds. Contact stormwater runoff from the power block and equipment areas will be treated and also routed to the stormwater retention pond. No point-source discharge of stormwater runoff will be required. Stormwater runoff that is collected in the retention pond will be released by a combination of percolation, evaporation, and diversion for use as cooling tower makeup.

3.3 FUEL

The primary fuel used by the CTs and for HRSG duct firing will be natural gas, delivered to the plant by a new lateral connected to one or more existing pipelines. Typical properties of natural gas are shown in Table 3.3.0-1. The heat content is typically 20,835 Btu/lb [lower heating value (LHV)] with a maximum sulfur content of 2 grains per 100 standard cubic feet (gr/100 scf) of gas.

Ultra low-sulfur light oil may be used as a backup fuel for an equivalent of 500 hours/year per CT at baseload conditions. Typical properties of ultra low-sulfur light oil are shown in Table 3.3.0-2. The heat content is typically 18,367 Btu/lb (LHV) with a maximum sulfur content of 0.0015 percent by weight.

No onsite storage will be provided for natural gas. Ultra low-sulfur light oil will be stored in a new 4.2-million-gallon tank for each unit.

The generating capacity of a combined cycle plant is affected by ambient temperature, with increased temperature resulting in less efficient electric production. Greater overall fuel consumption will occur at lower ambient temperatures. For the purpose of calculating maximum hourly fuel use quantities representative of a nominal 1,100-MW combined cycle unit, the following operating conditions for the CTs were used:

1. 35°F dry-bulb turbine inlet temperature,
2. 60-percent relative humidity,
3. 28 feet above mean sea level (ft-msl)] elevation, and
4. 20,835-Btu/lb and 950 Btu/scf heating value (LHV) of natural gas and 18,367-Btu/lb and 129,900 Btu/gallon heating value (LHV) for ultra low-sulfur light oil.

For the GE Frame 7FA CT, the maximum heat input is 1,688 million (MM) Btu/hr (LHV) for each CT when firing natural gas (100-percent capacity, 35°F). The corresponding maximum fuel usage is about 1.8 million cubic feet per hour (MMcf/hr) of natural gas for each CT. Maximum potential fuel usage at 59°F turbine inlet temperature would be about 5.9×10^{10} cubic feet per year (yr^3) of natural gas for each 4-on-1 combined cycle unit using the GE Frame 7FA CT.

For the GE Frame 7FB CT, the maximum heat input is 1,790 MMBtu/hr (LHV) for each CT when firing natural gas (100-percent capacity, 35°F). The corresponding maximum fuel usage is about 1.9 MMcf/hr of natural gas for each CT. Maximum potential fuel usage at 59°F turbine inlet temperature would be about 6.4×10^{10} yr^3 of natural gas for each 4-on-1 combined cycle unit using the GE Frame 7FB CT.

The HRSG duct burners associated with the 4-on-1 combined cycle unit using the GE Frame 7FA or 7FB CTs will have a maximum firing rate of 550 MMBtu/hr high heating value (HHV) or 495.5 MMBtu/hr (LHV). The maximum annual fuel usage for the duct burners is based on 2,880 hours/year at this heat input. The maximum potential annual fuel usage for the duct burners is calculated to be about 6 billion scf/year.

The 3-on-1 combined cycle unit will utilize either the Siemens 501G or the MHI 501G CTs. These machines are very similar in capacity and heat rate as well as the corresponding fuel use. The maximum heat input for each CT associated with a 3-on-1 configuration is 2,420 MMBtu/hr (LHV) for each CT when firing natural gas (100-percent capacity, 35°F). The corresponding maximum fuel usage is about 2.5 MMcf/hr of natural gas for each CT. Maximum potential fuel usage at 59°F turbine inlet temperature would be about 6.3×10^{10} yr^3 of natural gas for each 3-on-1 combined cycle unit using the “G” Class CTs.

The HRSG duct burners associated with the 3-on-1 combined cycle unit will have a maximum firing rate of 475 MMBtu/hr (HHV) or 428 MMBtu/hr (LHV). The maximum annual fuel usage for the duct burners is based on 2,880 hours/year at this heat input. The maximum potential annual fuel usage for the duct burners is calculated to be about 4 billion scf/year.

Ultra low-sulfur light oil will be limited to 500 hours per year per CT at full load for either the 4-on-1 or 3-on-1 combined cycle configuration. For the GE Frame 7FA turbines, the maximum fuel use of about 14,700 gallons/hour/CT at 35°F turbine inlet. Annual usage would be of 27.9 million gallons for four CTs each operating for 500 hours and a turbine inlet temperature of 59°F. For the GE Frame 7FB turbines, the maximum fuel use is about 15,700 gallons/hour/CT at 35°F turbine inlet, and the maximum annual usage would be about 29.9 million gallons for the four CTs at a turbine inlet of 59°F. For the “G” Class CTs, the maximum fuel use is about 19,100 gallons/hr/CT at 59°F turbine inlet and would require an annual usage of 27.3 million gallons for three CTs each operating for 500 hours and a turbine inlet temperature of 59°F.

The Site will be connected to a new lateral from one or more natural gas pipeline systems. Ultra low-sulfur light oil will be delivered to the Site by truck.

3.4 AIR EMISSIONS CONTROLS

3.4.1 AIR EMISSIONS TYPES AND SOURCES

Air pollutants will be emitted from the CT/HRSGs when firing natural gas and ultra low-sulfur light oil. Air emissions result from either the combustion process or impurities in the fuel. Tables 3.4.1-1 and 3.4.1-2 present the performance and maximum estimated emission rates of regulated pollutants for each CT/HRSG stack when firing natural gas and ultra low-sulfur light oil, respectively. The maximum estimated emission rates were determined using the manufacturer's information for the equipment proposed for the Project. The design parameters are provided in Tables 3.4.1-1 and 3.4.1-2 for an operating load of 100 percent (baseload) and a turbine inlet temperature of 59°F. Appendix 10.1.5, the PSD Application, presents the basis for the emission rates and maximum annual emissions of regulated and non-regulated pollutants as well as performance for turbine inlet temperatures of 35°F, 59°F, 75°F, and 95°F and low load information.

During combustion, two primary types of NO_x are formed: fuel NO_x and thermal NO_x. Fuel NO_x emissions are formed through the oxidation of a portion of the nitrogen contained in the fuel. Thermal NO_x emissions are generated through the oxidation of a portion of the nitrogen contained in the combustion air. NO_x formation can be limited by lowering combustion temperatures (through water or steam injection) and/or staging combustion (a reducing atmosphere followed by an oxidizing atmosphere, known as dry NO_x control).

Carbon monoxide (CO) is formed by incomplete combustion of fuel. High combustion temperatures, adequate excess air, and good fuel/air mixing during combustion will minimize CO formation. CO formation is limited by ensuring complete efficient combustion of the fuel in the turbines. Recent improvements in CT combustor technology allow for both reduced NO_x emissions and low CO emissions.

Emissions of NO_x for the Project are proposed at concentrations of 2.5 parts per million-dry conditions (ppmvd), corrected to 15-percent oxygen (O₂) or less when firing natural gas and 10 ppmvd corrected to 15-percent O₂ or less when firing ultra low-sulfur light oil.

The level of NO_x control establishes emission rates for CO, since DLN combustors will be used when firing gas. Maximum CO emission rates for the Project are specific to the turbine selected. For the GE Frame 7FA turbine, the proposed CO emission rates when firing natural gas are 4.14 ppmvd corrected to 15 percent O₂ at baseload operation and 7.6 ppmvd corrected to 15 percent O₂ with maximum duct firing. For the GE 7FB turbine, the proposed CO emission rates when firing natural gas are 11.8 ppmvd corrected to 15 percent O₂ at baseload operation and 13.6 ppmvd corrected to 15 percent O₂ with maximum duct firing. For the "G" Class turbine, the proposed CO emission rates when firing natural gas are 5 ppmvd corrected to 15 percent O₂ at baseload operation and 7.2 ppmvd corrected to 15 percent O₂ with maximum duct firing.

When firing ultra low-sulfur light oil, the CO emissions are established by the use of water injection for NO_x control. The proposed CO emission rates for oil firing at baseload conditions are 8 ppmvd corrected to 15 percent O₂ for the GE Frame 7FA turbine, 12.7 ppmvd corrected to 15 percent O₂ for the GE 7FB turbine, and 7 ppmvd corrected to 15 percent O₂ for the "G" Class turbine.

Maximum SO₂ emission rates are controlled and minimized by the very low sulfur content in the fuels, which will be 2 grains sulfur/100 scf for natural gas and 0.0015 percent sulfur by weight for ultra low sulfur light oil.

Table 3.4.1-3 presents the potential PM/PM₁₀ emissions from one mechanical draft cooling tower. PM emissions are emitted from the mechanical draft cooling tower in the form of drift. Cooling tower drift will be controlled through the use of mist eliminators that will be designed to limit drift to 0.0005 percent of the circulating water rate of the cooling tower. The information presented in Table 3.4.1-3 is for a 22-cell design. Alternatively, a 24-cell tower design may be used. However,

the circulating water and drift rates are the same; therefore, the emissions (total PM and PM₁₀) are the same.

Each combined cycle unit will be equipped with two, 100-percent capability, 2,250-kW emergency generators. These emergency generators will be used when electric power cannot be transmitted into the FPL transmission system and is unavailable to the Site. This primarily would occur during catastrophic events such as hurricanes. At a maximum expected operation of 160 hours per year, the emissions of any regulated air pollutant will not exceed 5 TPY. At an emission rate of 5 TPY, each emergency generator would be classified as an exempt emission unit and can be considered as an insignificant activity for air permitting purposes. Appendix 10.1.5 contains emissions and manufacturer's information for the emergency generators proposed for the Project. Normally these emergency generators would be operated 1 to 2 hours per month for maintenance and reliability testing.

The Project will include two natural gas-fired fuel heaters in the gas yard. These heaters will utilize a heat transfer fluid for heating the natural gas and be fired with only natural gas. The manufacturer will be Hanover Compression Company or equivalent. These heaters will have a heat input of 10 MMBtu/hr or less and will be used as necessary to heat natural gas above the dew point.

If the "G" Class CTs are selected for the Project, an auxiliary boiler is required for startup. The combustor for the "G" Class CT requires steam for combustor cooling, which normally comes from the HRSG. For startup of each "G" Class CT, an auxiliary boiler is required to supply steam for combustion process. Once sufficient quality and quantity of steam is available from the HRSG, steam from the auxiliary boiler is not required. The steam boiler will have a steam capacity of 85,000 lb/hr and be a Nebraska Boiler or equivalent. One boiler is required for each nominal 1,100-MW combined cycle unit. It was conservatively assumed that the annual operation of the auxiliary boilers would be 500 hours/year for the startup of the "G" Class CTs.

Table 3.4.1-4 presents the annual potential emissions for the Project. Annual emissions were based on emissions expected for baseload and ambient temperatures of 59°F. The maximum emissions are based on 8,260 hours firing natural gas and 500 hours per year firing oil. Natural gas firing includes 2,880 hours with maximum duct firing. For the GE Frame 7FA CT, the maximum emissions include 400 hours peak firing with duct firing. The potential emissions are based on the 59°F turbine inlet temperature at 100-percent load condition since it represents a conservative average when the annual



average temperatures are slightly higher than 70°F. Table 3.4.1-4 compares the emissions to the PSD significant emission rates, which are thresholds for PSD review for new major sources. PSD review is required for emissions of a pollutant greater than the listed PSD significant emission rate. PSD review requires a determination of BACT.

3.4.2 AIR EMISSION CONTROLS

The use of clean fuel, i.e., natural gas, and combustion controls will minimize air emissions and ensure compliance with applicable emission-limiting standards. Using clean fuels will minimize emissions of SO₂, PM/PM₁₀, and other fuel-bound contaminants. Combustion controls will minimize the formation of NO_x and the formation of CO and VOCs by combustor design. Further NO_x reduction will be achieved by SCR. The combination of these techniques are proposed for this Project and have been determined to represent BACT on previous projects based on an evaluation of economic, energy, and environmental impacts. The following subsection presents a summary of the Air Pollution Control Technology and BACT analysis, which is presented in the PSD permit application in Appendix 10.1.5.

3.4.3 CONTROL TECHNOLOGY DESCRIPTION AND BEST AVAILABLE CONTROL TECHNOLOGY

BACT review is required under FDEP rules and EPA regulations pertaining to PSD. Federal regulations are codified in 40 Code of Federal Regulations (CFR) Part 51.166, and FDEP has adopted PSD rules in Rule 62-212.400, F.A.C. The BACT review is part of the evaluation of control technology under the Florida PSD rules. BACT is applicable to all pollutants for which PSD review is required and is pollutant specific. It is an emission limitation that is based on the maximum degree of reduction for each regulated pollutant, which is determined to be appropriate after taking into account energy, environmental, economic impacts, and other costs. BACT cannot be any less stringent than the federal New Source Performance Standards (NSPS) applicable to the source under evaluation.

The FDEP and have established a policy for BACT review in which the most stringent control alternatives are evaluated first. The alternatives are either rejected based on technological, environmental, energy, or economic reasons or are proposed as BACT. This procedure is referred as the "top-down" approach. For the Project, BACT is applicable for emissions of PM and PM₁₀, SO₂, NO_x, CO, VOCs, and sulfuric acid mist (SAM).

On February 18, 2005, EPA proposed new NSPS for Stationary Combustion Turbines that will commence construction after February 18, 2005. These NSPS, Subpart KKKK, will replace Subpart GG and Da for combustion turbines in combined cycle mode. When finalized, the Subpart KKKK requirements will supersede the Subpart GG requirements and apply to units with a gross capacity of greater than 1 MW. The proposed Subpart KKKK requirements that would apply to the West County Energy Center when finalized by EPA are applicable to combustion turbines greater than 30 MW. The NO_x emissions are limited to 0.39 lb/MW-hr for gas-firing and 1.2 lb/MW-hr for light oil firing. For SO₂ emissions, the proposed Subpart KKKK requirements limit emissions to 0.58 lb/MW-hr or a fuel sulfur content of 0.05 percent. These emission rates are approximately equivalent to 10 ppmvd corrected to 15-percent O₂ when firing natural gas and 30 ppmvd corrected to 15-percent O₂ when firing light oil.

Appendix 10.1.5 of the SCA contains a complete PSD application for two combined cycle units. The PSD application includes the BACT evaluation for the Project and addresses those pollutants for which BACT is applicable. A discussion of the environmental, economic, and energy aspects of alternative control techniques and methods are included. The remainder of this section briefly describes those control technologies that are proposed for the West County Energy Center.

3.4.3.1 Nitrogen Oxides

DLN combustor technology has been offered and installed by CT manufacturers to reduce NO_x emissions by inhibiting thermal NO_x formation through premixing fuel and air prior to combustion and providing pre-mix combustion to reduce flame temperatures. The DLN combustors have premixed fuel zones plus a standard diffusion flame pilot burner for startup. Low-NO_x levels are achieved by introducing fuel primarily to the pre-mix zones and reducing the amount of fuel being combusted from the pilot nozzle.

When firing natural gas, NO_x emissions from the GE 7FA and GE 7FB turbines will be controlled using DLN combustors to 9 ppmvd and 25 ppmvd (corrected to 15-percent O₂), respectively. For the "G" Class turbine, the NO_x emissions will be controlled using dry low-NO_x combustors to 35 ppmvd (corrected to 15-percent O₂) or less. When firing ultra low-sulfur light oil, all turbines will utilize water injection to reduce NO_x emissions to 42 ppmvd (corrected to 15-percent O₂).

NO_x emissions will be further controlled by SCR systems when firing either natural gas or ultra low-sulfur light oil. SCR is a post-combustion process where NO_x in the gas stream is reacted with



ammonia in the presence of a catalyst to form nitrogen and water. The reaction occurs typically between about 320 and 400 degrees Celsius (°C) (600 and 750°F). These temperatures occur within the HRSG where the SCR catalyst and ammonia injection grid is installed. Ammonia will be stored onsite in tank(s). The SCR system will be designed for an additional NO_x reduction of 75 percent or more depending upon the turbine used for the Project. Flue gas NO_x emissions when firing natural gas will be reduced to 2.5 ppmvd, corrected to 15-percent O₂. When firing ultra low-sulfur light oil, SCR will reduce NO_x emissions by 80-percent or more to 10 ppmvd corrected to 15-percent O₂ or less.

The recent permitting trend for combined cycle units is the use of DLN combustors and SCR. Based on the ability to control NO_x to low emission levels, an emission level of 2.5 ppmvd corrected to 15-percent O₂ is proposed for the Project when firing natural gas and is equal to or lower than BACT determinations made in EPA Region IV for similarly designed projects.

3.4.3.2 Carbon Monoxide

The proposed BACT emission rates are dependent upon the turbines selected for the Project. The CTs would utilize advanced combustion technology, and the proposed emission rates are consistent with those established as BACT for these turbines. For the GE Frame 7FA turbine, the proposed BACT CO emission rates when firing natural gas are 4.14 ppmvd corrected to 15 percent O₂ at baseload operation and 7.6 ppmvd corrected to 15 percent O₂ with maximum duct firing. For the GE 7FB turbine, the proposed BACT CO emission rates when firing natural gas are 11.8 ppmvd corrected to 15 percent O₂ at baseload operation and 13.6 ppmvd corrected to 15 percent O₂ with maximum duct firing. For the "G" Class turbine, the proposed BACT CO emission rates when firing natural gas are 5 ppmvd corrected to 15 percent O₂ at baseload operation and 7.2 ppmvd corrected to 15 percent O₂ with maximum duct firing.

3.4.3.3 Sulfur Oxides (SO₂ and H₂SO₄ Mist)

Post-combustion controls for SO₂ emissions comprise various wet and dry flue gas desulfurization (FGD) processes. However, FGD alternatives are not feasible for use on CT facilities due to high pressure drops across the control device. The only feasible control for combined cycle units is clean fuels, i.e., natural gas and ultra low-sulfur light oil. The ultra low-sulfur light oil proposed for the Project will be limited to 0.0015 percent. Additionally, SAM production will be limited by the use of low-sulfur fuels.

3.4.3.4 Particulate Matter and Other Regulated Pollutants

Post-combustion alternatives such as baghouses, scrubbers, and electrostatic precipitators are not feasible due to the high pressure drops associated with the units and the small amount of PM reduction, which would occur since the CT PM emissions are minimal (i.e., these emissions are already lower than most baghouses emit). Clean-burning fuels that have low PM and trace contaminant contents are proposed as BACT for the Project.

PM emissions will be emitted from the mechanical draft cooling tower in the form of drift. Cooling tower drift will be controlled through the use of mist eliminators that will be designed to limit drift to 0.0005 percent of the circulating water rate of the cooling tower. Table 3.4.1-3 presents information on the cooling tower and potential PM and PM₁₀ from drift.

3.4.4 DESIGN DATA FOR CONTROL EQUIPMENT

Design data for the air pollution control equipment are presented in Section 4.0 of Appendix 10.1.5 (PSD Application).

Emissions of other pollutants for the Project are expected to be minimal and require no additional control technology. Therefore, analysis of alternative emission controls for these other pollutants is not necessary.

3.4.5 DESIGN PHILOSOPHY

The Project minimizes air pollutant emissions by using the most efficient and pollution-preventing technology. This concept has been incorporated with the selection of a combined cycle process utilizing advanced CTs. Combined cycle plants can be expected to achieve fuel conversion rates on the order of 7,000 Btu/kilowatt hours (kWh), as opposed to values in the 9,000- to 10,000-Btu/kWh range for more conventional generating plants. This is an improvement of about 30 percent. Thus, by maximizing the megawatt output per unit of fuel consumed, the air pollutant emissions per megawatt output are minimized. Pollution prevention is incorporated in the design by the use of clean fuels and combustion technology. Natural gas and ultra low-sulfur light oil will be used. Moreover, advanced DLN combustion technology will be used to minimize NO_x emissions while ensuring that CO and VOC emissions are within accepted limits. SCR will be installed to further reduce NO_x emissions. Taken together, the design of the Project will incorporate features that will make the Project one of the most efficient and lowest polluting power plants in the State of Florida.

3.5 PLANT WATER USE

The source of cooling water for the Project will be surface water from the L10/L12 Canal with the upper Floridan aquifer used as a secondary/backup source. This water will be obtained from an intake to be installed on the canal sized for the ultimate site capacity (refer to Figures 3.2.0-1 and 3.2.0-2 for locations). Figure 3.5.0-1 shows the plan and section views for the intake structure located at the south bank of the L10/L12 Canal. Figure 3.5.0-2 shows an alternative inlet structure located on the north bank of the L10/L12 Canal. The design of the intake will include a trash rack and pumps, the latter capable of transferring water to the Site. The secondary/backup water supply for the Project will consist of three new FAS wells, each rated at 7,000 gpm, which will be constructed within the Site (refer to Figures 3.2.0-3 and 3.2.0-4 for locations). As an alternative, when available, stormwater runoff collected in the retention ponds may be diverted for use as cooling tower makeup. Surface water will be used as makeup to a closed-cycle recirculating cooling system for heat dissipation and may be treated by chemical softening.

General plant service water, fire protection water, and process water will be obtained from the L12 Canal. Process water uses will include demineralized water use in the CT inlet air inlet evaporative cooling system, NO_x injection system (for ultra low-sulfur light oil firing), power augmentation, HRSG steam cycle makeup, and general service water use for washdowns.

The Project water balance is presented schematically in Figures 3.5.0-3 and 3.5.0-4, respectively for surface water using 5 cycles of concentration and Floridan aquifer water using 5 cycles of concentration for shorter durations (e.g., 90 days). The design water quality of the water sources is presented in Tables 3.5.0-1 and 3.5.0-2, for surface water and Floridan aquifer, respectively. This information on water quality has been derived from information described in Subsection 2.3.4. The following subsections (3.5.1 through 3.5.4) provide more detailed descriptions of proposed plant water uses.

3.5.1 CIRCULATING WATER HEAT REJECTION SYSTEM

A rectangular wet mechanical draft cooling tower, located within the Power Block for each unit, will be used to reject the Project heat load of about 2.3 billion Btu/hr to the atmosphere. Makeup water will be pre-treated to remove scale-causing chemicals (e.g., calcium, magnesium, and sulfate). Cooling tower blowdown will be routed to an injection well (refer to Figures 3.2.0-3 and 3.2.0-4 for locations). An application for an exploratory well under FDEP's Underground Injection Control (UIC) program is contained in SCA Appendix 10.1.8. Table 3.4.1-3 presents design information on the cooling tower.



3.5.2 DOMESTIC/SANITARY WASTEWATER

Restroom facilities will be installed to handle domestic/sanitary wastewater. A package sanitary treatment system meeting the requirements of Chapter 64E-6 F.A.C. and Palm Beach County ECR-1 will be installed. Treated sanitary wastewater will be routed to a UIC injection well.

3.5.3 POTABLE WATER SYSTEMS

Potable water use will be obtained from the surficial aquifer with a capacity of up to 35,000 gallons per day (gpd). The potable water system will meet the requirements of Chapter 62-555 F.A.C. and Palm Beach County ECR-II. Permanent safety shower/eyewash stations will be installed at the Site.

3.5.4 PROCESS WATER SYSTEMS

The Project will utilize trailer-mounted reverse osmosis/mixed bed (RO/MB) demineralizer systems for process water treatment using water from a 3-million-gallon raw water tank for each unit. The demineralized water will be pumped to a 2-million-gallon storage tank for each unit to store process water use. RO reject will be mixed with the cooling tower blowdown for disposal while regeneration of the mixed bed systems will be offsite.

3.5.4.1 Demineralized Water

The Project will require the use of demineralized water [i.e., conductivity < 0.1 microsiemens per centimeter ($\mu\text{S}/\text{cm}$)]. Demineralized water is required for:

- Makeup to replace blowdown from the HRSG (necessary to maintain a low dissolved solids content in the HRSG),
- Makeup to replace miscellaneous steam losses in the steam cycle;
- Emergency makeup water,
- CT power augmentation (GE Frame 7FA CTs),
- Injection into the CTs for NO_x control when firing ultra low-sulfur light oil, and
- CT air inlet evaporative cooling system feed.

Surface water from the L10/L12 Canal will be used as process water treatment system influent and service water.

3.5.4.2 General Service Water

General service water uses, including seal water, cleaning and flushing water, and fire protection water, will be provided by the service water system.



3.5.5 WATER SUPPLY ALTERNATIVES

An evaluation of possible alternative water supply strategies for the Project is provided in Appendix 10.8.

3.5.6 UIC INJECTION WELL

Cooling tower blowdown along with other wastewaters will be disposed of using an UIC injection well. Figure 3.5.6-1 presents a conceptual diagram of the UIC injection well. To provide technical information that will support the construction of the UIC injection wells, an exploratory well will be constructed. This exploratory well will provide detailed information on lithology, water quality, flow conditions and other geologic parameters specific to the Site. An application for the exploratory well is contained as Appendix 10.1.8 and will be submitted to FDEP separate from the Site Certification process. The exploratory well will also be used as a monitor well for the UIC injection wells.

3.6 CHEMICAL AND BIOCIDES WASTE

The wastewaters generated by the Project will include HRSG blowdown, Process Water Treatment System wastewater (RO reject water), groundwater pretreatment wastewaters (softener backwash water), cooling tower blowdown, and equipment area storm and wash waters. HRSG blowdown will be quenched with cooling tower blowdown. Contact area stormwater and wash waters will be passed through an oil/water separator and then released to the stormwater ponds. Cooling tower and HRSG blowdown and the water treatment wastewaters will be routed to the injection well (see Appendix 10.1.8).

The principal uses of chemicals and biocides will be for steam cycle water quality control, chemical cleaning of the HRSG and pre-HRSG piping systems, and conditioning of water in the cooling tower.

Table 3.6.0-1 presents a list of all the waste streams associated with the Project, their characterization and proposed method of disposal. The following sections provide further information on the characteristics of these waste streams (see also Section 3.7).

3.6.1 COOLING SYSTEM WATER CHEMICAL TREATMENT

Intermittent shock chlorination or other oxidizing or non-oxidizing biocides will be used to prevent biofouling of the heat rejection system. A chlorine solution will be fed into the cooling tower.

A scale inhibitor will be fed to the circulating water system to control the formation of calcium carbonate scales. These scales can adhere to heat transfer surfaces and impair cooling condenser performance. Sulfuric acid will be added to the circulating water system to reduce alkalinity in the circulating water makeup, thus reducing the likelihood of scale formation. In addition, a polymer may be added to the circulating water system to help hold suspended solids in suspension.

Cooling tower makeup water may be pretreated by chemical softening prior to addition to the cooling tower basin.

3.6.2 STEAM CYCLE WATER TREATMENT

The steam-condensate-feedwater cycle will be chemically treated to prevent corrosion or scaling of the condensate piping and the HRSG preboiler piping and drums. The steam cycle water will be treated with an oxygen scavenger, such as hydrazine, for dissolved oxygen control and with ammonia or an amine for pH control. Sodium phosphate will be fed to the HRSGs for control of pH and hardness. Residual phosphate in the HRSG will react with hardness to form a nonadherent precipitate that can be removed through boiler blowdown.

3.6.3 SANITARY WASTEWATER TREATMENT

Sanitary wastewater will be routed to a package sanitary treatment system meeting the requirements of Chapter 64E-6 F.A.C. and Palm Beach County ECR-1 will be installed. Treated sanitary wastewater will be recycled to the cooling tower or routed to the UIC injection wells.

3.6.4 MAKEUP WATER DEMINERALIZATION

As discussed in Section 3.5.4, the makeup water to the steam cycle will be demineralized using trailer-mounted RO/MB type demineralizer trains. The resulting RO reject will be routed to the UIC injection wells. Regeneration of the mixed bed ion exchange units will be performed offsite.

3.6.5 CHEMICAL CLEANING

The HRSG and preboiler piping will be chemically cleaned initially during commissioning and also periodically during the life of the plant. The chemicals used will not be permanently stored onsite but will be delivered to the Site by a licensed contractor at the time of the scheduled periodic cleanings. The chemical cleaning solutions to be used for acid and alkaline cleaning of the HRSG will be dependent on the HRSG manufacturer selected. The actual cleaning solutions used must be

consistent with the HRSG manufacturer's recommendations. Chemicals typically used in HRSG and feedwater pipe cleaning include the following:

1. Inhibited citric acid,
2. Aqueous ammonia,
3. Organic chelates, such as EDTA,
4. Disodium phosphate,
5. Trisodium phosphate,
6. Nonfoaming wetting agents, and
7. Foam inhibitors.

Wastewaters will consist of the cleaning solutions and material removed during the cleaning process. Chemical cleaning is an infrequent maintenance operation; it does not contribute to the liquid wastes produced by the normal operation of the plant.

Chemical cleaning wastes will be maintained onsite and tested and, if not hazardous, will be routed to the UIC injection wells with the other wastewaters.

3.6.6 MISCELLANEOUS DRAINS

Wastewater can result from draining a storage tank or from cleaning and maintenance operations such as washdown of storage areas. Waste water from these processes are expected to be non-hazardous and will be contained prior to being discharged to the Boulder Zone via UIC injection well(s). Flows from the miscellaneous plant drains will be intermittent and will not normally contribute to the wastewater flows. Periodic off-line washes of the CTs using water or a detergent-water solution will also produce wastewaters. These wastewaters will be collected in a local sump and routed to the UIC injection well(s).

3.7 SOLID AND HAZARDOUS WASTE

All non-hazardous and hazardous wastes associated with the Project will be managed according to FPL's "Waste Guidelines" with appropriate modifications to accommodate the construction Project (see Table 3.7.0-1). The Project may generate hazardous waste periodically as part of the boiler chemical cleaning [less than 100 kilograms (kg)/month], including spent solvents, boiler chemical cleaning wastes, and other wastes. These wastes will be collected and managed as hazardous waste until tested to determine their characteristics.

The same types of wastes mentioned above are expected to be generated during construction and will be managed under the same guidelines. Solvent rags will be collected and laundered. Residual waste from punctured aerosol cans will be collected and managed as hazardous waste. Paint waste, polyvinyl chloride (PVC) cleaner, and PVC cement wastes will be minimized by implementation of programs requiring use of all material prior to issuance of additional material.

3.7.1 SOLID WASTE

Solid wastes will be generated by the Project but generally in small quantities. Solid wastes will be limited to municipal solid waste and infrequent replacement of inlet air filters. Filter cake from water pretreatment process may also be generated. An approved solid waste disposal contractor will dispose of all solid wastes.

3.7.2 HAZARDOUS WASTE

As discussed above, potential hazardous waste associated with the Project will be less than 100 kilograms (kg)/month and may include chemical cleaning of the boilers, spent solvents, boiler chemical cleaning wastes, and other wastes. Any wastes, if hazardous, will be collected onsite and disposed of by a licensed hazardous waste contractor. Hazardous waste will be managed according to applicable rules and regulations.

3.8 SITE DRAINAGE

3.8.1 DESIGN CRITERIA AND APPLICABLE REGULATIONS

The surface water management system for the Project will be designed to meet the requirements of all applicable local, regional, state, and federal requirements, which include the rules of the SFWMD, Palm Beach County, FDEP, and EPA. The design rainfall event, based on a 100-year 72-hour storm, is approximately 13 inches. The basic design philosophy is that the stormwater runoff from the Project will be retained onsite with no offsite discharge.

The Project drainage system of catch basins, pipes, channels, swales, and culverts will convey runoff to stormwater retention ponds. A conceptual stormwater management plan and design calculations for the Project are presented in Appendix 10.6.

3.8.2 CONSTRUCTION SITE DRAINAGE

Prior to beginning any earth-disturbing activities, a silt fence will be installed along the perimeter of areas to be used for construction laydown, parking, and trailers and where runoff to offsite areas is



expected. This silt fence will filter sediments from construction runoff. The new stormwater retention ponds will be installed in the northern portion of the Site to serve as a sedimentation ponds during construction.

During construction, the extent of earth disturbances will be minimized as much as is practical. Areas outside of cut-and-fill operations will be protected against unnecessary equipment traffic. Aggregate-surfaced areas will be provided for roads, while limerock surfacing will be provided for laydown and parking areas.

Temporary erosion and sedimentation control measures will be designed to prevent sediment from being displaced and carried offsite by construction runoff. Silt fences, as well as inlet and outlet protection, will be used at catch basins and culverts to assist in sediment control. Construction personnel and equipment will enter the Site over paved roads. Temporary construction entrances will be provided and maintained as required to minimize migration of sediment from construction areas onto public roads. If necessary, public roads impacted by construction activities will be swept periodically to remove excess sediment tracked from the Project. Sediment collected in the sedimentation ponds and erosion control devices (e.g., staked silt fence, hay bales, inlet/outlet protection) during construction will be removed as required to maintain proper functioning of these measures. All temporary sediment and erosion control measures will be removed at the end of construction. The erosion and sediment control Best Management Practices (BMPs) to be implemented during construction are provided in Appendix 10.6.

3.8.3 OPERATIONAL SITE DRAINAGE

At the completion of construction, areas not occupied by facilities will be seeded and runoff will be routed to the stormwater retention ponds, which will be retained. Non-contact stormwater runoff from the Site will be drained into the stormwater retention ponds. Contact stormwater runoff from the Power Block and equipment areas will be routed through an oil/water separator and also routed to the stormwater retention ponds. Stormwater runoff from the potentially oil-contaminated areas (containment areas for transformers, oil tanks, and other oil-containing or handling equipment) will also be routed through an oil/water separator and then routed to the stormwater ponds.

Generally, drainage will be directed away from structures and routed to the stormwater collection system. The CT/HRSG Power Block area will be graded with moderate slopes for effective drainage. Site runoff will be conveyed to stormwater retention ponds through a drainage system of



pipes, channels, swales, and culverts. No point-source discharge of stormwater runoff will be provided or required for the Project. Stormwater runoff that is collected in the retention ponds will either percolate, evaporate, or be used as cooling tower makeup.

3.9 MATERIALS HANDLING

3.9.1 CONSTRUCTION MATERIALS AND EQUIPMENT

Construction materials and equipment will be delivered to the Site by existing roadways. The existing PBA road will be used during construction and operation of the Project.

Surface materials suitable for the Power Block and structures associated with the Project have already been placed on the 220-acre Site. This material is primarily sand and shell, quarried from the nearby PBA operations. Some additional limestone and aggregate may be used on some construction laydown areas and internal roads.

Equipment and component parts of the combined cycle units will be unloaded and moved around the Site using portable cranes and trucks. Some of the heaviest items such as the new CTs, new steam turbines, electric generators, HRSGs, and transformers may require special transport. Pollution control measures for the laydown areas will include runoff collection as is described in Section 3.8. Main roads in the laydown areas will be surfaced with aggregate/limerock and may be treated with dust palliative to reduce dust. Alternatively, water sprays may be used, as required, to control dust due to traffic.

3.9.2 ROADS

Construction trucks will travel to the Site using State Road 80 and the existing PBA road. This route will be used for the construction of all three combined cycle units. From the existing PBA road, construction trucks will be directed to the Project construction laydown areas.

Table 3.3.0-1. Typical Natural Gas Composition

Composition	Mole %
Nitrogen (N ₂)	0.27 - 0.45
Helium (He)	0.01
Carbon Dioxide (CO ₂)	0.44 - 0.88
Methane (CH ₄)	96 - 97.0
Ethane (C ₂ H ₆)	1.8 - 2.6
Propane (C ₃ H ₈)	0.16 - 0.29
Butane (C ₄ H ₁₀)	0.011 - 0.017
Pentanes (C ₅ H ₁₂)	0.007 - 0.03
Hexanes (C ₆ H ₁₄)	0.03
Heptanes (C ₇ H ₁₆)	0.01
Octanes (C ₈ H ₁₈)	0.0
Argon, Oxygen (Ar, O ₂)	0.0
Sulfur (S)	2 grains per 100 scf
Water Vapor (H ₂ O)	0.6 lb/MMscf

Low Heating Value (LHV) - 20,835 Btu/lb; 950 Btu/scf

High Heating Value (HHV) - 23,127 Btu/lb; 1,055 Btu/scf

Note: scf = standard cubic feet

MM = million

Table 3.3.0-2. Expected Ultra Low-sulfur Light Oil Composition

Elements	Maximum
Carbon Residue	0.35 % on 10% Bottoms
Water and Sediment	0.05 %
Ash	0.01 %
Vanadium	0.5 ppm
Sodium and potassium	0.5 ppm
Lead	1 ppm
Calcium	2 ppm
Sulfur	0.0015 wt. %

Low Heating Value (LHV) - 18,367 Btu/lb; 129,900 Btu/gallon

High Heating Value (HHV) - 19,469 Btu/lb; 137,694 Btu/gallon

Note: ppm = parts per million

Table 3.4.1-1 Stack, Operating, and Emission Data for Each CT/HRSG and Duct Burners in Combined Cycle Operation – Natural Gas Combustion

Parameter	Operating and Emission Data a for Ambient Temperature 59°F					
	Combustion Turbine/ HRSG			Combustion Turbine/ HRSG/ Duct Burner		
	GE-7FA	GE-7FB	Frame G	GE-7FA	GE-7FB	Frame G
<u>Combustion Turbine Performance</u>						
Net power output (MW)	173.64	191.38	255.43	173.64	191.383	255.43
Net heat rate (Btu/kWh, LHV)	9,258	9,052	8,857	9,258	9,052	8,857
(Btu/kWh, HHV)	10,279	10,048	9,831	10,279	10,048	9,831
Heat input (MMBtu/hr, LHV)	1,608	1,733	2,262	1,608	1,733	2,262
(MMBtu/hr, HHV)	1,785	1,923	2,511	1,785	1,923	2,511
Evaporative Cooler	Off	Off	Off	Off	Off	Off
Relative Humidity (%)	60	60	60	60	60	60
Fuel heating value (Btu/lb, LHV)	20,835	20,835	20,835	20,835	20,835	20,835
(Btu/lb, HHV)	23,127	23,127	23,127	23,127	23,127	23,127
(HHV/LHV)	1.110	1.110	1.110	1.110	1.110	1.110
Steam Flow (lb/hr)	NA	NA	NA	NA	NA	NA
<u>Duct Burner (DB)</u>						
Heat input (MMBtu/hr, HHV)	0	0	0	550	550	475
(MMBtu/hr, LHV)	0	0	0	495.5	495.5	427.9
<u>CT/HRSG Stack Data (ft)</u>						
Height	131	131	140	131	131	140
Diameter	19.0	19.0	22.0	19.0	19.0	22.0
<u>100 Percent Load</u>						
Temperature (oF)	202	202	188	188	188	188
Velocity (ft/sec)	60.2	60.1	57.1	59.6	59.4	57.5
<u>Maximum Hourly Emissions per Unit</u>						
SO ₂	lb/hr	9.8	10.6	14.9	12.9	13.6
PM/PM ₁₀	lb/hr	11.0	11.1	11.5	14.4	14.5
NO _x	lb/hr	16.2	17.4	25.0	23.5	24.9
	ppmvd @ 15% O ₂	2.5	2.5	2.5	2.5	2.5
CO	lb/hr	16.3	50.0	30.0	38.3	72.0
	ppmvd @ 15% O ₂	4.1	11.8	5.0	7.6	13.6
VOC (as methane)	lb/hr	2.8	2.8	4.1	5.0	5.0
	ppmvd @ 15% O ₂	1.3	1.2	1.2	1.9	1.9
Sulfuric Acid Mist	lb/hr	0.98	1.06	1.49	1.29	1.36

^a Refer to Appendix 10.1.5 for detailed information on basis of pollutant emission rates and operating data.

Table 3.4.1-2 Stack, Operating, and Emission Data for Each CT/HRSG for Combined Cycle Operation – Ultra Low-sulfur Light Oil Combustion

Operating and Emission Data a for Ambient Temperature 59°F				
Combustion Turbine/ HRSG				
Parameter	GE-7FA	GE-7FB	Frame G	
<u>Combustion Turbine Performance</u>				
Net power output (MW)	179.2	191.9	254.5	
Net heat rate (Btu/kWh, LHV)	10,208	10,106	9,300	
(Btu/kWh, HHV)	10,821	10,712	9,858	
Heat Input (MMBtu/hr, LHV)	1,830	1,830	2,367	
(MMBtu/hr, HHV)	1,939	1,939	2,509	
Relative Humidity (%)	60	60	60	
Fuel heating value (Btu/lb, LHV)	18,367	18,367	18,367	
(Btu/lb, HHV)	19,469	19,469	19,469	
(HHV/LHV)	1.060	1.060	1.060	
<u>CT/HRSG Stack Data (ft)</u>				
Height	131	131	140	
Diameter	19.0	19.0	22.0	
<u>100 Percent Load</u>				
Temperature (oF)	295	295	293	
Velocity (ft/sec)	72.0	68.4	68.1	
Maximum Hourly Emissions per Unit				
SO ₂	lb/hr	3.0	3.0	3.9
PM/PM ₁₀	lb/hr	17.6	17.6	69.2
NO _x	lb/hr	77.6	80.7	103.0
	ppmvd @ 15% O ₂	10.0	10.0	10.0
CO	lb/hr	37.9	62.0	44.0
	ppmvd @ 15% O ₂	8.0	12.7	7.0
VOC (as methane)	lb/hr	7.5	7.0	37.3
	ppmvd @ 15% O ₂	2.8	2.6	10.0
Lead	lb/hr	0.03	0.03	0.03
Sulfuric Acid Mist	lb/hr	0.60	0.60	0.77

^a Refer to Appendix 10.1.5 for detailed information on basis of pollutant emission rates and operating data.

Source: GE, 2005; Siemens, 2005; MHI, 2005; FPL, 2005; Golder, 2005.

Table 3.4.1-3 Physical, Performance, and Emissions Data for Mechanical Draft Cooling Tower for Each Nominal 1,100-MW Unit

Parameter	One Cooling Tower
Physical Data	
Number of Cells	22
Deck Dimensions, ft	
Length	661.1
Width	114
Height	51
Stack Dimensions	
Height, ft	65
Stack Top Effective Inner Diameter, per cell, ft	38
Effective Diameter, all cells, ft	178.2
Performance Data	
Discharge Velocity, ft/min	1,323
Circulating Water Flow Rate (CWFR), gal/min	306,000
Design hot water temperature, °F	105.2
Design cold water temperature, °F	86.9
Heat Rejected, million Btu/hr	2,600
Design Air Flow Rate per cell, acfm	1,500,000
Liquid/ Gas (Air Flow) (L/G) Ratio	1.045
Hours of operation	8,760
Emission Data	
Drift Rate ^a (DR), percent	0.0005
Total Dissolved Solids (TDS) Concentration ^b , maximum ppm	20,000
Solution Drift ^c (SD), lb/hr	765.6
PM Drift ^d , lb/hr	15.3
tons/year	67.1
PM ₁₀ Drift ^e	
PM ₁₀ Emissions, lb/hr	1.17
tons/year	5.1

^a Drift rate is the percent of circulating water.

^b A TDS of 20,000 results in maximum PM emissions.

^c Includes water and based on circulating water flow rate and drift rate (CWFR x DR x 8.34 lb/gal x 60 min/hr).

^d PM calculated based on total dissolved solids and solution drift (TDS x SD).

^e PM₁₀ based on Cooling Tower PM₁₀ emissions study see SCA Appendix 10.1.5.

Source: Marley, 2003; FPL, 2005; Golder, 2005.



Table 3.4.1-4. Summary of Maximum Potential Annual Emissions (Project)

Pollutant	Annual Emissions (tons/year) for Each Combined Cycle Unit							Annual Emissions (tons/year)		
	GE-7FA	GE-7FB	Frame G	Cooling	Emergency	Natural Gas	Auxiliary	Maximum	PSD	
	4 CTs/HRSGs (per Unit)	4 CTs/HRSGs (per Unit)	3 CTs/HRSGs (per Unit)	Tower (per Unit)	Generators (2 per Unit)	Heaters ^a 2 in gas yard	Boiler ^b (per G-Unit)		Significant Emission Rate (tons/year)	PSD Review Required?
SO ₂	193	205	203	NA	0.00	0.47	0.07	411	40	Yes
PM	219	321	205	100.6	0.09	0.16	0.04	843	25	Yes
PM ₁₀	219	321	205	5.1	0.09	0.16	0.04	652	15	Yes
NO _x	390	411	410	NA	9.87	8.30	2.49	856	40	Yes
CO	464	1,006	478	NA	0.36	7.00	4.60	2020	100	Yes
VOC (as methane)	67.7	66.7	87.4	NA	0.16	0.46	0.13	176	40	Yes
Sulfuric Acid Mist	19.3	20.5	20.3	NA	0.00	0.04	0.00	41	7	Yes
Lead	0.026	0.026	0.025	NA	0.00	0.00	0.00	0	0.6	No

Source: GE, 2005; Siemens, 2005; MHI, 2005; FPL, 2005; Golder, 2005.

Note: ^a Two natural gas dew-point heaters will be included in the gas yard for the first combined cycle unit. This will provide sufficient capacity for the ultimate capacity of the Project.

^b An auxiliary boiler is only required to supply steam to the G-Class CTs during startup.

Table 3.5.0-1. L10/L12 Water Quality Design Criteria

Parameter (units)	Maximum ¹	5 cycles ²
Alkalinity as CaCO ₃ (mg/l)	307	<1535
Alkalinity (Bicarbonate) (mg/L)	210	<1050
Aluminum (mg/L)	1.8	9
Ammonia as N (mg/L)	<.1	ND
Antimony (ug/L)	<5.0	<25
Arsenic (ug/L)	8.1	40.5
Barium (ug/L)	45	225
Beryllium (ug/L)	<.1	<.5
BOD (5-day) (mg/L)	4.3	NA
BOD - Soluble (mg/L)	<2	NA
Cadmium (ug/L)	0.77	3.85
Calcium (mg/L)	101	505
Chloride (mg/L)	214	1070
Chromium (ug/L)	<5	<25
COD (mg/L)	97	NA
Copper (ug/L)	9.6	48
Cyanide (mg/L)	<.005	<.025
Dissolved Oxygen (mg/L)	7.92	>5
Fluoride (mg/L)	0.34	1.7
Hardness (mg/L as CaCO ₃)	250	<1250
Iron - Dissolved (ug/L)	2200	11000
Iron Total (ug/L)	2000	10000
Lead (ug/L)	3.6	18
Lead - Dissolved (ug/L)	<3	<15
Magnesium (mg/L)	19	95
Manganese (mg/L)	0.018	0.09
Mercury (ug/L)	<.13	<.65
Molybdenum (ug/L)	<5	<25
Nickel (ug/L)	2.3	11.5
Nitrate as N (mg/L)	1.8	ND
Nitrate + Nitrite as N (mg/L)	0.89	ND
Nitrite as N (mg/L)	0.83	ND
Nitrogen as N (total) (mg/L)	5.59	ND
O-Phosphate as P (mg/L)	0.13	ND
Oil & Grease (mg/L)	<1.7	<8.5
pH (SU)	8.1	Neutral
Phenols (mg/L)	<.01	<.05
Phosphate, Total as P (mg/l)	0.17	ND
Potassium (mg/L)	8.1	40.5
Selenium (ug/L)	12	60
Silica (mg/L)	14.7	73.5
Silver (ug/L)	0.07	0.35
Sulfate (mg/L)	106	530
Sulfide (mg/L)	<2	<10
TDS (mg/l)	921	4605
Temperature (F)	86.9	NA
Thallium (ug/L)	<10	<50
TKN as N (mg/L)	4.7	ND
TSS (mg/L)	38	<190
Turbidity (NTU)	46	<230
Vanadium (ug/L)	6.9	34.5
Zinc (ug/L)	7	35

Note:

¹ Source water maximum concentration.

² Cycle values are estimates and based on maximum concentrations.

ND - Not Determined - concentration relationship is not linear.

NA - Not Applicable - cycle concentrations are not applicable.

Source: SFWMD, 2005; FPL, 2005; Golder, 2005.



Table 3.5.0-2. Upper Floridan Aquifer Water Quality Design Criteria

Parameter (units)	Average ¹	95% UCL ²	5 cycles ³
Alkalinity as CaCO ₃ (mg/l)	130	139	< 695
Barium (ug/L)	17	23	115
Calcium (mg/L)	136	147	735
Chloride (mg/L)	1969	2259	11295
Dissolved Oxygen (mg/L)	1.7	3.1	>5
Fluoride (mg/L)	1.1	1.4	7
Hardness (mg/L as CaCO ₃)	943	1062	< 5310
Iron - Dissolved (ug/L)	96	364	1820
Magnesium (mg/L)	152	176	880
Manganese (mg/L)	0.009	0.026	0.130
pH (SU)	7.6	7.7	Neutral
Potassium (mg/L)	41	51	255
Silica (mg/L)	13	16	80
Sodium (mg/L)	1118	1378	6890
Sulfate (mg/L)	540	651	3255
TDS (mg/l)	4174	4901	24505
Temperature (°C)	24.1	25.3	NA

Notes:

¹ Average concentrations are based on 11 Upper Floridan Aquifer wells located in Palm Beach County.

² 95th Percentile Upper Confidence Limit of the Mean based on available data.

³ Cycle values are estimates and based on average concentrations.

NA - Not Applicable - cycle concentrations are not applicable.

Neutral - pH concentration to be adjusted.

Sources: SFWMD, 2005; FPL, 2005; Golder, 2005.

Table 3.6.0-1. West County Energy Center Waste Streams, Characterization and Disposal Method (Page 1 of 2)

Waste Streams (Process Water Systems)	Non Hazardous Basis for Characterization	Hazardous Basis for Characterization	Disposal Management Process
Demineralized Water RO Reject	Based on analytical characterization of historical data		Disposed of as industrial wastewater into UIC injection well.
Demineralization Wastewater	Based on analytical characterization of historical data		Disposed of by approved disposal contractor.
Heat Recovery Steam Generator Blowdown	Based on analytical characterization of historical data		Disposed of as industrial wastewater into UIC injection well.
Pretreatment Wastewater	Based on analytical characterization of historical data		Disposed of as industrial wastewater into UIC injection well.
Cooling Tower Blowdown	Based on analytical characterization of historical data		Disposed of as industrial wastewater into UIC injection well.
Cooling System Water (Biocide Addition Chlorine, Scale Inhibitor, Pretreatment Chemicals)	Based on analytical characterization by vendor supplying chemical		Disposed of as industrial wastewater into UIC injection well.
Steam Cycle Water Treatment (Hydrazine, Ammonia, Sodium Phosphate)	Based on analytical characterization by historical data		Chemicals breakdown in steam cycle, any residual chemicals are disposed of by plant blowdown or boiler drain into UIC injection well.
Heat Recovery and Steam Generator as Well as Pre-boiler Piping Chemical Cleaning	Based upon analytical waste stream characterization.	Based upon analytical waste stream characterization	If non-hazardous, will be disposed into UIC injection well. If hazardous, then disposed of by a licensed approved contractor.
Miscellaneous Drains	Based on analytical characterization of historical data		Disposed of as industrial wastewater into UIC injection well.

Table 3.6.0-1. West County Energy Center Waste Streams, Characterization and Disposal Method (Page 2 of 2)

Waste Streams (Construction and Operations)	Non Hazardous Basis for characterization	Hazardous Basis for characterization	Disposal Management Process
Construction-Related Waste Water (e.g., ammoniated process water for hydrostatic testing and backfilling, groundwater from dewatering and production wells, steam blow quench water, etc.)	Based on historical data		Disposed of as industrial wastewater into UIC injection well.
Water Pretreatment Solid Waste	Based on analytical results		Disposed of by an approved disposal contractor.
Rags	As per EPA in 40 CFR 279		Recycled via laundering by FDEP-approved vendor or disposed of in landfill.
Punctured Aerosol Cans	As per EPA characterization letter		Disposed of by an approved scrap metal contractor.
Captured Paint Residuals from Punctured Aerosol Cans		Analytical data from waste characterization	As hazardous waste in accordance with 40 CFR, Part 261.
X-ray Weld Testing			Process does not generate waste chemicals onsite. Vendor is responsible for their waste generation.
Florescent Bulbs and Batteries		As per 40 C.F.R. 273 EPA determination	Recycled as universal waste.
Oily Separated Waste Water	Based on analytical results		Separated water is routed into UIC injection well. Oil is disposed of by an approved waste disposal contractor
Oily Solid Wastes	As per EPA in 40 CFR 279		Disposed of by an approved waste disposal contractor.



Table 3.7.0-1. FPL General Handling Waste Guidelines (Page 1 of 2)

GENERAL WASTE HANDLING GUIDELINES

1. All effort should be taken to reduce and/or eliminate waste generation.
2. All effort should be taken to reuse and/or recycle wastes.
3. Label all containers so that contents can easily be determined and products used.
4. If waste is hazardous due to a hazardous constituent in the original product, try to substitute with a non-hazardous product, if feasible.
5. If waste is generated, see attached list for disposal options and instructions.
6. If waste is hazardous and is required to be placed into locked satellite drums, contact Environmental Plant Leader.
7. If waste cannot be identified, contact Environmental Plant Leader.

WASTE HANDLING INSTRUCTIONS**Recycling**

1. Cardboard: flatten and place in small wire cage next to unloading dock.
2. Pallets (poor condition) and scrap wood: place in large wire cage next to unloading dock.
3. White paper and file stock: place in designated blue bin.
4. Aluminum cans: place in designated blue bin marked "Aluminum Cans".
5. Metal scrap: place in metal dumpster located in Laydown Area.
6. Empty drums (poor condition): empty, crush and place in metal dumpster.
7. Fluorescent bulbs (intact): place in an appropriate storage container and store in Hazardous Waste Area.
8. Lead acid batteries: place on pallet in Hazardous Waste Area.
9. Dry alkaline cell batteries: place in appropriate designated bin.
10. Ni Cad batteries (includes all communication type batteries, i.e., cell phone/pager batteries): place in appropriate bin.
11. Empty aerosol cans: puncture with can puncturing device and place into scrap metal drum designated for this purpose.



Table 3.7.0-1. FPL General Handling Waste Guidelines (Page 1 of 2) (Page 2 of 2)

Recycling (continued)

12. Used oil filters: place drained oil filters into gray drums located in Non-Regulated Drum Storage Area. Do not put plastic bags into drum.
13. Metal shavings: place in designated scrap metal drum.
14. Mercury liquid: place in glass jar under water and notify Environmental Plant Leader.

Non-Regulated Waste Disposal

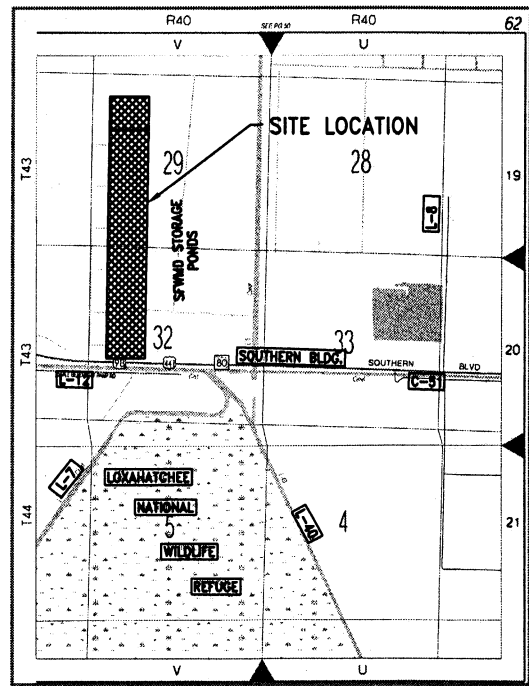
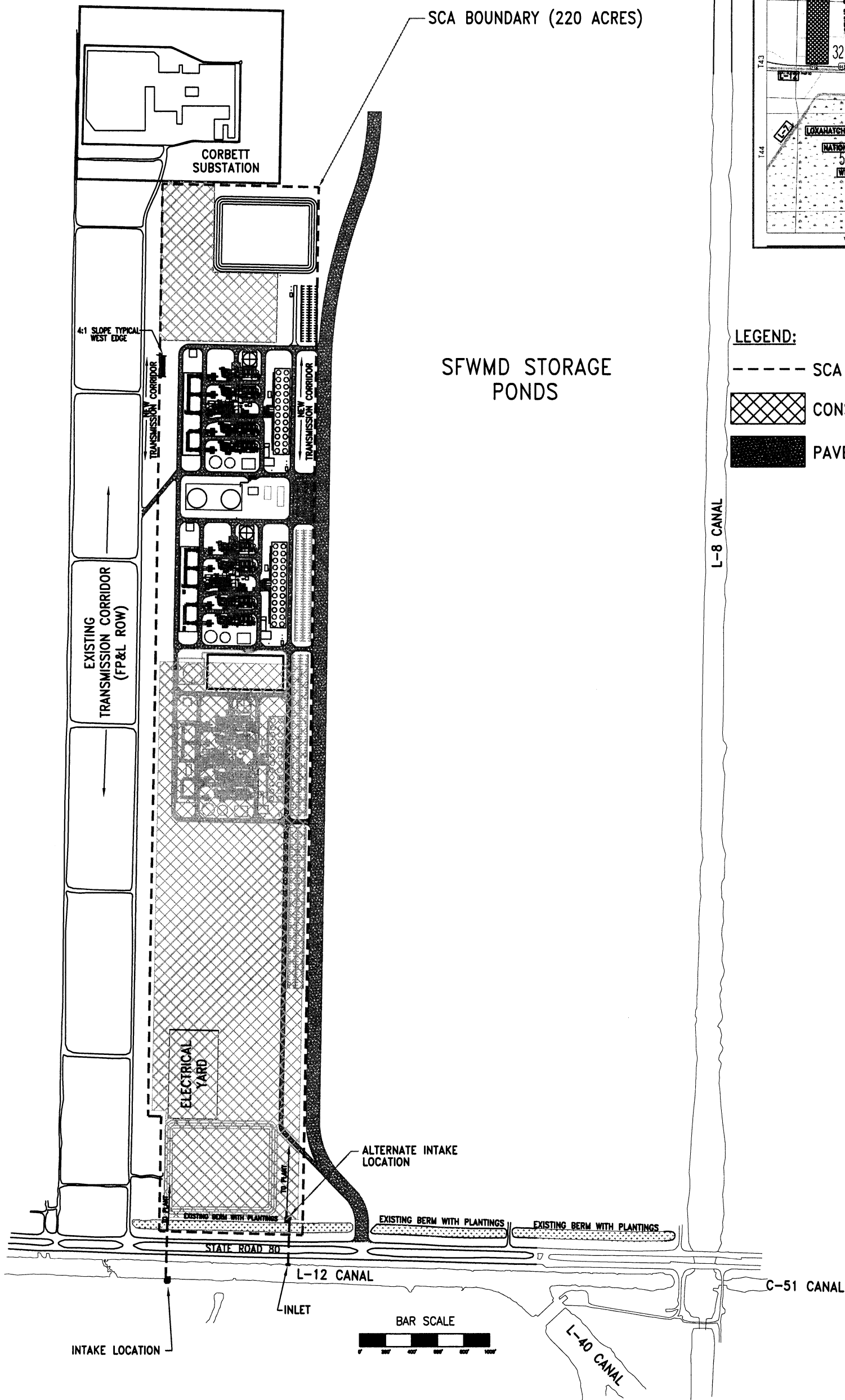
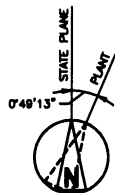
1. Normal trash: minimize and dispose, place into plant dumpster.
2. Used oil: place into "On Spec" Satellite Accumulation Area designated for this purpose.
3. Solid oily waste: place into Solid Oily Waste Dumpster designated for this purpose.
4. Parts cleaning solution: use parts cleaner for all parts cleaning. For special parts cleaning applications, see Environmental Plant Leader for instructions. Also contact Environmental Plant Leader when parts cleaning fluid is spent.
5. V-Bottom ash: collect in dumpsters as needed during outages.

Hazardous Waste Disposal *

1. Solvent-contaminated rags: place into "Solvent Rag" Satellite Accumulation Drum Area. When full, place in Hazardous Waste Area.
2. Solid paint cleanup material: place into Satellite Accumulation Drum Area. When full, place in Hazardous Waste Area.
3. Laboratory waste: place in Satellite Accumulation Drum Area. This drum is for use by on-shift production personnel performing water chemistry. When full, place in Hazardous Waste Area.
4. Outdated lab chemicals: these chemicals will be lab packed by the Environmental Plant Leader.
5. Aerosol can-puncturing waste: collect in Satellite Accumulation Drum Area. When full, place in Hazardous Waste Area.
6. Waste paint-related material: place in Satellite Accumulation Drum Area. When full, place in Hazardous Waste Area.
7. Bead blasting material: place in drum designated for this purpose. When full, place in Hazardous Waste Area.

* When full, all hazardous waste drums must be labeled "Hazardous Waste" and dated.





SITE MAP

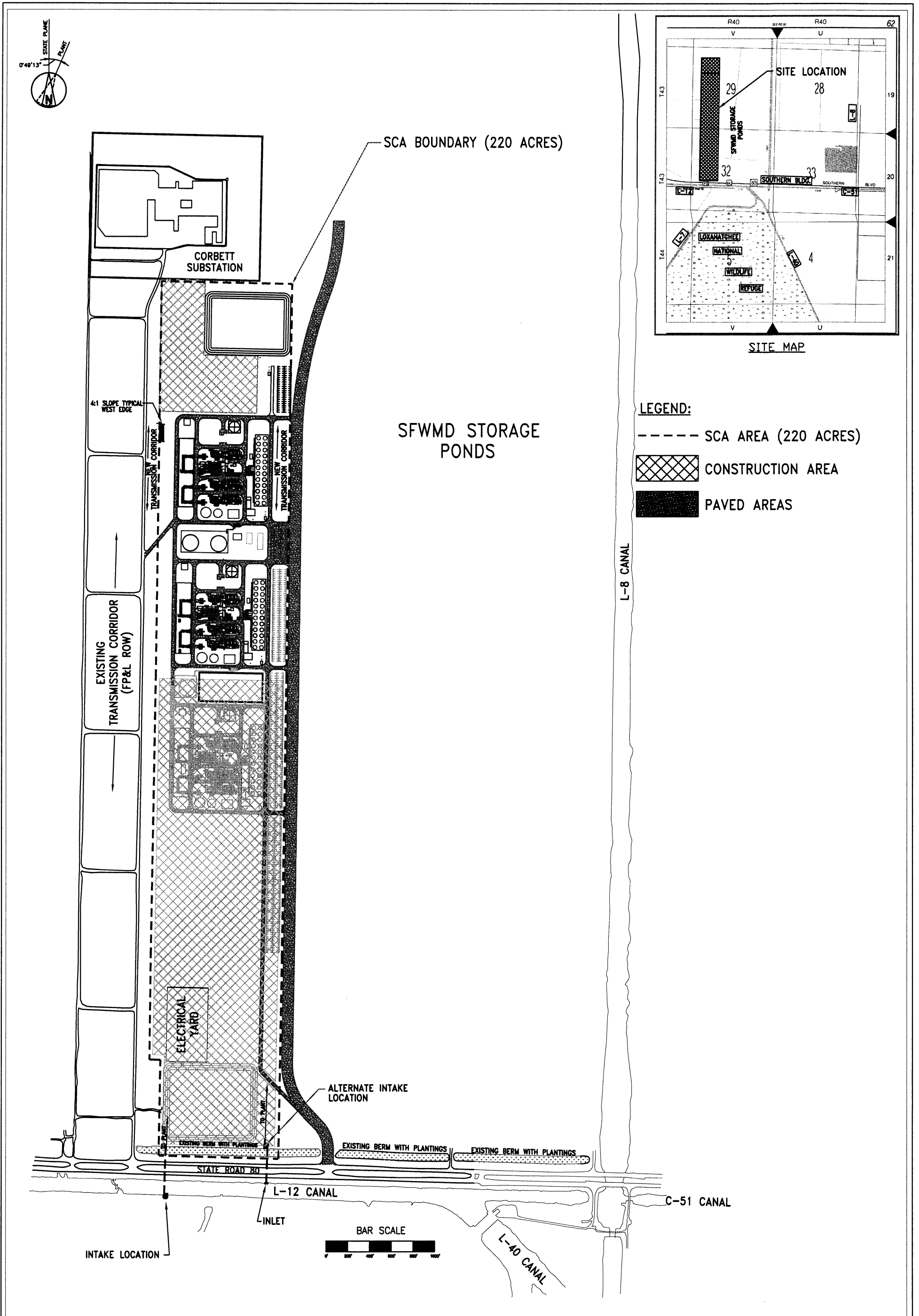
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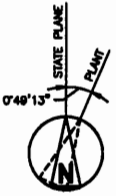
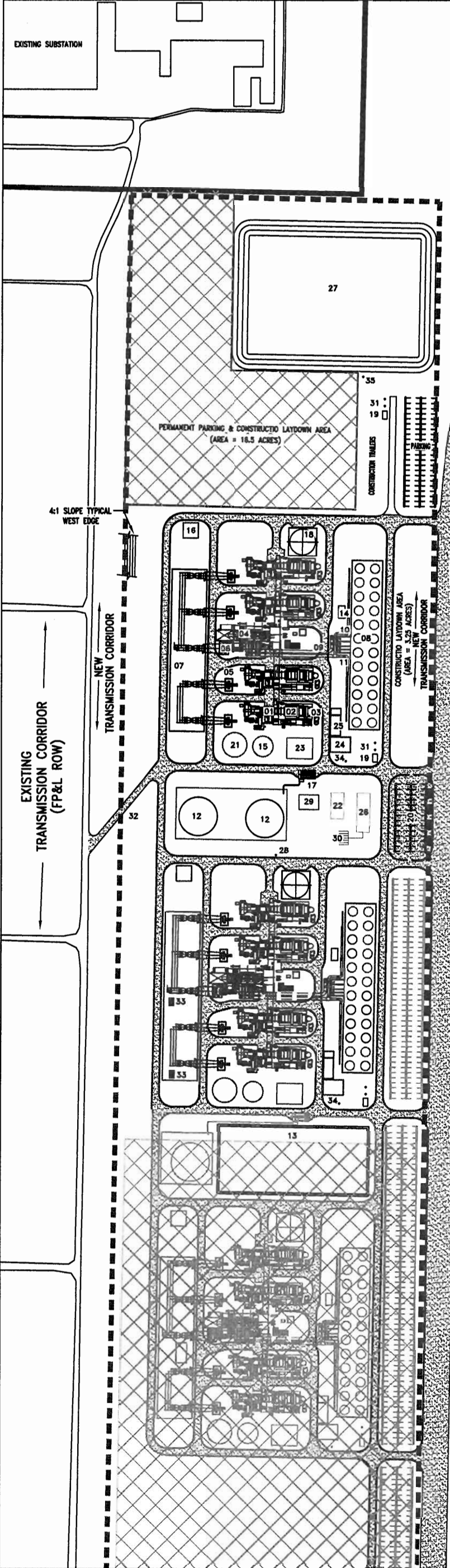
- SCA AREA (220 ACRES)
- CONSTRUCTION AREA
- PAVED AREAS

REV	DATE	REVISION DESCRIPTION
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GMG	BY	CH	COR	APR	PGD	ORG

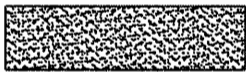
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	SCALE	1"=800'	CAD FILE NAME	COMP.DWG	TITLE	FIGURE 3.2.0-1 SITE PLAN	
	DRAWING SIZE	AB (8.5x11)	FPL ARCHIVE NAME	N/A		3-4X1 POWER BLOCKS	
	DRAWING NUMBER					SHEET	REV
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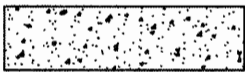


FACILITIES LEGEND

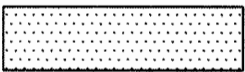
I.D	FACILITY	REMARKS
01	COMBUSTION TURBINE	-
02	HEAT RECOVERY STEAM GENERATOR (HRSG)	-
03	HRSG STACK (4-TOTAL)	-
04	STEAM TURBINE	-
05	CT GENERATOR STEP UP TRANSFORMER	-
06	ST GENERATOR STEP UP TRANSFORMER	-
07	COLLECTOR YARD	U1-230 KV U2-500 KV
08	COOLING TOWER	-
09	CIRCULATING WATER LINES	-
10	CIRCULATING WATER PUMPS	-
11	AUXILIARY WATER PUMPS	-
12	FUEL OIL TANK	100,000 BBL
13	GAS REGULATING STATION	WITH HEATERS
14	CIRC. WATER CHEMICAL FEED AREA	-
15	DEMIN. TANK	2 MIL. GAL.
16	STORMWATER SUMP	-
17	OIL TRUCK UNLOADING STATION	-
18	AMMONIA TANK & UNLOADING STATION	-
19	UNDERGROUND INJECTION WELLS	1-UNIT CAPACITY
20	PARKING	104 SPACES
21	RAW/FIREWATER WATER TANK	3 MIL. GAL.
22	MAINTENANCE BUILDING	7,500 SQ. FT.
23	WATER & FIRE PUMPS	-
24	DEMIN. TRAILER AREA	-
25	DEMIN. PUMP & PRE-TREATMENT AREA	-
26	CONTROL ADMIN BUILDING	20,000 SQ. FT.
27	STORMWATER POND	-
28	POTABLE WELL	-
29	EMERGENCY STANDBY DIESEL GENERATOR	-
30	POTABLE WATER WASTE TREATMENT SYSTEM	-
31	GROUNDWATER WELLS	BACKUP PRODUCTION WELLS
32	EMERGENCY ACCESS ROAD	-
33	AUXILIARY TRANSFORMER	U2 ONLY
34	MONITORING WELL	-
35	EXPLORATORY/DUAL ZONE MONITORING WELL	-



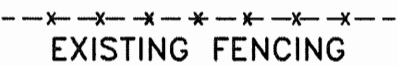
ASPHALT PAVING



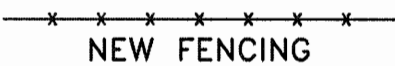
AGGREGATE SURFACING



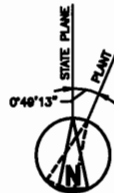
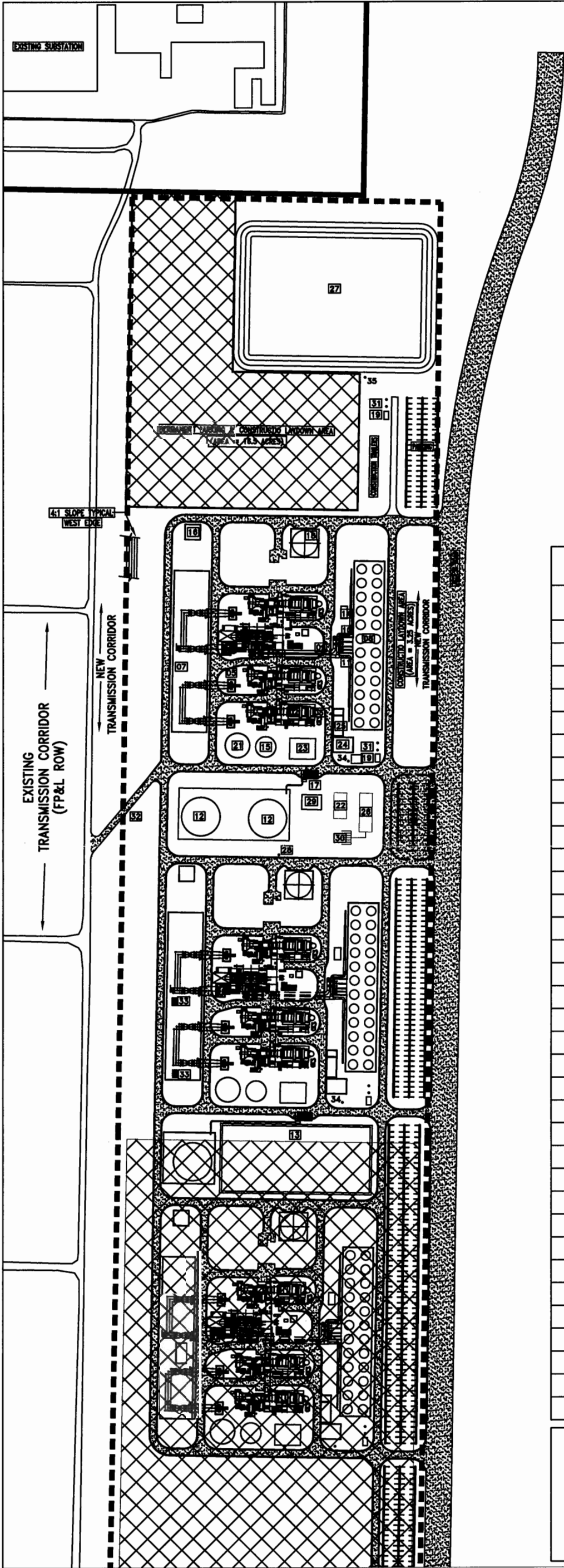
CONCRETE SURFACING



EXISTING FENCING



NEW FENCING



FACILITIES LEGEND

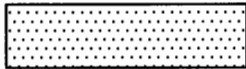
I.D	FACILITY	REMARKS
01	COMBUSTION TURBINE	-
02	HEAT RECOVERY STEAM GENERATOR (HRSG)	-
03	HRSG STACK (4-TOTAL)	-
04	STEAM TURBINE	-
05	CT GENERATOR STEP UP TRANSFORMER	-
06	ST GENERATOR STEP UP TRANSFORMER	-
07	COLLECTOR YARD	U1-230 KV U2-500 KV
08	COOLING TOWER	-
09	CIRCULATING WATER LINES	-
10	CIRCULATING WATER PUMPS	-
11	AUXILIARY WATER PUMPS	-
12	FUEL OIL TANK	100,000 BBL
13	GAS REGULATING STATION	WITH HEATERS
14	CIRC. WATER CHEMICAL FEED AREA	-
15	DEMIN. TANK	2 MIL. GAL.
16	STORMWATER SUMP	-
17	OIL TRUCK UNLOADING STATION	-
18	AMMONIA TANK & UNLOADING STATION	-
19	UNDERGROUND INJECTION WELLS	1-UNIT CAPACITY
20	PARKING	104 SPACES
21	RAW/FIREWATER WATER TANK	3 MIL. GAL.
22	MAINTENANCE BUILDING	7,500 SQ. FT.
23	WATER & FIRE PUMPS	-
24	DEMIN. TRAILER AREA	-
25	DEMIN. PUMP & PRE-TREATMENT AREA	-
26	CONTROL ADMIN. BUILDING	20,000 SQ. FT.
27	STORMWATER POND	-
28	POTABLE WELL	-
29	EMERGENCY STANDBY DIESEL GENERATOR	-
30	POTABLE WATER WASTE TREATMENT SYSTEM	-
31	GROUNDWATER WELLS	BACKUP PRODUCTION WELLS
32	EMERGENCY ACCESS ROAD	-
33	AUXILIARY TRANSFORMER	U2 ONLY
34	MONITORING WELL	-
35	EXPLORATORY/DUAL ZONE MONITORING WELL	-



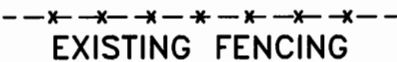
ASPHALT PAVING



AGGREGATE SURFACING



CONCRETE SURFACING



EXISTING FENCING



NEW FENCING



SYSTEM
N/A
SCALE
1"=400'
DRAWING SIZE
AB (8.5X11)

DISCIPLINE
CS
CAD FILE NAME
SCA.DWG
FPL ARCHIVE NAME
N/A

PLANT/UNIT
WEST COUNTY ENERGY CENTER
TITLE
FIGURE 3.2.0-4
PLOT PLAN
3-ON-1 CONFIGURATION

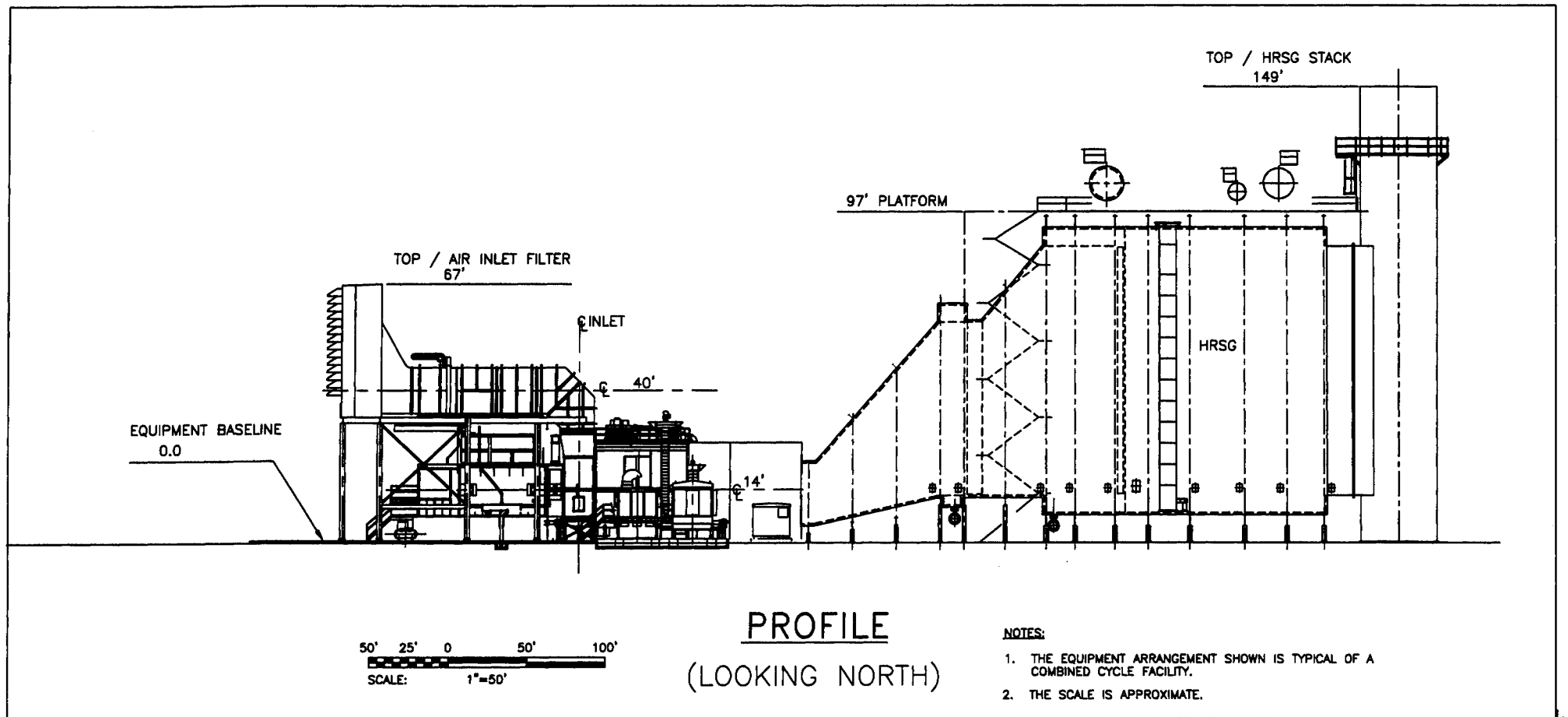


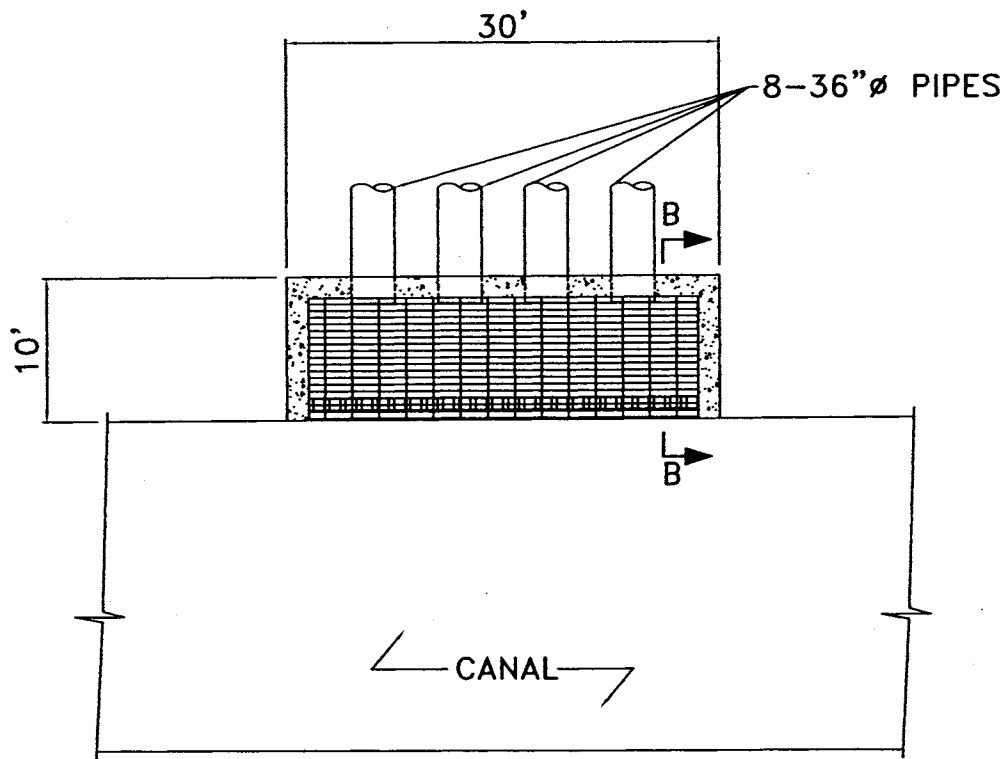
Figure 3.2.0-5. Profile of Combustion Turbine and Heat Recovery Steam Generator

Source: Black & Veatch, 2001; FPL, 2005; and Golder, 2005

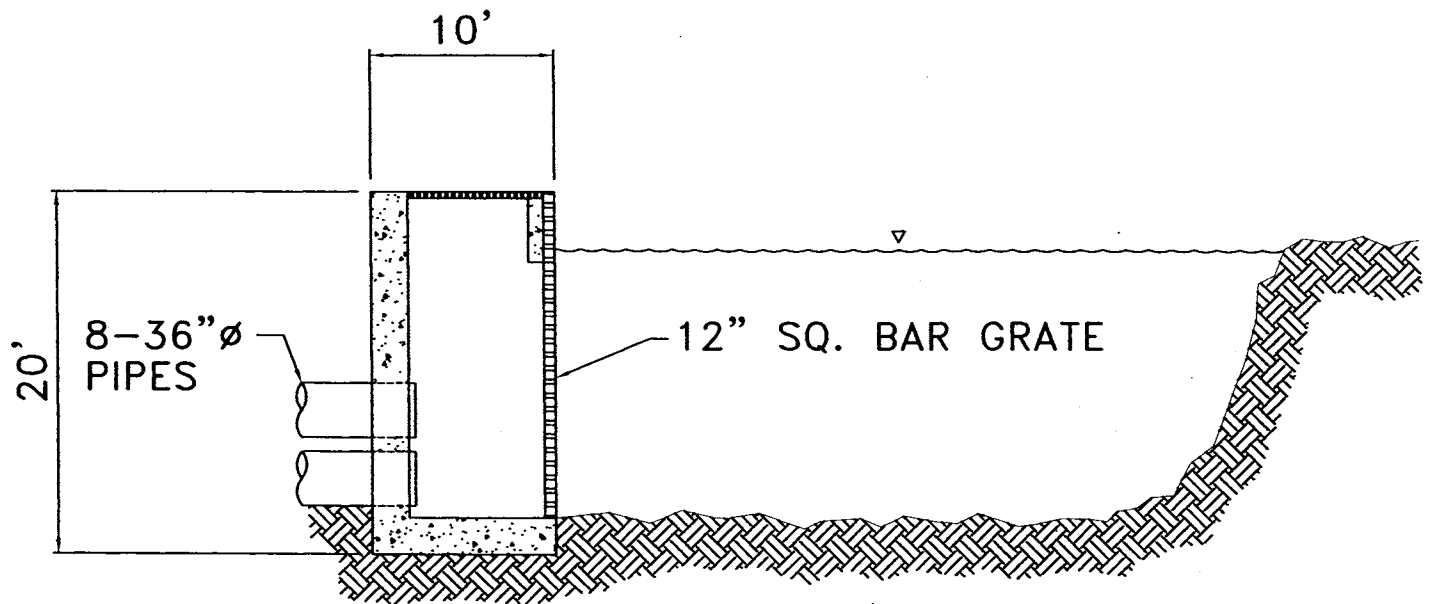




										 FPL		SYSTEM N/A		DISCIPLINE CS		PLANT/UNIT FIGURE 3.5.0-1																	
												SCALE NTS		CAD FILE NAME IS-05.DWG		TITLE INTAKE STRUCTURE AT WCEC PLAN, SECTIONS & DETAILS PALM BEACH COUNTY, FL																	
												DRAWING SIZE A (8.5X11)		FPL ARCHIVE NAME N/A																			
0 02/21/05 ISSUED FOR USE										GMG						TDJ		PGD		DRAWING NUMBER										SHEET		REV	
REV		DATE		REVISION DESCRIPTION						BY		CH		COR		APR		ORG		0437649/4/4.2SCA/Figures/IntakeX-Secs.dwg										1 OF 1		0	

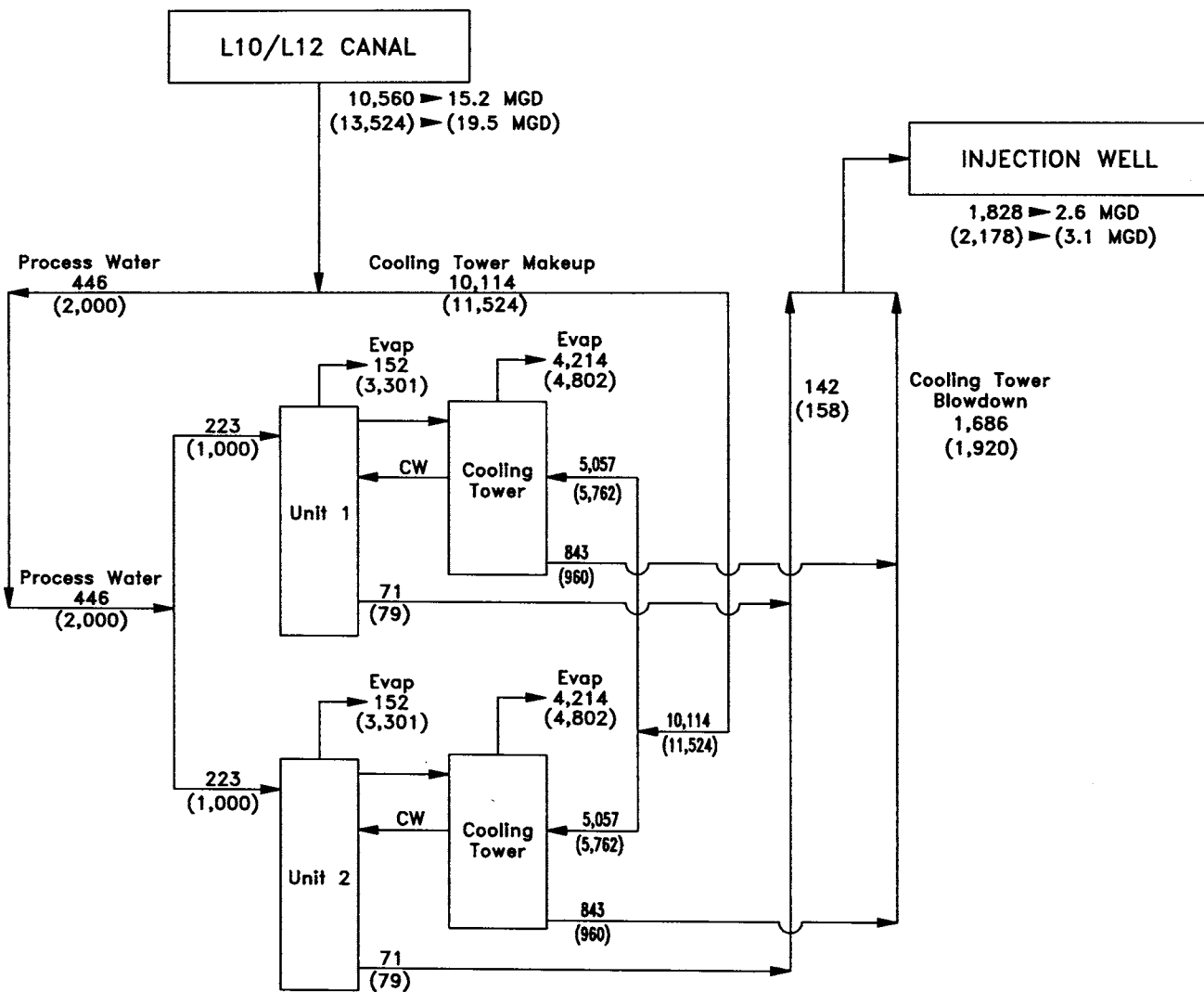


PLAN VIEW ALTERNATE INLET STRUCTURE



SECTION B-B

										 FPL	SYSTEM N/A	DISCIPLINE CS	PLANT/UNIT FIGURE 3.5.0-2
											SCALE NTS	CAD FILE NAME IS-05.DWG	TITLE ALTERNATE INLET STRUCTURE AT WCEC PLAN, SECTIONS & DETAILS PALM BEACH COUNTY, FL
											DRAWING SIZE A (8.5X11)	FPL ARCHIVE NAME N/A	
											DRAWING NUMBER 0437649/4/4.2SCA/Figures/IntakeX-Secs.dwg		
0	02/21/05	ISSUED FOR USE			GMG				TDJ	PGD	SHEET 1 OF 1	REV 0	
REV	DATE	REVISION DESCRIPTION			BY	CH	COR	APR	ORG				

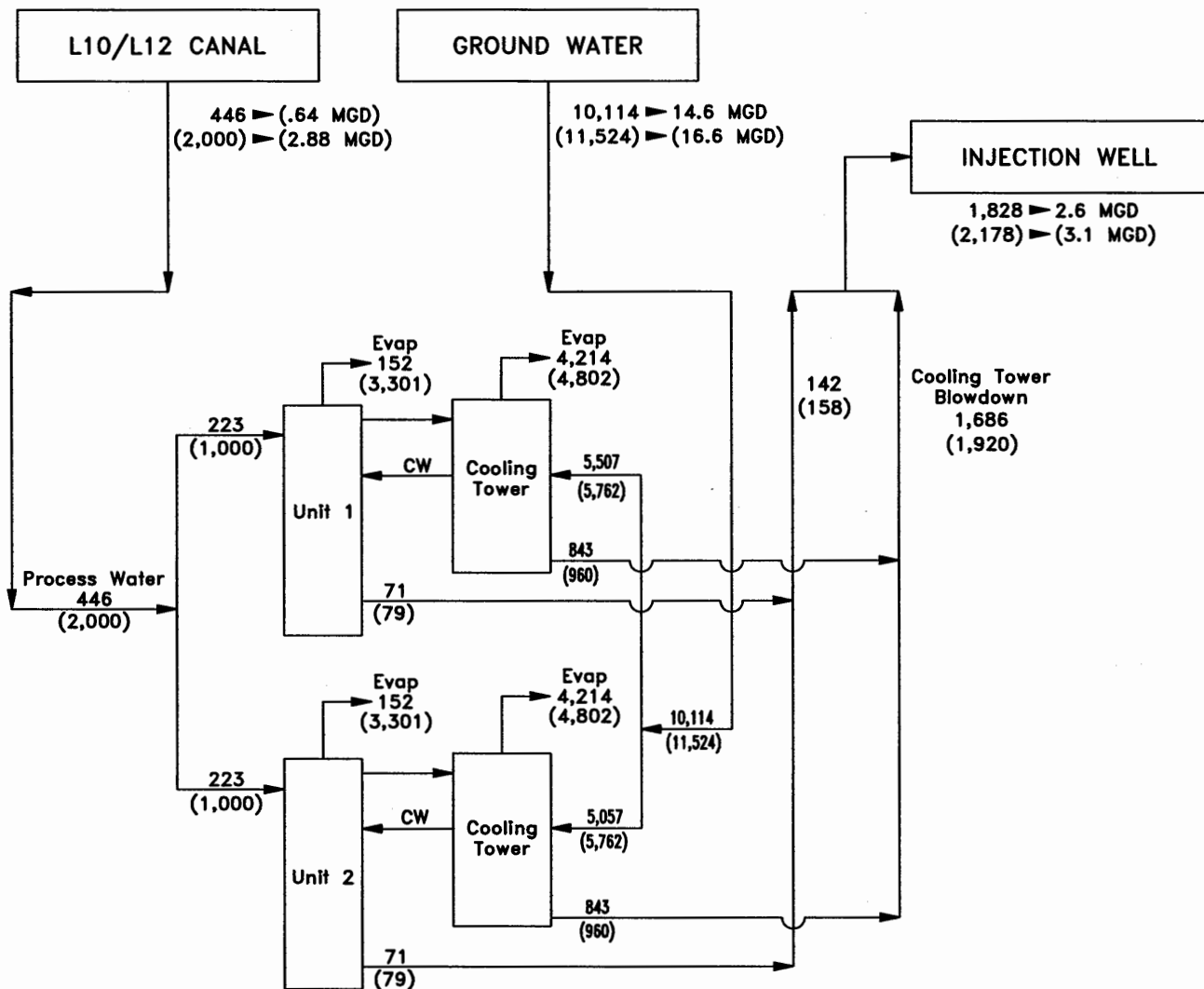


NOTES:

1. FLOWS ARE IN GALLONS PER MINUTE (GPM).
2. FLOWS SHOWN WITH NO () ARE BASED ON AVERAGE DAILY WATER USE.
3. NUMBERS IN () ARE PEAK INTERMITTENT FLOWS.
4. FLOWS ARE BASED ON 5 CONC. IN CT.

	SYSTEM	DISCIPLINE	PLANT/UNIT
	n/a	CS	WCEC -- FIGURE 3.5.0-3
	SCALE	CAD FILE NAME	TITLE
n/a	WMB.DWG	WATER MASS BALANCE FOR WCEC PRIMARY SOURCE (SURFACE WATER) TWO 1,100-MW UNITS	
DRAWING SIZE	FPL ARCHIVE NAME		
A (8.5X11)	n/a		
DRAWING NUMBER			SHEET
0437649/4/4.2SCA/WaterBalance(CB-007-S)			1 of 1
			REV
			0

0	02-14-05	ISSUED FOR USE	GMG	TDJ	PCBL
REV	DATE	REVISION DESCRIPTION	BY	CH	COR
			APR	ORG	



NOTES:

1. FLOWS ARE IN GALLONS PER MINUTE (GPM).
2. FLOWS SHOWN WITH NO () ARE BASED ON AVERAGE DAILY WATER USE.
3. NUMBERS IN () ARE PEAK INTERMITTENT FLOWS.
4. FLOWS ARE BASED ON 2 CONC. IN CT.

 FPL	SYSTEM n/a	DISCIPLINE CS	PLANT/UNIT WCEC -- FIGURE 3.5.0-4		
	SCALE n/a	CAD FILE NAME WMB.DWG	TITLE WATER BALANCE FOR WCEC		
	DRAWING SIZE A (8.5X11)	FPL ARCHIVE NAME n/a	SECONDARY SOURCE (BACKUP)--		
	GROUNDWATER-TWO 1,100-MW UNITS				
DRAWING NUMBER 0437649/4/4.2SCA/WaterBalance(CB-008-G)				SHEET 1 of 1	REV 1

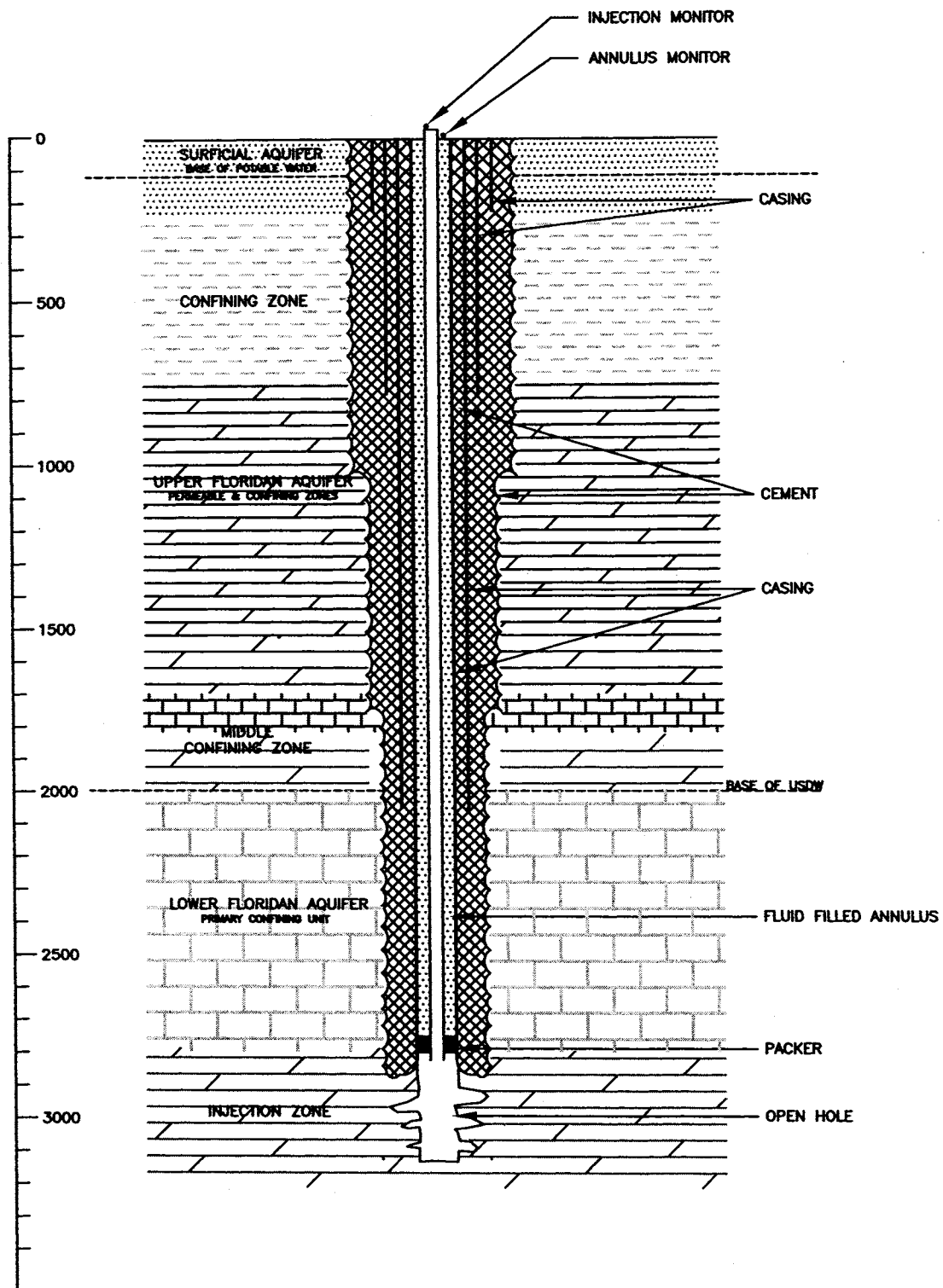


FIGURE 3.5.6-1. CONCEPTUAL INJECTION WELL DESIGN
FPL WEST COUNTY ENERGY CENTER
PALM BEACH COUNTY, FL

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

4.1 LAND IMPACTS

4.1.1 GENERAL CONSTRUCTION IMPACTS

The portions of the Site that will be affected by the construction of the Project were shown in Figures 3.2.0-1 through 3.2.0-4. The entire 220 acres has been filled with about 23 ft of shell and sand quarried from nearby PBA mining activities. No areas of the Site require clearing of vegetation or substantive filling for the Project's requirements. Construction laydown and parking areas, which may be heavily traveled, may be stabilized with rock. Other more lightly traveled areas may be seeded or sodded with grass to prevent erosion.

The areas occupied by the Power Blocks for each unit provide space for the CTs and associated HRSGs, steam turbine generators, cooling towers, ultra low-sulfur light oil tanks, collector yards, and raw/demineralized water tanks (see Figures 3.2.0-3 and 3.2.0-4). Other facilities include the parking lot and roads; stormwater ponds; parking; and road connection to PBA Road. Support facilities include the administration building, control room, warehouse, gas yard, water pipeline, UIC wells, FAS and surficial wells, and electrical substation connection.

No explosives for blasting will be used during construction of the Project.

Access to the Site is by public roads; State Road 80, a four-lane divided highway, is located immediately south of the Site. There is a permanent private paved road east of the Site (referred to as PBA Road) connected to State Road 80 that will provide access for the construction of the Project. Construction traffic will be directed from PBA Road onto the Site. Fugitive dust generation from traffic and/or excavations will be minimized through paving, placing of sod in areas not utilized for construction, the use of water sprinkling, or other dust-suppressant techniques.

The existing grade of the Site is about 23 ft-msl and about 13 ft above the surrounding land areas. The finished grade of the Project, which includes the Power Block and the equipment, will remain at the existing site elevation of approximately 23 ft-msl. Construction laydown and parking areas will remain at the existing Site elevation (i.e., 23 ft-msl).



Site preparation will be minimal due to the existing character and structural stability of the backfilled material. Areas will be graded and some minor amounts of rock fill will be used to help support the plant foundations, piping, electrical duct banks, trenches, and manholes. Foundations required to support heavy loads (i.e., such as building columns, CTs, and generators) are planned to be spread foundations but may be supported by pilings.

Dewatering of the Site is not anticipated except for deep structures (e.g., circulating water pump pit and intake). Dewatering could be potentially required for excavations below 15 ft-msl for circulating water pipes due to local water elevations. Such dewatering will be localized and last for less than 1 year. Effluent from any dewatering at the Site will be routed to the stormwater retention ponds. For the intake structure on the L10/L12 Canal, temporary dewatering will be accomplished by localized pumping. The dewatering system will be designed to control turbidity. Lowering the water table in the immediate area of construction allows backfilling with structural fill (i.e., limerock or limestone). The duration of dewatering will be limited to 6 months. Based on the location and limited duration of dewatering, no offsite impacts to groundwater are anticipated (see Section 4.3). There will be no impacts to the underlying deeper aquifers because excavation and dewatering activities will be limited to a very small area of the surficial aquifer system adjacent to L10/L12 Canal (less than 1 acre). Once the detailed design is completed, a dewatering plan, if required, will be submitted to SFWMD prior to commencing dewatering activities.

As described in Section 3.6 and listed in Table 3.6.0-1, there are a variety of potential waste streams resulting from the construction and operation of the Project. During construction of the Project, the waste streams will be managed as presented in Table 3.6.0-1. Solvent rags will be collected and laundered. Residual waste from punctured aerosol cans will be collected and managed as hazardous waste. Paint waste, PVC cleaner, and PVC cement wastes will be minimized by implementation of programs requiring use of all material prior to issuance of additional material. All hazardous wastes will be stored onsite and disposed of by a licensed hazardous waste contractor. All non-hazardous waste will be managed according to the Waste Handling Guidelines identified in Table 3.7.0-1 with appropriate modifications to accommodate the construction project.

Water needed during the construction will be obtained from the plant water system. This water system will be from the surficial aquifer and designed for a maximum capacity of 35,000 gallons per day (gpd). Water associated with the hydrostatic testing of HRSGs, piping, and tank systems after

installation will be obtained from the plant water system and will be contained onsite. Chemicals such as ammonia may be added to this water to meet manufacturer's specifications for pH control and will be routed through the UIC. If no chemicals are added, hydrostatic test water will be either routed to the stormwater ponds or allowed to percolate and/or evaporate onsite.

Plant water system will provide water for chemical cleaning of the HRSG and steam piping, as well as for steam blow processes. Chemical cleaning involves cleaning the HRSG to clean the piping systems (see Subsection 3.6.5). The steam blow process involves cleaning steam-piping systems to remove accumulated weld spatter, slag, filings, and other debris. If this material is not removed prior to steam turbine operation, the steam turbine will be damaged by the metal particles, which would strike the blades and steam path at very high velocities. Blowing through the piping system with steam removes this material, along with rust, grease, and other fabrication and construction residues prior to commencement of combined cycle operation. The steam blow process requires treated water and may require an additional portable reverse osmosis (RO) unit for a short time period. RO reject will be routed to the UIC.

Solid waste materials will be disposed of in accordance with applicable rules and regulations. Construction and demolition wastes, such as scrap wood and metal, will be transferred to a specified storage area on the Site where they will be separated and stockpiled for salvage and recycling. General waste materials (i.e., typical of municipal solid wastes) will be collected in appropriate waste collection containers for disposal at an approved offsite location.

During construction, the construction labor force will use portable chemical toilets and/or permitted holding tanks. A licensed contractor will pump all sanitary sewage from the portable toilets and holding tanks as needed and transport the waste to an approved disposal facility.

Potable water for consumption during construction will be obtained from the plant water system, meeting the requirements of Chapter 62-555, F.A.C., and Palm Beach County ECR-II. Potable water for emergency eyewash and shower stations will be obtained initially from temporary systems and subsequently connected permanently to the Project's potable water system.

Used oil from construction vehicles and equipment will be collected in appropriate containers and transported offsite for recycling or disposal at an approved facility. The approved disposal facility



will be an existing facility that has been previously permitted for commercial recycling or disposal of used oils.

Individual contractors will be responsible for handling any hazardous materials required to perform their tasks and any resulting hazardous wastes. This responsibility includes the proper recordkeeping, transportation, storage, handling, and offsite disposal of such wastes.

It is anticipated that onsite construction activities for the Project will begin by May 2007 and be completed by June 2010. Demobilization and cleanup will extend to November 2010. The peak employment is expected to occur in the summer of 2008 and will be about 1,000 construction workers and management. Construction employment will average about 430 workers from about October 2007 through September 2009.

4.1.2 ROADS

Construction traffic will use State Road 80 to access PBA Road, which is an asphalt-paved road along the eastern boundary of the Site. A separate onsite asphalt driveway will be constructed to connect the Site to PBA Road. Construction traffic will be directed to either the parking or laydown areas.

4.1.3 FLOOD ZONES

The entire Site is above the 100-year flood zone. Construction of the Project will not adversely impact adjacent surface water flood elevations or flows and will not cause any adverse flooding or related impacts to offsite property.

4.1.4 TOPOGRAPHY AND SOILS

Current topographic features at the Site reflect the placement of sand and shell from previous PBA activities. The existing grade is about 23 ft-msl and varies about +/- 1 ft. During Site preparation, areas will be graded as necessary with structural fill (rock) placed in areas as needed.

No adverse impact is anticipated to soil stability or bearing strength because spread foundations or pilings will be used; therefore, overall settling of the land area will be negligible. Slight settling may take place in areas of construction, but this will be minor and localized in extent due to the existing conditions.



The areas affected by construction do not include any areas designated as Prime and Unique Farmland.

Most of the areas designated for construction facilities will not require filling. Site topography will not be affected by construction-related activities and there will be no effect on existing aesthetics or view shed. There is an existing visual barrier along the southern portion of the Site adjacent to State Road 80. This barrier, which has been planted with grass and trees, is about 30 ft above the elevation of State Road 80 and forms a visual barrier. Elevations of the land surface after construction will be the same as the existing elevation; no significant changes in topography will be observable from offsite locations.

Construction activities will alter runoff in several parts of the Project; however, no adverse effects are anticipated from this alteration. Surface water runoff from the Power Block, construction parking, and laydown areas will be directed during construction to stormwater ponds.

Groundwater levels will not be significantly affected by modifications to soil percolation from construction activities at the Site due to the proximity of surface water and the interconnection between these surface water bodies and the surficial aquifer. Slight changes in percolation rates will have negligible impacts on water levels, because the surface infiltration affects only localized areas within the Site.

4.1.5 CONSTRUCTION OF THE UIC INJECTION WELL

Following completion of the exploratory well and analysis of the resulting data, the drilling and testing of the test injection well will be conducted under a step-by-step drilling program similar to that of the exploratory well as described in detail in Appendix 10.1.8. This program includes sampling, coring, testing, and geophysical logging. The drilling and testing program is described briefly below and will be adjusted based on the results obtained from the exploratory well program.

Construction of the test injection well will be performed by constructing supporting appurtenances to facilitate the drilling program. These include an approximately 500-ft² well drilling pad (reinforced concrete with sump) and four surficial pad monitoring wells.

The pad monitoring wells, located in the vicinity of the corners of the well pad, will be sampled 48 hours prior to drilling of the test injection well and weekly during drilling and monitor well construction for analysis of pH, temperature, conductivity, and chloride concentration. Water levels will be monitored during each sampling event.

The conventional mud-rotary method will be employed for drilling through the setting of the conductor and intermediate casings to approximately 1,000 ft-bls. Drilling below this level will be performed by the reverse-air circulation method. There will be no discharge of drilling fluids and/or formation fluids. A closed-circulation system will be used for the drilling fluids, employing suitable devices such as screens, shale shakers, and settling tanks to remove cuttings.

Drilling will be accomplished using a closed-circulation system designed and constructed so that no overflow of brackish or salty water occurs. All necessary steps will be taken to prevent accidental spillage from occurring. Tanks for the circulation system will be steel and leak proof. The entire circulation system will be within the curb-reinforced concrete pad.

Flowing conditions in the test injection well will be kept under control at all times. Drilling mud may be used as weight material to keep the drilling fluid at a density necessary to suppress the flow. During the injection well construction and testing procedures, salt will not be used as an additive during drilling, testing, or reaming operations conducted above a depth of approximately 2,000 ft-bls. During the dual-zone deep monitor well construction and testing, salt will not be used at any time.

As flowing conditions are anticipated during the drilling of the injection well and dual-zone deep monitor well, the driller will furnish and install suitable blow-out preventers. The blow-out preventers to be provided will be commercially available, hydraulically operated, single-annular preventers, or an approved equivalent, and will be used during drilling operations below the 24-inch-diameter intermediate casing in the exploratory well to ensure the driller's capability to control potential flowing conditions prior to penetrating the Floridan Aquifer System. When no work is being done on a well, the preventer will remain in place. If requested, each crew also will test the operation of the blow-out preventers on the wells once per week during construction in the presence of the Engineer to demonstrate proficiency in its operation.

Drill cuttings and drilling fluid will be removed from the drilling site and disposed of at an approved location. The fluid displaced from the borehole during cementing operations will be considered excess drilling fluid and will be disposed of in an approved manner.

Geophysical logging will be conducted by a geophysical surveying company specializing in the operation of down-hole geophysical equipment in deep well environments. The logging company will perform temperature logs after each stage of cementing on all casings (and tubing) where returns are not observed at pad level. Caliper logs will be performed on all reamed boreholes before the installation of all casings. Additionally, the various logs will be performed in the test injection well and/or constructed monitor well at the required stages.

Rock cores will be collected during the drilling of the 12-inch-diameter pilot hole for the injection well below the base of the intermediate casing. Four-inch-diameter cores, at least 10 ft long, will be collected at depths designated by the Engineer. Coring points will be determined from information derived during drilling operations. All cores will be stored in wooden boxes with lids, marked with the appropriate well designation, and the depth from which they are taken. Tops and bottoms of the cores will be marked accordingly. After collection, boxing, and labeling, each core will be evaluated to obtain a maximum of three representative sections for analysis of vertical and horizontal hydraulic conductivity, porosity, specific gravity, Young's modulus/elastic modulus, and compressive strength.

Upon completion of the analysis of cores and sample cuttings recovered during installation of the injection well, the UIC Section of FDEP in Tallahassee will be contacted to arrange for their transfer to the Florida Geological Survey.

Packer tests will be conducted to determine the hydrologic properties of the formation and obtain representative water samples for analysis. The depth intervals to be tested will be selected based on an analysis of the geophysical logs, the lithologic logs of the pilot hole, the core samples, and other available site-specific (historical) and regional data.

After successfully setting and inflating the packer device, and before conducting a constant-rate pumping test and recovery test for each pumping test interval, each zone will be developed to obtain formation water that is free of any drilling mud/fluid and will allow water levels in the drill pipe to

return to static conditions. Pre-test development will be performed prior to each constant-rate packer-pumping test.

The water produced during the pumping tests will be confined to the closed-circulation system until disposal at a location meeting applicable standards. Water levels will be monitored and recorded at land surface using an M-scope, tape, or electronic probe/transducer.

4.2 IMPACT ON SURFACE WATER BODIES AND USES

4.2.1 IMPACT ASSESSMENT

Due to the existing nature of the Site and the absence of any discharges offsite, the surrounding surface waters will not be affected by Site preparation and construction activities. Figures 3.2.0-1 through 3.2.0-4 present the land areas that will be impacted by construction. The focus of this impact evaluation is on potential discharges from these land areas to nearby surface water canal systems.

4.2.1.1 Surficial Hydrology—Physical and Chemical Impacts

For the onsite construction, the stormwater ponds located in the northern and southern portions of the Site will be initially excavated to serve as sediment ponds during construction. Stormwater runoff from construction activities, including the construction laydown and parking areas, will be routed to the new stormwater ponds. Offsite impacts will be prevented and controlled through proper design and placement of runoff control features. Any effluent from onsite dewatering will be routed to the stormwater ponds or controlled onsite and allowed to percolate or evaporate.

Erosion during construction will be controlled by grading, construction of ditches and embankments, maintenance of relatively flat grades, and other appropriate erosion control techniques. Sedimentation will be controlled during construction by use of additional sediment control basins and traps, filter berms, straw bales, and other applicable devices as appropriate.

Runoff collected in the sediment control pond will be allowed to percolate or evaporate. Based on the limited discharge quantity associated with construction activities, no adverse impacts to surface waters are anticipated.

Construction of the Project will impact less than 0.25 acre of wetland for the construction of the intake on the L10/L12 Canal. The potential impacts during construction will be minimized by



isolating the construction area from the surrounding surface water. This will be done by first enclosing the area with sedimentation barriers (e.g., screens). A seepage barrier (e.g., sheet pile) will then be installed prior to construction of the intake. This will isolate construction activities from the surface waters to minimize impacts.

Dewatering for the construction of the intake or inlet structures will be drawn from the L10/L12 Canal. Dewatering discharge will essentially be identical in water quality to the water in the L10/L12 Canal and will be discharged back into the L10/L12 Canal. Water samples will be collected and analyzed for the constituents listed in the State's Generic Permit for the Discharge of Produced Ground Water from any Non-Contaminated Site Activity [Chapter 62-621.300(2) F.A.C.]. If groundwater quality meets the generic permit requirements as expected, a short summary of the proposed activity and a copy of the analytical results will be sent to the FDEP Southeast District office within 1 week after discharge begins.

Impacts from the use of chemicals for cleanup of spillage of chemicals or oil and grease will be mitigated through proper handling and disposal practices. Construction contractors will be required to implement environmental control practices (e.g., designating specific areas for fueling and maintenance) to minimize any spills. These areas will be located so that any spills, if they do occur, will not be adjacent to any surface waters. If any spills occur, cleanup will be expedited with ultimate disposal in an approved facility. When appropriate, such materials will be handled to conform with FPL's Spill Prevention Control and Countermeasure (SPCC) plans and hazardous waste management. In addition, construction-specific procedures will be developed and implemented by individual contractors.

4.2.1.2 Aquatic Systems

The Project design will require dredging and filling for the intake previously shown in Figures 3.5.0-1 and 3.5.0-2 for the proposed intake and its alternative. The aerial amount of dredging and filling is less than 0.25 acre of wetlands. The Project will comply with the requirements of the USACE and FDEP, as well as Palm Beach County.

As described in Subsection 4.2.1.1, the potential for impacts to aquatic systems outside of the Site will be minimized through the use of appropriate construction techniques to control erosion, sedimentation, and surface runoff.



4.2.2 MEASURING AND MONITORING PROGRAMS

Stormwater associated with construction activities will be retained onsite and no monitoring is proposed. Silt fences at the perimeter of active construction areas will be maintained during construction. Dewatering, if discharged, will be monitored as required under the FDEP applicable regulations.

4.3 GROUNDWATER IMPACTS

4.3.1 PHYSICAL AND CHEMICAL IMPACTS

Activities associated with Site preparation and construction are not expected to produce any significant changes to groundwater quality, quantity, or levels in the vicinity of the Site. Dewatering, if required during construction, will be confined to localized areas. Consequently, the zone of influence for the dewatering activities will be confined to small areas associated with the construction of the intake and associated facilities and piping associated with the Power Blocks. As a result, no impacts to groundwater resources or offsite wells will occur from dewatering activities.

Construction workforce will require an average of approximately 35,000 gpd of potable water, which will come from a well in the surficial aquifer. The well will be installed early in the construction schedule and include a potable water system to supply water needs during construction. The potable water system will meet the requirements of Chapter 62-555, F.A.C., and Palm Beach County ECR-II.

A MODFLOW model was also used to simulate potential impacts on the surficial aquifer system from pumping the potable supply well. Aquifer parameters were obtained from the available literature and from onsite slug tests (Golder, 2002). The model was run for 90 days at the maximum monthly demand without recharge. The maximum cone of depression, defined by the 0.1-ft drawdown contour, extends out 1,350 ft from the pumping well and does not significantly impact any wetlands or existing users. The average cone of depression was predicted to be 800 ft for the 0.1-ft drawdown contour. The maximum simulated drawdown at the well is only 1.66 ft with the average predicted drawdown of 0.38 ft at the well. A detailed discussion of the surficial aquifer modeling is contained in SCA Appendix 10.7.

As discussed in Section 4.2.1.1, construction contractors will be required to implement practices to minimize spills. Maintenance and refueling will be performed only in designated areas. Any spills will be cleaned up and wastes disposed of in accordance with the applicable requirements.

4.3.2 MEASURING AND MONITORING PROGRAM

During construction dewatering, any applicable measuring and monitoring programs will be conducted.

4.4 ECOLOGICAL IMPACTS

4.4.1 IMPACT ASSESSMENT

4.4.1.1 Terrestrial Systems

The terrestrial systems on the entire 220-acre Site have been previously cleared and filled in connection with previous PBA activities. The construction activities in these areas will not cause adverse ecological impacts.

The Site's 220 acres of altered terrestrial systems (see Subsection 2.3.6, Pre-Existing Stress, Terrestrial Systems) do not contain unique wildlife species and are not considered important wildlife habitats because of their disturbed nature. No adverse impacts to wildlife resources in the area will occur as a result of construction.

No adverse impacts to federally or state-listed terrestrial plants and animals are expected, due to the existing developed nature of the terrestrial habitat within the Site. The sand- and shell-covered Site does not provide suitable habitat for listed plants or animals.

Fugitive dust generated by construction activities will be minimized through BMPs (see Subsection 4.5.2). Any localized fugitive dust will not adversely affect the terrestrial systems surrounding the Site.

Noise from construction activities will not affect wildlife in the vicinity of the Site. Presently, the area experiences noise associated with operation of the existing PBA activities, and wildlife that occurs in the vicinity of the Site, such as birds, is acclimated to such activities. No noise-sensitive wildlife is known to occur in the Site or its vicinity since wildlife in the area would have been acclimated to noise associated with the existing PBA activities.

4.4.1.2 Aquatic Systems/Wetlands

The proposed Project will involve the dredging and filling of less than 0.25 acre for the L10/L12 Canal intake. The impacts to aquatic and wetland systems will be negligible.

4.4.1.3 Endangered and Threatened Species

The Site does not contain any habitat suitable for endangered or threatened species.

4.4.2 MEASURING AND MONITORING PROGRAMS

4.4.2.1 Terrestrial Systems

No monitoring programs will be undertaken because no important terrestrial systems will be affected by construction activities proposed for the Project.

4.4.2.2 Aquatic Systems/Wetlands

No monitoring programs will be undertaken because no important aquatic/wetland systems will be affected by construction activities proposed for the Project.

4.5 AIR IMPACTS

4.5.1 AIR EMISSIONS

Construction activities will result in the generation of fugitive PM emissions and vehicle exhaust emissions. Fugitive PM emissions will result primarily from ground excavation, grading, cut-and-fill operations, and vehicular travel over paved and unpaved roads. Vehicular traffic will include heavy-equipment traffic and traffic due to construction workers entering and leaving the Site. Construction personnel and equipment will enter the Site primarily over surfaced roadways. Exposed land areas may also generate fugitive dust due to wind erosion. There will be no open burning associated with land clearing activities.

Emissions of fugitive PM from these activities are extremely difficult to quantify because of their variable nature. They can only be estimated since emissions are dependent upon a number of factors, including specific activities conducted, level of activity, meteorological conditions, and control measures utilized.

During the construction period, the PM₁₀ emissions are estimated to average about 8.3 TPY, 63.8 lb/day (5 days/week), or 6.4 lb/hr (10 hr/day).



An emission rate of 8.3 TPY of PM₁₀ is less than the PSD significant emission rate of 15 TPY. As a result, the estimated fugitive emissions are not expected to significantly affect air quality outside the Site boundary.

Emissions will also result from onsite construction equipment operating with diesel and gasoline engines including cranes, trucks, compressors, etc. This equipment will produce emissions of CO, NO_x, VOC, PM, and SO₂. Exhaust emissions were based on EPA emission factors (AP-42) for diesel engines. Based on the EPA emission factors and the estimated maximum number of vehicles, the CO, NO_x, VOC, PM, and SO₂ emissions are estimated to be 4.3, 19.8, 1.6, 1.4, and 1.3 TPY, respectively, over the 3-year construction period. These levels of emissions will not cause significant impacts to air quality in the vicinity of the Site.

4.5.2 CONTROL MEASURES

A number of control measures will be implemented during the construction period to minimize air emissions and potential impacts. The Site consists of compacted coarse sand and shell that is difficult to become airborne, thereby reducing air emissions due to wind. After grading, the untravelled or lightly traveled areas will be either paved or vegetated to minimize fugitive PM and wind erosion. Heavily traveled unpaved construction laydown areas and unpaved roads may be stabilized with rock. Watering on an as-needed basis will control fugitive dust from highly traveled areas. The entrance road will be paved, which minimizes dust emissions from vehicles entering the Site.

4.6 IMPACT ON HUMAN POPULATIONS

Construction projects can affect human populations by altering demographic patterns; by placing demands on infrastructure elements such as housing, transportation, and educational facilities; by contributing noise to the environment; and by creating inconveniences due to the movement of workers, materials, and machinery. Due to the likely patterns of local employment and daily commuting, the Project's demographic impact is expected to be small. Chapter 7.0 of this SCA provides information on income, employment, tax revenue, and service needs associated with the construction workforce. This section is, therefore, limited to a discussion of workforce requirements and the relatively minor impacts of Project-related traffic, housing, education, and noise.

4.6.1 CONSTRUCTION WORKFORCE

The construction workforce for the Project is expected to average approximately 350 workers over the 3-year construction period. Construction is anticipated to commence in the spring of 2007 and conclude in the fall of 2010. Peak construction is estimated at approximately 1,000 workers in mid-2008 and will result in workforce skills as follows:

Trade	Percent	Trade	Percent
Laborers	12	Pipefitters	19
Carpenters	6	Insulators	2
Operators	5	Electricians	22
Ironworkers	4	Painters	1
Millwrights	10	Supervision	13
Boilermakers	6		

The majority of the construction workers are expected to commute to the Site from within a commuting distance of up to 100 miles, primarily from locations within Palm Beach, Broward, and Miami-Dade Counties. Contractors will be responsible for hiring the construction workforce. A more detailed discussion of the workforce, payrolls, and economic impacts of the workforce is found in Chapter 7.0.

4.6.2 TRANSPORTATION

Traffic associated with Project construction will affect area roadways on a temporary basis for the duration of the construction period. Peak use of State Road 80 for Project construction traffic will flow west during the morning peak hour, away from the urbanized areas of Palm Beach County. The opposite will occur in the evening peak hour, when construction traffic will flow in a predominantly easterly direction toward the urban areas. Thus, construction traffic will flow in the opposite direction of peak hour directional traffic for the typical commuter.

A traffic impact analysis was conducted to determine impacts during the construction period when the peak construction workforce will be present onsite (2008). The annual average daily traffic (AADT) counts were obtained. These counts represent background conditions at the time when traffic counts were taken. Annually, between 2001 and 2004, State Road 80 peak season daily volumes increased by 4.7 percent to 5.6 percent. Therefore, the most recent count was compounded annually by 5 percent to obtain background traffic during the year in which peak construction will occur (2008).

Construction of the Project will take place primarily over a 3-year period and will require the use of several area roadways. During construction, there will be an average of 350 workers and a maximum of approximately 1,000 construction workers onsite. The workers will generally be onsite between the hours of 7:00 a.m. and 4:00 p.m. Delivery trucks will also be expected to arrive at the Site daily during this timeframe to bring in materials and equipment. Most of the deliveries, however, are expected to arrive after the work shift begins or later during the day and will not have a significant impact in the morning or evening peak hours. Worst-case construction traffic impacts have been calculated for the peak hour when the peak construction workforce is present in 2008.

The peak-hour traffic departing from the Site is expected to include a worst-case condition of 100 percent of the peak construction workers and one-eighth of the delivery trips (delivery arrivals are expected throughout the day). Assuming this temporal/distribution and a trip generation rate of 1.0 per construction employee, the total trip generation from the Project construction during the peak hour results in 1,100 exiting vehicles; 1,000 from the construction employees and 90 for delivery and miscellaneous activities. The use of 1,000 trips for construction workers is extremely conservative since some car-pooling would likely occur. Therefore, the projected impacts represent worse-case conditions. Only miscellaneous inbound trips to the Site would be expected in the peak hour and these have been estimated to be 10 trips.

The roadway that will be impacted the most by Project construction traffic is State Road 80, which connects the Site with Palm Beach County and its municipalities. Estimated traffic assignment from the Site to this roadway was based upon the location of logical trip ends for the traffic generated by the Project. It is expected that 85 percent of the Project trips will depart the Site and travel east on State Road 80, the remaining 15 percent traveling west on State Road 80. Traffic would continue to access local communities including many of the municipalities in Palm Beach County, including Belle Glade.

Information was obtained from the FDOT and Palm Beach County Traffic Engineering Department regarding the existing road lanes, the Level of Service (LOS) standard that applies to the road segment, and existing peak-hour traffic volumes. The baseline conditions described in Subsection 2.2.5, and the projected peak-hour background traffic plus construction traffic, were used to generate the maximum peak-hour traffic volumes and are summarized in Table 4.6.2-1. The LOS for the total traffic volume has been determined using FDOT Generalized Level of Service Tables for

Rural Undeveloped and Urbanized Areas. As indicated in Table 4.6.2-1, all road segments that will be impacted by construction traffic will continue to operate at or above the state-wide minimum LOS standard of B for rural areas, LOS C for areas transitioning to urbanized areas, and LOS D for urbanized areas.

The intersection of PBA Road and State Road 80 adjacent to the Site will be affected by construction traffic as the anticipated construction traffic enters and departs from State Road 80. Traffic control will be required at the intersection during the morning arrivals and afternoon departures of construction traffic. Traffic control will be handled by a traffic management specialist(s) (e.g., local off-duty police officers) hired for the peak construction period. This impact is considered to be temporary and will occur during the portion of the construction period when construction employment is highest.

4.6.3 HOUSING

An average of 350 employees will be required during Project construction, and employment will peak at 1,000 employees. Many of these employees will be employed for only a portion of the construction period due to the changing skill requirements of the construction project. There is a significant labor pool of construction workers in Palm Beach County, estimated at over 30,000 and an additional 40,000 in the adjoining counties. There are abundant lodging accommodations (over 80,000 public lodging units) in Palm Beach County.

4.6.4 EDUCATION

Because of the short duration of employment, few workers will relocate with their families. As a result, there will be little immigration of school-aged children resulting from Project construction. No significant adverse effects on local elementary, middle, or high school enrollment are anticipated.

4.6.5 CONSTRUCTION NOISE IMPACTS

The impacts of noise on human populations are dependent upon the proximity of institutional and residential land uses to construction activities and the type and extent of noise sources. The nearest locations that could potentially be impacted by noise (i.e., critical receptor) from the proposed facility construction area are located approximately 3,940 ft northeast of the Site. This location is the Indian Trails subdivision.

Construction of the Project will require installation of foundations and erection of major components of the combined cycle unit such as the CTs, HRSGs, steam turbines, and cooling system. The use of construction equipment, such as dump trucks, cranes, bulldozers, graders, front-end loaders, and air compressors will be required. These sources have maximum noise levels ranging from about 70 to 90 dBA (measured at a distance of 50 ft).

The evaluation of noise impacts from construction activities was performed using previous results from noise propagation computer programs to estimate noise levels (CADNA A). Noise source levels are entered as octave band sound power levels. The user can specify coordinates, either rectangular or polar. All noise sources are assumed to be point sources; line sources can be simulated by several point sources. Sound propagation is calculated by accounting for hemispherical spreading and three other user-identified attenuation options: atmospheric attenuation, path-specific attenuation, and barrier attenuation. Atmospheric attenuation is calculated using the data specified by the ANSI Method for the Calculation of the Absorption of Sound by the Atmosphere (ANSI, 1999). Path-specific attenuation can be specified to account for the effects of vegetation, foliage, and wind shadow. Direction source characteristics and reflection can be simulated using path-specific attenuation. Attenuation due to barriers can be calculated using the coordinates and height of the barrier. Barrier attenuation is calculated by assuming an infinitely long barrier perpendicular to the source-receptor path. Total and A-weighted SPLs (filtered to approximate human hearing) are calculated. Background noise levels can be incorporated into the program and are used to calculate overall SPLs.

The model was performed to predict the maximum noise levels produced by a combination of likely noise sources with and without background noise levels. A conservative estimate of the number and types of construction equipment was assumed to calculate construction noise levels.

Table 4.6.5-1 lists the major types of equipment expected to be used during the construction of the Project and their associated noise characteristics. For the purpose of the construction noise impact analyses, all of the equipment was conservatively assumed to be operating simultaneously at peak power. These heavy construction activities are expected to occur during the daytime hours. Most of the heavy construction activities will occur during the first 6 to 8 months of construction for each combined cycle unit.

The noise levels resulting from these combinations of equipment were input as multiple sources to the model. Octave bands were estimated from *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliance* (EPA, 1971). It is unlikely that all the equipment would be operating simultaneously and continuously; and therefore, this impact assessment is conservative. Background SPL values were incorporated into the model to calculate impacts at the residential location identified in Subsection 2.3.8. Only the atmospheric attenuation option was enabled during the noise modeling runs.

The maximum noise level resulting from construction of the Project is estimated to be 36.8 dBA at the nearest residence. This noise level does not include background, which can be variable depending upon the activities in the area. As presented in Section 2.3.8, the background sound pressure levels used in the impact analyses were 42.7 and 40.0 dBA for the daytime and nighttime, respectively. The construction noise impacts, including background values obtained from monitoring, are presented in Table 4.6.5-2. The background values were used to calculate the total noise level presented in the table. As shown in Table 4.6.5-2, the estimated noise levels during the construction of the Project are estimated to be 43.7 dBA at the nearest residence during the daytime and 41.7 dBA during the nighttime.

The construction activities associated with the Project are predicted to meet the requirements under the Palm Beach County Unified Land Development Code, Article 5, Chapter E, Section 3.B. The predicted noise levels would be less than 55 dBA during the daytime (7 a.m. to 8 p.m.) and 50 dBA during the nighttime (8 p.m. to 7 a.m.). In addition, the Unified Land Development Code prohibits excessive noise from 10 p.m. to 7 a.m. Excessive noise is defined “as noise that disturbs a reasonable person of normal sensitivity”. Heavy construction activities associated with the Project, as represented by the predicted noise concentrations, are expected to occur during the daytime hours. Mechanical and electrical installation activities may occur at night; however, these activities have minimum noise levels much lower than those predicted in Table 4.6.5-2. Taking together the predicted noise levels and the construction periods, construction noise levels are not expected to adversely impact the nearest residential receptor identified in the vicinity of the Site. The noise estimates are conservative and include only atmospheric attenuation. The actual or measured noise levels due to construction are expected to be lower than predicted.

During the initial startup of the Project, steam blows are conducted to clean piping. Steam blows result in elevated noise levels for short durations. Notification will be made to those locations that may be able to notice elevated noise levels.

4.7 IMPACTS ON LANDMARKS AND SENSITIVE AREAS

Construction-related impacts to landmarks and sensitive areas will be minor and will not result in any changes to accessibility or use. The closest landmark or sensitive area within a 5-mile radius of the Project (refer to Subsection 2.2.5) is the Loxahatchee National Wildlife Refuge. The portion of the Loxahatchee National Wildlife Refuge in the vicinity of the Site is not open for public use. The closest point of public access of this Wildlife Refuge that is open for public use is about 20 miles southeast of the Site. These areas will not experience any significant changes in air quality, noise level, water quality, or visual characteristics perceptible to their users.

Occasional construction noise may be heard near the Site during the Project construction period. The noise is anticipated to be infrequent and of short duration and primarily occur during the daytime. Visual impacts will be minor since the closest public viewpoint is either from State Road 80 or about 0.75-mile distance at the nearest residential area. Views of the construction activity will not occur from any public recreational areas.

No use-related impacts are anticipated at any public recreational facilities since these areas are a considerable distance from the Site.

4.8 IMPACT ON ARCHAEOLOGICAL AND HISTORIC SITES

Results of a search of the Florida Master Site File conducted for the Site lists no previously recorded archeological sites and standing structures. The original grade was partially mined, excavated, and backfilled with sand and shell to bring the current grade up to an approximate elevation of 23 ft. A letter from the Florida Department of State, Division of Historical Resources in June 2004 indicated that there were no previously recorded cultural resources on the Site (see Appendix 10.5.3).

4.9 SPECIAL FEATURES

There will be no unusual products, raw materials, solid waste disposal, incinerator effluents, or residues produced during construction of the Project that will have influence on the environment or ecological systems of the Site or adjacent areas.



4.10 BENEFITS OF CONSTRUCTION

The construction phase of the Project will contribute both short- and long-term economic benefits to the surrounding region. Construction benefits will include construction employment that will average several hundred over the 3-year construction period. Construction wages will increase the demand for goods and services in the region. Direct purchases of construction materials will have both direct and indirect economic benefits. This includes construction materials (e.g., concrete and steel for foundations), rental equipment (e.g., construction cranes, pumps), food services, and transportation services.

4.11 VARIANCES

No variances from applicable standards of any State, regional, or local government agencies due to the construction of the Project are required or requested as part of this SCA.

Table 4.6.2-1. Level of Service (LOS) for Roadway Links During Peak Construction Traffic – FPL West County Energy Center (2008)

Roadway	Link	2008 Baseline Peak-Hour Traffic ²	2008 Baseline Peak-Hour LOS ¹	2008 Baseline Peak-Hour and Peak Construction Traffic ³	2004 Baseline Peak-Hour and Peak Construction Traffic LOS ¹
SR 80	SR700 to 1 mile west of SR 7/US 441	1,453	A	2,388	B
SR 80	1 mile west of SR 7 to east of SR 7	5,389	B	6,324	D
SR 80	East of SR 7 to east of Turnpike	3,771	B	4,706	B

¹ Level of Service:

- LOS A Completely free-flow conditions. The operation of vehicles is virtually unaffected by the presence of other vehicles and operations are constrained only by the geometric feature of the highway and by driver preferences.
- LOS B Free flow, although the presence of other vehicles becomes noticeable. Average travel speeds are the same as LOS A, but drivers have slightly less freedom to maneuver. Minor disruptions are easily absorbed, although local deterioration will be more obvious.
- LOS C Influence of traffic density on operations becomes marked. The ability to maneuver within the traffic stream is clearly affected by other vehicles. Minor disruptions can cause serious local deterioration on service.
- LOS D Ability to maneuver is severely restricted due to traffic congestion. Travel speed is reduced by the increasing volume. Only minor disruptions can be absorbed.
- LOS E Operations at or near capacity, an unstable level. Disruptions cannot be dissipated readily.
- LOS F Forced or breakdown flow. Vehicles arrive at a rate greater than the rate at which they are discharged. The demand exceeds the computed capacity of the planned facility.

² Background traffic based on 2003 FDOT traffic counts, compounded annually by 5 percent.

³ Background traffic plus peak construction traffic.

NOTE: Site vicinity is characterized as rural. All other links are characterized as urbanized. Programmed improvements include widening SR 80 to 8 lanes from Forest Hills Boulevard eastward. Construction of each of the four separate projects is to be completed between March 2005 and mid-2008.

Source: Golder, 2005.



Table 4.6.5-1. Summary of Construction Noise Sources Associated with Heavy Construction Activities

Source	Modeled Source Height ^a (m)	Sound Power Level (dB) for Octave Band Center Frequency (Hz)									Overall Sound Power Level	
		31.5	63	125	250	500	1K	2K	4K	8K	(dB)	(dBA)
Front End Loader 1	1.8	0.0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	122.4	115.5
Truck 1	1.8	0.0	0.0	118.6	116.1	113.1	109.6	106.1	102.1	0.0	121.7	115.3
Truck 2	1.8	0.0	0.0	118.6	116.1	113.1	109.6	106.1	102.1	0.0	121.7	115.3
Front end Loader 2	1.8	0.0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	122.4	115.5
Bulldozer 1	1.8	0.0	106.6	103.6	101.6	102.6	99.6	96.6	94.6	96.6	105.3	110.9
Bulldozer 2	1.8	0.0	106.6	103.6	101.6	102.6	99.6	96.6	94.6	96.6	105.3	110.9
Crane 1	1.8	0.0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	122.4	115.5
Crane 2	1.8	0.0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	122.4	115.5
Welder 1	1.8	0.0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6	112.7
Welder 2	1.8	0.0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6	112.7
Welder 3	1.8	0.0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6	112.7
Welder 4	1.8	0.0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6	112.7

^a Source height used for modeling analysis only and does not necessarily represent the physical height of the source.

Source: Golder, 2005.

Table 4.6.5-2. Baseline Sound Levels and Sound Level Impacts (dBA) of Construction of the FPL West County Energy Center

Baseline Site	Location	Time	Baseline Sound Levels ^a (dBA)	Sound Levels for Construction (dBA)
5	Nearest Residence	Day	42.7	43.7
		Night	40.0	41.7

^aBased on L₉₀. Nighttime observations for background were adjusted for transient sounds (see discussion in Section 2.3.9 and Appendix 10.5.2 for octave band charts).

Source: Golder, 2005.

5.0 EFFECTS OF PLANT OPERATION

As discussed in this chapter, operation of the West County Energy Center will comply with all applicable regulatory standards, and impacts will be minimized through available and reasonable methods.

5.1 EFFECTS OF THE OPERATION OF THE HEAT DISSIPATION SYSTEM

Heat is a necessary byproduct of the fossil fuel-fired generation of electricity. While a significant portion of the thermal energy produced from the fuel is converted to electrical energy by the turbine generators, a portion is absorbed by cooling water flowing through the condenser tubes. The West County Energy Center will have a closed-cycle recirculating heat dissipation system, utilizing rectangular wet mechanical draft cooling towers. Makeup water will be withdrawn primarily from the L10/L12 Canal, which is a manmade water supply and flood control conveyance canal operated by the SFWMD. The secondary/backup supply will be from Floridan aquifer wells. Blowdown from the cooling towers will be discharged to the Boulder Zone of the Lower Floridan Aquifer (LFA) through Class I injection wells. Stormwater will be retained onsite and may be reused in the cooling tower. Since there will be no surface water discharge of industrial wastewater or storm water, the facility will not require a National Pollutant Discharge Elimination System (NPDES) permit. Therefore, Section 316 of the Clean Water Act (CWA) is not applicable. Notwithstanding, as discussed in greater detail below, there will be no significant impacts to surface water resources from operation of the heat dissipation system.

5.1.1 TEMPERATURE EFFECT ON RECEIVING BODY OF WATER

There will be no temperature effect on any surface water body from operation of the heat dissipation system.

5.1.2 EFFECTS ON AQUATIC LIFE

No significant adverse effects upon aquatic life are anticipated during operation of the West County Energy Center. The West County Energy Center's intake structure at the L10/L12 Canal will use screening and diversion technologies to minimize impacts to aquatic organisms that may be in the canal. Furthermore, the intake structure will be designed to ensure that maximum through-screen velocities are less than 0.5 feet per second (fps). The L10/L12 Canal, however, is specifically designed as a water supply and flood control conveyance. Consequently, there are already many

water intakes, control structures, and pump stations between Lake Okeechobee and the Site, and biological resources in the Canal are limited.

Although fishery survey data collected from the Canal are limited, according to the FFWCC and SFWMD the Canal supports common species such as largemouth bass (*Micropterus salmoides*) and sunfish (*Lepomis* sp.), as well as exotic species such as the peacock bass (*Cichla ocellaris*) and blue tilapia (*Oreochromis aurea*). No protected species of fish are found in the Canal. With regard to breeding habitat, the Canal is excavated and maintained with relatively steep slopes, which does not provide desirable breeding habitat for native fish. Therefore, the West County Energy Center should not have a significant impact on important species or the food chain in the canal system. Following utilization within the cooling tower system, cooling tower blowdown will be discharged to the Boulder Zone of the LFA through a deep well injection well system. Therefore, no discharge of heated cooling waters to the L10/L12 Canal, or any other surface water, will occur and no thermal effects on aquatic life from the operation of the heat dissipation system, or from shutdown of the system, will occur.

5.1.2.1 Impingement and Entrainment

The habitat within the Canal is not considered valuable for breeding; therefore, entrainment of eggs and larvae is not anticipated to be significant. In addition, the eggs of warm freshwater species that inhabit the Canal system are demersal, or attached to bottom substrate rather than floating within the water column, and some species also guard their nests, eggs, and fry, which further reduce the probability of entrainment. The average flow in the L10/L12 Canal is approximately 17 times the average West County Energy Center withdrawal rate, and peak flows in the Canal are approximately 170 times the average withdrawal rate for the West County Energy Center. Consequently, entrainment impacts will be limited. Furthermore, the intake structure will utilize a low-intake velocity (maximum through-screen velocity of 0.5 fps at the minimum ambient source water surface elevation), which will reduce the probability of impingement, and further reduce impacts to aquatic biota. For the above reasons, impingement and entrainment impacts from the intake should be minimal and should not impact the aquatic biological community.

5.1.2.2 Thermal Effects

Cooling water will be routed to the Boulder Zone through deep well injection; therefore, no thermal effects upon the aquatic life within the L10/L12 Canal will occur.

5.1.3 BIOLOGICAL EFFECTS OF MODIFIED CIRCULATION

Due to the implementation of design parameters protective of aquatic biota, no significant biological effects of modified circulation are anticipated. No thermal impacts will occur to the L10/L12 Canal, and the adherence to the low-intake velocity and screening systems will minimize impingement and/or entrainment of aquatic organisms.

5.1.4 EFFECTS OF OFFSTREAM COOLING

The potential impacts of the mechanical draft cooling towers were addressed by performing plume dispersion analyses that predicted impacts with respect to:

- Plume Length,
- Plume Height,
- Plume Shadowing,
- Plume Fogging,
- Plume Icing, and
- Salt [from total dissolved solids (TDS)] Deposition.

Assessments of maximum seasonal and annual cooling tower impacts of potential plume-induced visibility effects, fogging and icing, and deposition of drift were predicted with the cooling tower impact model (SACTI), which was developed through the Electric Power Research Institute (EPRI, 1984). Standard hourly meteorological data of surface weather observations and coincident twice-daily mixing height data are used in the analysis and processed with cooling tower data (e.g., tower size, height, and latitude/longitude) by a preprocessor program. The output meteorological record is utilized by the SACTI model to predict the increase in annual frequencies of meteorological events due to a particular cooling tower's design and configuration. Icing and fogging frequencies at a particular location are based on the prediction of the cooling tower's visible plume length under various ambient meteorological conditions. The impacts of the visible plumes are evaluated in the model through the use of physical plume dispersion in conjunction with an algorithm to take into account the thermodynamic interactions of the plume as well as any potential wake effects. The SACTI model can also determine the potential drift and deposition frequencies by wind direction and distance category from a cooling tower.

The general parameters used in the modeling are presented in Table 3.4.1-3. A distribution of the predicted drift droplet sizes for the cooling tower design is presented in Table 5.1.4-1. The drift

emissions from the cooling towers were based on the maximum concentration of TDS in the circulating water. The maximum TDS in the cooling towers was conservatively assumed to be 20,000 parts per million (ppm), based on two cycles of concentration for the modeling.

Hourly surface meteorological data and twice-daily mixing height data from the Palm Beach International Airport for the years 1987 through 1991 were used. This 5-year record coincides with the meteorological data used for other air impact analyses. Long-term monthly clearness indices and daily solar insolation values were also used.

Annual and seasonal impacts were predicted. The seasonal results are for winter (December, January, and February), spring (March, April, and May), summer (June, July, and August), and fall (September, October, and November).

The SACTI model calculations utilized a polar coordinate receptor grid system centered on the tower. Receptors were placed surrounding the source at 22.5-degree intervals and at varying distance intervals. For the drift deposition and plume length computations, 100-meter (m) intervals out to 10,000 m were used; for plume fogging and icing computations, 100-m intervals out to 1,600 m were used; for plume height, 10-m intervals up to 1,000 m were used; and for plume shadowing, 200-m intervals out to 8,000 m were used.

To estimate potential impacts conservatively, it was assumed that the tower operated year-round without plume abatement. This would produce conservative estimates of plume length, fogging, icing, plume shadowing, and salt deposition.

5.1.4.1 Cooling Tower Visibility

The visible plume from a cooling tower is a result of the mixing of the saturated exhausts from the cooling tower with the ambient air, and the resultant mixture is beyond its ability to accommodate the entrained moisture as a gas. At this point, the moisture in the mixture condenses and forms a visible water vapor plume. The ability for air to accommodate water as a gas depends on the temperature. For example, at an ambient temperature of 90°F, the air is capable of accommodating almost six times more water vapor (as mass) than at 40°F. With wet cooling towers, plumes are typically more visible and at greater plume lengths during the winter months than during the summer.

The frequencies of visible plume length, height, and shadowing and hours of fogging resulting from the mechanical draft cooling towers without plume abatement are summarized in Table 5.1.4-2 for each season and annually. The table presents results for various increasing distances from the towers. The results indicate that the predicted frequency of an elevated visible plume is about the same during the winter as in the summer.

Visible vapor plumes from the West County Energy Center cooling towers will remain close to each of the towers, i.e., within 100 m. Plume lengths of 100 m or less are predicted to occur 92.6 percent of the time. A maximum plume length of 200 m is predicted to occur only about 6.5 percent of the time during the winter and about 2.2 percent during the summer, with an annual frequency of about 4.2 percent. Plume lengths of 300 m are predicted to occur less than 1 percent of the time on an annual basis.

The frequency for the heights of visible plumes is shown in Table 5.1.4-2. Plume heights are relatively low in elevation with plume heights exceeding 30 m predicted to occur less than 10 percent of the time. Plume heights of 30 m are predicted to occur about 8.3 percent of the time in the summer. Plume heights of 30 m and less were predicted to occur about 8.8 percent of the time on an annual basis. Plume heights of greater than 50 m were predicted to occur only about 3.6 percent of the time on an annual basis.

Plume shadowing was estimated to decrease significantly with increasing distance from the cooling tower. Beyond 600 m (1,970 ft) from the tower, the annual average number of hours of plume shadowing in any direction is estimated to be less than 85.4 hours per year. Plume shadowing is the best indicator of a highly visible plume since it is the indicator of a distinct shadow. As shown in Table 5.1.4-2, this effect occurs close to the cooling tower.

The nearest road to the West County Energy Center is State Road 80, which runs in an east-west direction approximately 1 mile (1.6 km) south of the Site. Ground-level fogging on State Road 80 is not predicted to occur during plume fogging conditions. The total hours per year of induced fogging surrounding the cooling tower is estimated to be about 1.6 hours (200 m from the cooling towers). Fogging resulting from the cooling towers is not predicted to occur beyond 400 m from the towers.

Rime icing is not predicted to occur from cooling tower drift.

5.1.4.2 Cooling Tower Deposition

The maximum and minimum average salt deposition predicted from the cooling tower to locations off the Site are presented seasonally and annually in Table 5.1.4-2. The maximum impacts are based on the TDS in the circulating water of 20,000 ppm. This represents a worst case using the secondary/backup water supply from the Upper Floridan Aquifer (UFA) as cooling tower makeup. This would likely be for relatively short durations, about 90 days. The primary source of cooling tower makeup, surface water from the L10/L12 Canal, contains much lower concentrations of TDS than the Floridan aquifer supply. When this surface water supply is concentrated in the cooling towers, the resulting drift would have TDS less than 10,000 ppm resulting in proportionally lower deposition.

The maximum average seasonal deposition from the cooling towers is 596 kilograms per square kilometer per month ($\text{kg}/\text{km}^2\text{-mo}$) during the spring at a distance of 200 m (0.2 km) from the towers toward the east. At a distance of 400 m (0.4 km), the maximum average winter deposition is 121 $\text{kg}/\text{km}^2\text{-mo}$ toward the west/northwest. The maximum annual average deposition is 406 $\text{kg}/\text{km}^2\text{-mo}$, 200 m (0.2 km) from the cooling towers in an easterly direction. At 400 m (0.4 km) in a west-northwest direction, the maximum annual average deposition is 92 $\text{kg}/\text{km}^2\text{-mo}$; while deposition is reduced by about 50 percent at 600 m (0.6 km), with a maximum annual average deposition of 48 $\text{kg}/\text{km}^2\text{-mo}$.

According to data collected as part of the Florida Acid Deposition Study [(FADS), 1986], which measured wet and dry deposition over many locations in Florida, background salt deposition in south Florida ranges from approximately 400 to 600 $\text{kg}/\text{km}^2\text{-mo}$.

Potential impacts to vegetation and soil may result from deposition of cooling tower drift. A majority of available research on the impacts of deposition from cooling towers is from the use of makeup water that contains appreciable quantities of salt [i.e., sodium (Na^+) and chloride (Cl^-)]. Several plant species are considered to have very low resistance to salt. These species are flowering dogwood (*Cornus florida*), American sycamore (*Platanus occidentalis*), sassafras (*Sassafras albidum*), and arrowwood (*Viburnum dentatum*). Several studies have been conducted with dogwood because it is a reliable bioindicator of salt damage. The leaf injury threshold of dogwood has been

calculated to be 750 kg/km²-mo (Curtis *et al.*, 1976), 517 kg/km²-mo (Davis, 1979), and 375 kg/km²-mo (Freudenthal and Beals, 1978). In addition to flowering dogwood, Townsend (1980) found that American sycamore was equally sensitive to sodium chloride. McCune *et al.* (1977) found that white ash was more susceptible than dogwood to saline cooling tower drift.

Environmental factors, other than salt drift concentration, can affect species response to cooling tower drift. Grattan *et al.* (1981) reported that a low relative humidity increased the tolerance of pepper, soybean, and tomato plants to Na⁺ and Cl⁻ uptake. No injury symptoms were apparent on any species at any salt deposition level when relative humidity was maintained at approximately 70 percent; however, in the presence of dew or 100-percent relative humidity, plant injury was linearly related to the amount of salt deposition on leaves.

Temperature influences ion absorption rates, with absorption rates decreasing as temperature decreases (Smith and Robinson, 1971). Rainfall amounts also influence symptomatic response of plants to salt drift. Mulchi and Armbruster (1981) observed that above-normal amounts of rainfall delayed the onset of foliar symptoms, whereas below normal amounts of rainfall tended to promote the onset of symptoms and to enhance the magnitude of symptom expression for both corn and soybeans.

Susceptibility to foliar injury from saline aerosols also varies with the developmental stage of the leaf. McCune *et al.* (1977) found that younger leaves of deciduous woody species were more sensitive to saline aerosols than older leaves; whereas, year-old needles of conifers were more susceptible to saline aerosols. Grattan *et al.* (1981) reported that young tomato and pepper leaves (<3 cm in length) were more severely injured than older, fully developed leaves.

As presented in Table 5.1.4-2, the maximum predicted deposition rates are close to the cooling towers with about a 10-fold decrease between 200 and 600 m. The majority of deposition will occur over previously impacted areas and over the course of an annual period will have similar chemical constituents as the source water (i.e., L10/L12 Canal). Taking together the low deposition rates, area of deposition impact, and quality of the drift particles, no effect to offsite vegetation from cooling tower drift is anticipated.

Vegetation may be affected by absorbing salts that accumulate in the soil. Accumulation will occur if the annual deposition rate of salt exceeds the rate at which salt is leached from the soil by rainfall. However, it is difficult to predict which plant species would be most affected by soil salinity, as tolerance to salt spray does not necessarily parallel known plant tolerances to soil salinity, but is governed by the rate of foliar absorption (Grattan *et al.*, 1981). Given the low deposition rates and the type of compounds in the drift particles, impacts are not anticipated by accumulation in the soils.

5.1.5 MEASUREMENT PROGRAM

Since no significant impact to surface water quality is expected from the West County Energy Center, no additional monitoring of surface water is proposed. Because there are no significant adverse ecological impacts due to the proposed West County Energy Center's heat dissipation system, no biological monitoring is proposed.

Surface water intake and Floridan aquifer supply well withdrawals will be measured and reported to the SFWMD as required by consumptive use permitting rules and regulations. An aquifer monitoring program, as required by the rules and regulations of the UIC program, will also be conducted.

5.2 EFFECTS OF CHEMICAL AND BIOCIDES DISCHARGES

The West County Energy Center's wastewaters will be injection into the Boulder Zone of the LFA at a depth greater than -2,800 ft-msl.

5.2.1 INDUSTRIAL WASTEWATER DISCHARGES

Wastewaters associated with the West County Energy Center were identified in Section 3.6 and delineated in Table 3.6.0-1. Table 3.6.0-1 presents waste streams, their characterization, and disposal method. All industrial wastewater, including process wastewater and cooling tower blowdown, will be discharged through the injection wells. Contact stormwater will be collected and treated in an oil/water separator and then routed to the onsite stormwater retention ponds, which are designed to hold a 100-year 72-hour storm event. Therefore, there will be no industrial wastewater or stormwater discharge to surface waters and no impact to surface water quality from the West County Energy Center.

5.2.2 COOLING TOWER BLOWDOWN AND INDUSTRIAL WASTEWATERS

Cooling tower blowdown makes up the majority of wastewater and will be mixed with other industrial wastewater streams prior to injection. This section addresses the potential impacts of the UIC wells proposed for the West County Energy Center.

5.2.2.1 Geohydrologic Setting

Figure 5.2.2-1 provides a schematic model of the geohydrologic conditions in the area of the proposed injection wells. The injection wells are shown on the left side of the figure, and the vertical profile of TDS is shown on the right. Much of the specific information provided in the following subsections is from the report by Reese and Memberg (2000) and is supplemented by data provided by SFWMD (Lukasiewicz, personal comm., Jan. 2005). The base of the lower most aquifer containing an Underground Source of Drinking Water (USDW) is located at about -2,000 ft-msl. The base of the USDW is defined by water with a TDS concentration of less than 10,000 mg/L. In the area of the proposed injection well, this is also approximately the base of the second production zone within the Lower Floridan Aquifer (LFA-PZ2). This production zone is approximately 175 ft thick. The lower confining unit, which separates the USDW from the injection zone (also referred to as the Boulder Zone), is about 800 ft thick, and the vertical hydraulic conductivity of this unit is about 1.6×10^{-3} ft/day (i.e., leakance is about 2.0×10^{-6}). The Boulder Zone is approximately 300 ft thick, and the transmissivity is approximately 10^7 ft²/day. The TDS concentration in the Boulder Zone and in most of the Lower Confining Unit is approximately 35,000 mg/L (specific weight approximately 1.025). In the uppermost portion of the Lower Confining Unit, there is a salinity transition zone, where the TDS concentration increases from 10,000 mg/L to 35,000 mg/L. This transition zone is approximately 100 to 150 ft thick (Reese and Memberg, 2000). For the purpose of this analysis, the transition zone is estimated to be 100 ft thick, because this produces a “worst-case” scenario.

The injection fluid (i.e., the power plant effluent) TDS concentration could be as low as 1,500 mg/L, or as high as 20,000 mg/L – depending on the source and quality of the cooling tower makeup water. The most probable range is between 2,500 and 10,000 mg/L. Since a lower injection fluid density will result in a higher injection pressure (i.e., a “worst-case” scenario) due to the greater density difference between the injection fluid and the injection zone, the injection fluid TDS concentration, for the purpose of this analysis, is estimated to be 1,500 mg/L (specific weight approximately 1.001).

5.2.2.2 Impact Analysis Approach

The first step in determining potential impacts of injection on the USDW, is to estimate the “maximum injection pressure.” This is the maximum pressure increase, at the injection well, in the Boulder Zone (not the surface injection pressure), that is required to achieve the maximum injection flow rate. To determine the maximum injection pressure, the injection process will be modeled as steady-state flow from a well into a leaky confined aquifer, with modifications to transmissivity to account for the density stratified flow regime in the injection zone.

In step two, the maximum injection pressure will be used to calculate the maximum vertical flow rate through the confining unit (i.e., the steady-state vertical flow rate, at the well, at the maximum injection rate).

In step three, the maximum vertical displacement of the water column will be calculated for the project life of the injection well (estimated to be less than 100 years).

In step four, the maximum vertical displacement will be used to calculate the maximum potential change in the TDS concentration in the USDW over the life of the injection well. This last step assumes no regional flow in LFA-PZ2, which would further reduce potential impacts to the USDW.

The approach outlined above is relatively simple. However, the assumptions and simplifications that have been made ensure that any bias will tend to over-estimate potential impacts.

5.2.2.3 Injection Zone Pressure

The formula for steady flow in a leaky confined aquifer (see Bear, 1979, pp 313-315) in the vicinity of the well (i.e., $r \ll \lambda$) is given by:

$$s(r) = \left[\frac{Q_w}{2\pi T} \right] \ln \left(\frac{1.123\lambda}{r} \right) \quad (1)$$

Where: $\lambda = \sqrt{T/L}$

s = the pressure increase (ft – H_2O)

r = the radius from the well (ft)

Q_w = the injection rate (ft^3 / day)

T = Transmissivity of the injection zone (ft^2 / day)

L = Leakance of the confining layer (ft / day / ft)

Since the injection fluid will be less dense than the formation fluid, the flow will stratify and the injection zone will be confined to the upper part of the Boulder Zone. Applying the Ghyben-Herzberg approximation (Bear, 1979, p. 384), the injection zone thickness (h_I) is given by:

$$\begin{cases} h_I = \delta * s(r_w) & \delta * s(r_w) \leq B \\ h_I = B & \delta * s(r_w) > B \end{cases} \quad (2)$$

$$\text{Where: } \delta = \left[\frac{\gamma_{BZ}}{\gamma_{BZ} - \gamma_I} \right] \quad \gamma_I < \gamma_{BZ}$$

γ_{BZ} = the specific weight of the Boulder Zone fluid,

γ_I = the specific weight of the injection fluid.

The injection zone transmissivity (T) is given by:

$$T = T_{BZ} * [h_I / B] \quad (3)$$

Where :

T_{BZ} = the transmissivity of the Boulder Zone, and

B = the thickness of the Boulder Zone.

Substituting equations (2) and (3) into equation (1) at $r = r_w$ gives the following equations for the maximum injection zone pressure and injection zone thickness:

$$\left. \begin{aligned} s(r_w) &= \sqrt{\left[\frac{Q_w(\max)B}{2\pi T_{BZ} \delta} \right] \ln \left(\frac{1.123\lambda}{r_w} \right)} \\ h_I &= \sqrt{\left[\frac{Q_w(\max)B\delta}{2\pi T_{BZ}} \right] \ln \left(\frac{1.123\lambda}{r_w} \right)} \\ \lambda &= \sqrt{\frac{T_{BZ} h_I}{B L}} \end{aligned} \right\} \quad h_I = \delta * s(r_w) \leq B$$

The above equations are implicit and are most easily solved numerically. They can be solved using the Solver tool in a MicroSoft™ Excel Spreadsheet. For the conditions outlined above, the solution gives the following results (see Table 5.2.2-1):

Injection Zone Thickness = 89 ft
Maximum Injection Zone Pressure = 2.1 ft-H₂O

5.2.2.4 Maximum Vertical Flow Rate and Vertical Displacement

The maximum vertical flow rate through the confining layer, which is induced by the injection well, is given by the following formula:

$$q_v [\text{ft} / \text{day}] = L [\text{ft} / \text{day} / \text{ft}] * s(r_w) [\text{ft}]$$

For a leakance value of 2.0×10^{-6} [ft/day/ft] and a maximum injection pressure of 2.1 [ft], the maximum vertical flow rate is 4.2×10^{-6} [ft/day], or 1.53×10^{-3} [ft/year].

The vertical velocity through the confining layer (V) is given by the following equation:

$$V [\text{ft} / \text{day}] = q_v [\text{ft} / \text{day}] / n_e$$

Where : n_e = the effective porosity of the confining unit

Since the confining layer is composed of low-permeability fine-materials, the effective porosity (n_e) should be comparable to the specific yield for clay and silt (Bear, 1979, pp 88 and 99). Therefore, to be conservative, this analysis uses an effective porosity of 10 percent. Under these conditions, the vertical velocity through the confining layer is 0.015 ft/yr. Consequently, if the injection wells were to operate for 100 years, the water in the confining unit would be displaced less than 1.5 ft.

5.2.2.5 Potential Impact on Water Quality in the USDW

If the water column in the Lower Confining Unit is vertically displaced 1.5 ft after 100 years of injection, the TDS concentration at the bottom of LFA-PZ2 could increase by 375 mg/L due to the vertical displacement of the water in the salinity transition zone (see Figure 5.2.2-1 and calculation below).

$$\Delta TDS [\text{mg} / \text{l}] = \left[\frac{(35,000 [\text{mg} / \text{l}] - 10,000 [\text{mg} / \text{l}])}{100 [\text{ft}]} \right] * 1.5 [\text{ft}] = 375 [\text{mg} / \text{l}]$$

The salinity transition zone, which is found primarily in the upper part of the Lower Confining Unit, has a significant vertical gradient [i.e., 250 milligrams per liter per foot (mg/L/ft)]. The vertical TDS gradient within LFA-PZ2 is relatively minor (i.e., <25 mg/L/ft). This condition indicates that vertical mixing is significant in LFA-PZ2. Consequently, if water moving up from the confining unit over the 100-year injection period is continuously mixed with the water in LFA-PZ2 (conservatively

assuming no regional horizontal flow in LFA-PZ2), the average TDS increase in LFA-PZ2 will be no more than 1.6 mg/L, or .02 percent over 100 years (see calculation below).

$$\overline{\Delta TDS}[mg/l] = \left(\frac{375[mg/l]}{2} \right) \left(\frac{1.5[ft]}{175[ft]} \right) = 1.6 mg/l$$

$$\overline{\Delta TDS}[\%] = \left(\frac{1.6[mg/l] * 100}{8,000[mg/l]} \right) = .02 \%$$

This “worst-case” increase in TDS concentration in the lower most USDW is insignificant and would not be detectable. Furthermore, this increase is the result of vertical displacement of the formation water in the Lower Confining Unit; it is not the result of effluent reaching the USDW. After 100 years of injection, effluent from the injection well would likely migrate vertically only 1.5 ft into the 800-ft-thick Lower Confining Unit. Therefore, no impacts to the USDW are expected from injection of the wastewater into the Boulder Zone of the LFA.

5.2.2.6 UIC Permitting Process

Appendix 10.1.8 of this SCA provides a copy of the UIC Exploratory Well Permit Application. After FDEP issues the permit for the exploratory well, FPL will construct and test the exploratory well to determine site-specific stratigraphy, water quality profiles, potentiometric pressures, and important aquifer parameters. The well will then be converted to a dual-zone monitoring well. Information collected from the exploratory well will be used to design, permit, construct, and test the first Test/Injection Well. When this well has been proven, additional injection wells will be constructed and tested as required by Chapter 62-528, F.A.C.

5.2.3 MEASUREMENT PROGRAMS

An aquifer monitoring program, as required by the rules and regulations of the UIC program, will be conducted.

5.3 IMPACTS ON WATER SUPPLIES

5.3.1 SURFACE WATER

The West County Energy Center has two primary water demands that will be met by surface water:

1. Makeup water to replace cooling tower evaporation and blowdown, and
2. Process water, which is used primarily to make demineralized water for the steam system makeup and air emissions control.



A water-use diagram is presented in Section 3.5 of this SCA. The table below summarizes the water demand requirements for the West County Energy Center; assuming two combined cycle units. The primary source for the cooling tower makeup water will be the L10/L12 Canal. This will also be the source for process water. A secondary/backup source for cooling tower makeup, will be the Upper Floridan Aquifer. When water from the L10/L12 Canal is used, the cooling towers can operate at five cycles of concentration. When the Upper Floridan Aquifer is used, five cycles of concentration will be employed for shorter durations (e.g., 90 days). The potable water supply will be obtained from onsite surficial aquifer wells. Potential groundwater impacts are discussed in the next section.

Two, 4-on-1 Combined Cycle Units Demand (Source)	Annual Average (MGD)	Monthly Maximum (MG)	Maximum Daily (MG)
Cooling Tower (L10/L12)	14.56	514.29	16.59
Process Water (L10/L12)	0.64	90.21	2.91
Total Demand (L10/L12)	15.20	604.50	19.50
Cooling Tower (UFA)	14.56	514.29	16.59
Potable (surficial aquifer)	0.035	1.09	0.035

The L10/L12 Canal is located in the Lake Okeechobee Service Area (LOSA) and is part of the regional water supply and flood control water conveyance system managed by the SFWMD. This canal is located south of the Site and is the nearest major surface water to the Site. It runs southeast from Lake Okeechobee and connects to Water Conservation Area 1 and the C51 Canal at Pump Station S5A, which is located southeast of the Site. During wet to normal hydrologic periods, water is discharged eastward through these canals to prevent flooding and maintain storage capacity in Lake Okeechobee. During dry periods, water from Lake Okeechobee is used to augment water supplies, flows, and levels in the canals.

Based on data from USGS Station No. 02278450, which is near the proposed intake location, the average historical flow for the L10/L12 Canal for the period of record from 1957 to 2003 was approximately 409 cfs. Peak flows in the canal have exceeded 4,000 cfs. Since the L10/L12 Canal is part of the SFWMD system, flows and water levels in the canal are controlled by SFWMD: 1) by releasing water from Lake Okeechobee, 2) by water control structures on the West Palm Beach Canal, and 3) by pumping at the S5A pump station. Consequently, about 40 percent of the time, the historical flow in the L10/L12 Canal has been zero or negative (i.e., sometimes the flow is west

toward Lake Okeechobee). While the flow may be zero, there is always water in the canal, by design.

The average historical flow in the L10/L12 Canal has been approximately 17 times the average power plant withdrawal rate for the two proposed combined cycle units, and the peak historical flows have been 170 times the West County Energy Center demand. The upstream water source for the L10/L12 Canal is Lake Okeechobee, which has a surface area of 740 mi² and receives flow from the entire Kissimmee River Basin in Central Florida. Therefore, the required West County Energy Center water demand can be physically supplied by the L10/L12 Canal. While Lake Okeechobee is a minimum flow and level water body under a prevention plan, there are no prohibitions in current SFWMD rules on new allocations from the L10/L12 Canal or from Lake Okeechobee. The requested use, however, must be consistent with the SFWMD prevention plan and the Lower East Coast Regional Water Supply Plan (LECRWSP). As discussed in the LECRWSP (SFWMD, May 2000), the relevant Lake Okeechobee water supply planning criterion is as follows:

Water levels should not fall below 11 ft NGVD for more than 80 days duration, more often than once every six years, on average.

The results of SFWMD's 31-year hydrologic simulation model are presented in the LECRWSP. The simulation shows that the above criterion can be met for all planning scenarios, even the 2020 Base Case scenario (i.e., the worst-case simulation – which applies future water demands, but implements only currently authorized restoration projects). One reason the water supply planning criterion can be met is that SFWMD implements supply-side management (i.e., water use limitations) if it projects that the Lake could fall below 11 ft-NGVD at the end of the dry season (May 31). The 2020 Base Case simulation shows that Lake Okeechobee levels would be expected to drop below 11 ft about 19 times in 31 years. These results indicate that supply-side management procedures could be implemented every few years – in the event that water resource development projects are not implemented as scheduled. If the water resource development projects are completed as planned, low-flow conditions should occur only about 1 year in 10 years, on average. The potential duration of low flow conditions could be just a few days, or it could last several months. Consequently, while the primary water supply for the West County Energy Center is from the L10/L12 Canal, a secondary water supply from the Floridan aquifer must be provided.

In summary, the West County Energy Center will not impact surface water supplies for the following reasons:

1. Under normal to wet hydrologic conditions, there is adequate water in the L10/L12 Canal for the existing legal users, the environment (i.e., the natural systems), and for the proposed West County Energy Center. In fact, under wet conditions, excess fresh water is discharged (i.e., wasted) to the coastal estuaries to maintain flood control storage volumes.
2. During drought conditions, SFWMD will implement supply-side management procedures to protect the existing users and the natural systems.
3. If necessary during significant droughts, to reduce demand on the surface water system, the West County Energy Center can use the Floridan aquifer wells as a secondary source of water.

Potential impacts on the groundwater system are discussed in the next section.

5.3.2 GROUNDWATER

Groundwater resources in the vicinity of the Site are described in Section 2.3 of the SCA, and the water supply wells are discussed in Section 3.5. The aquifers reasonably available are the surficial aquifer system (SAS) and the UFA. The SAS at the Site (10 ft-msl to -180 ft-msl) contains fresh water and can supply the potable demands of the West County Energy Center. The UFA in the vicinity of the Site (approximate depth: -750 to -1,350 ft-msl) is saline (i.e., chloride concentrations are greater than 250 mg/L). The TDS concentrations in the UFA are from 2,000 to 5,000 mg/L (chloride concentrations are from 1,000 mg/l to 2,500 mg/L). Water from this zone can be used for cooling without significant treatment provided the cycles of concentration in the cooling tower are no more than five for short durations.

A geohydrologic simulation model (MODFLOW) was used to evaluate the potential impacts of cooling water supply wells on the UFA and the SAS. Local and/or regional aquifer parameters were obtained from the available literature, including published information from aquifer performance tests and previous groundwater model calibrations. The model was run without recharge for 90 days at the maximum monthly water demand. The results indicate that the UFA can provide the required water without causing harm to existing legal users, the environment or the resource. The 1-ft drawdown contour is less than 15 miles from the center of pumping after 90 days. Predicted



drawdown in the surficial aquifer directly above the UFA production wells is less than 0.1 ft. A detailed discussion of the UFA modeling is provided in Appendix 10.7 of this SCA.

A MODFLOW model was also used to simulate potential impacts on the SAS from pumping the potable supply well. Again, aquifer parameters were obtained from the available literature and from onsite slug tests (Golder, 2002). The model was run for 90 days at the maximum monthly demand without recharge. The maximum cone of depression, defined by the 0.1-ft drawdown contour, extends out 1,350 ft from the pumping well and does not significantly impact any wetlands or existing users. The average cone of depression was predicted to be 800 ft for the 0.1-ft drawdown contour. The maximum simulated drawdown at the well is only 1.66 ft with the average predicted drawdown of 0.38 ft at the well. A detailed discussion of the surficial aquifer modeling is contained in SCA Appendix 10.7.

5.3.3 DRINKING WATER

There will be no discharges to drinking water sources from the West County Energy Center. Process wastewater and stormwater will be recycled and reused to the maximum degree practicable. All industrial wastewater will be discharged to injection wells located below the lowest most aquifer containing a USDW. No impacts to drinking water are expected. The impact analysis for the injection wells is provided in Subsection 5.2.2. No impacts to drinking water sources are expected from the West County Energy Center.

5.3.4 RUNOFF AND LEACHATE

Operation of the West County Energy Center will not generate leachate. The West County Energy Center has been designed to eliminate direct discharge to surface waters. All contact stormwater is routed through an oil/water separator and then routed to the stormwater retention ponds. Non-contact stormwater runoff is collected and routed to stormwater retention ponds. The stormwater retention system will be designed to meet applicable standards. Therefore, no impacts to water supplies are expected due to runoff or leachate.

5.3.5 MEASUREMENT PROGRAMS

Withdrawals from surface water intake, surficial aquifer supply wells, and Floridan aquifer supply wells will be measured and reported to the SFWMD as required by consumptive use permitting rules



and regulations. An aquifer monitoring program, as required by the rules and regulations of the UIC program, will be conducted.

5.4 IMPACTS FROM DISPOSAL OF BYPRODUCTS AND SOLID AND HAZARDOUS WASTES

As discussed in Section 3.7, the potential solid and hazardous waste associated with the West County Energy Center's operation will be handled according to the waste handling guidelines presented in Table 3.7.0-1.

5.4.1 SOLID WASTE

As explained in Section 3.7, all solid wastes generated during plant operations will be disposed of in offsite licensed landfills or by other approved methods. The operation of the West County Energy Center will generate minor amounts of solid wastes (e.g., used turbine inlet filters, municipal solid waste, and water pretreatment filter cake). There will be no adverse impacts resulting from solid waste generated by the West County Energy Center.

5.4.2 HAZARDOUS WASTE

The handling of hazardous wastes for the West County Energy Center is described in detail in Section 3.7. FPL will contract with an approved disposal company to transport and dispose of small quantities hazardous waste at licensed facilities in a manner that complies with environmental regulations. Therefore, no impacts are anticipated from hazardous wastes generated from the operation of the West County Energy Center.

5.5 SANITARY AND OTHER WASTE DISCHARGES

Sanitary wastes will be routed to a package treatment unit and the effluent routed to the UIC. Waste streams, their characterization, and disposal method are presented in Table 3.6.0-1.

5.6 AIR QUALITY IMPACTS

This section presents a summary of the air quality requirements, air modeling methodology, and results of air quality impact analyses for the Project/ultimate site capacity. Detailed information is contained in Appendix 10.1.5, Air Construction and PSD Application.

5.6.1 IMPACT ASSESSMENT

5.6.1.1 Regulatory Applicability

Under federal and State of Florida PSD review requirements, all major new or modified sources of air pollutants regulated under the Clean Air Act (CAA) must be reviewed and a pre-construction permit issued. EPA has approved Florida's State Implementation Plan (SIP), which contains PSD regulations; therefore, PSD approval authority has been granted to FDEP. The EPA has promulgated PSD regulations under 40 CFR Part 51.166. Florida's PSD rules are codified in Rule 62-212.400, F.A.C.

A "major facility" is defined as any one of 28 named source categories that have the potential to emit 100 TPY or more or any other stationary facility that has the potential to emit 250 TPY or more of any pollutant regulated under the CAA. "Potential to emit" means the capability, at maximum design capacity, to emit a pollutant after the application of control equipment. Once a new emission unit is determined to be a "major facility" for any regulated pollutant, all pollutants emitted in amounts greater than the PSD significant emission rates are subject to PSD review.

The West County Energy Center is classified as a major facility because it is one of the named source categories and has the potential to emit more than 100 TPY of at least one regulated pollutant. PSD review is required for several pollutants since the West County Energy Center emissions are greater than the PSD significant emission rate for several regulated pollutants.

Annual emissions for the West County Energy Center are presented in Table 3.4.1-4 and are compared to the PSD significant emission net increase thresholds. Based on the proposed emissions for the West County Energy Center, PSD review is required for each of the following regulated pollutants:

- Particulate matter (PM) as total suspended particulate matter (TSP),
- Particulate matter with aerodynamic diameter of 10 microns or less (PM₁₀),
- Sulfur dioxide (SO₂),
- Nitrogen dioxide (NO₂),
- Carbon monoxide (CO),
- Volatile organic compounds (VOCs), and
- Sulfuric acid mist.

Palm Beach County has been designated as an attainment area for all criteria pollutants [i.e., ozone (O_3), PM_{10} , SO_2 , CO , and NO_2]. Thus, the air quality in Palm Beach County meets all standards established by the federal and State governments to protect public health (with an adequate margin of safety) and welfare. All of Palm Beach County is classified as a PSD Class II area for PM_{10} , SO_2 , and NO_2 .

PSD review is used to determine whether significant air quality deterioration will result from new or modified facilities. The following analyses related to PSD are required for each pollutant emitted in significant amounts:

- Control technology review,
- Source impact analysis,
- Air quality analysis (monitoring),
- Source information, and
- Additional impact analyses.

The control technology review requirements of the federal and State 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 sources. 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, as 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 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 decision on BACT is to be based on balancing environmental benefits with energy, economic, and other impacts.

A source impact analysis must be performed for criteria pollutants to address compliance with AAQS and PSD Class II and I increments. These analyses may be limited to the new source if the net increases in impacts as a result of the new source are below significant impact levels. The significant impact levels are threshold levels that are used to determine the level of air impact analyses required

for a project. If the new source's impacts are predicted to be less than significant, then the source's impacts are assumed not to have a significant adverse affect on air quality and additional modeling with other sources is not required. However, if the source's impacts are predicted to be greater than the significant impact levels, additional modeling with other sources is required to demonstrate compliance ambient.

An air quality monitoring analysis must be performed that contains an analysis of continuous ambient air quality data in the area affected by the proposed major stationary facility. Existing data from the vicinity of the proposed source may be used if the data meet certain quality assurance requirements; otherwise, additional data may need to be gathered. The regulations also include an exemption that excludes or limits the pollutants for which an air quality analysis must be conducted if the air quality impacts for the proposed source are predicted to be less than the *de minimis* levels.

Source information must be provided to adequately describe the Project. The general type of information required for the West County Energy Center is presented in Section 3.4.

Additional analyses of the proposed sources' impacts on soils, vegetation, and visibility, especially as they affect air quality related values (AQRVs) in PSD Class I areas, must be performed. Air quality impacts as a result of general commercial, residential, industrial, and other growth associated with the source also must be addressed.

The following sections describe the methods and assumptions used to determine the air quality impacts of the West County Energy Center with both two nominal 1,100-MW units and three nominal 1,100-MW units.

5.6.1.2 Analysis Approach and Assumptions

General Modeling Approach

The air quality modeling approach for the West County Energy Center must follow EPA and FDEP modeling guidelines for determining compliance with AAQS and PSD increments. In general, when model predictions are used to determine compliance with AAQS and PSD increments, current policies stipulate that the highest annual average and highest, second-highest (HSH) short-term (i.e., 24 hours or less) concentrations are to be compared to the applicable standard when a 5-year period of meteorological data is used. The HSH concentration is calculated for a receptor field by:

1. Eliminating the highest concentration predicted at each receptor,
2. Identifying the second-highest concentration at each receptor, and
3. Selecting the highest concentration among these second-highest concentrations.

This approach is consistent with the air quality standards, which generally allow a short-term average concentration to be exceeded once per year at each receptor. Determining compliance with the 24-hour AAQS for PM₁₀, the highest of the sixth-highest concentration predicted in 5 years (i.e., H6H), instead of the HSH concentration predicted for each year, is used to compare to the applicable 24-hour AAQS.

To predict the maximum annual and short-term concentrations for the West County Energy Center, the modeling approach involves screening and refined phases. Concentrations are predicted for the screening phase using a coarse receptor grid and a 5-year meteorological data record. If the highest concentration is predicted at a receptor that lies in an area where the receptor spacing is more than 100 m, then a refined analysis is performed in that area using a receptor grid of greater resolution. Modeling refinements are performed using a receptor spacing of 100 m or less with a receptor grid centered on the screening receptor at which the maximum concentration must be predicted. The air dispersion model is then executed with the refined grid for the entire year of meteorology during which the screening concentration occurred.

This approach ensures that valid highest concentrations were obtained. Descriptions of the emission inventory and receptor grids requirements for the screening and refined phases of the analysis are presented in the following sections.

Air Quality Models

The selection of air quality models to calculate air quality impacts for the West County Energy Center must be based on the models' ability to simulate impacts in areas surrounding the Site as well as at the PSD Class I area of the Everglades National Park (ENP), located about 102 km from the Site. Two air quality dispersion models have been used in these analyses to address air quality impacts for the West County Energy Center. These models are:

- Industrial Source Complex Short Term (ISCST3) dispersion model, and
- California Puff model (CALPUFF).

The ISCST3 was used to evaluate the maximum pollutant impacts due to the West County Energy Center in nearby areas surrounding the Site. The ISCST3 model is applicable for estimating the air quality impacts in areas that are within 50 km from a source. This model is maintained by the EPA on its Internet website, Support Center for Regulatory Air Models (SCRAM), within the Technical Transfer Network (TTN).

The ISCST3 model is designed to calculate hourly concentrations based on hourly meteorological data (i.e., wind direction, wind speed, atmospheric stability, ambient temperature, and mixing heights). The ISCST3 model is applicable to sources located in either flat or rolling terrain where terrain heights do not exceed stack heights. These areas are referred to as simple terrain. The model can also be applied in areas where the terrain exceeds the stack heights. These areas are referred to as complex terrain.

The Site is about 23 ft-msl. The terrain around the immediate vicinity is flat. Due to the minimal amount of terrain elevation differences in the West County Energy Center's vicinity, receptor elevations do not need to be included in the analysis. As a result, the simple terrain option would be used for the air modeling analysis, which assumes that all receptors are at the same elevation as the stack base elevations for the West County Energy Center's stacks.

At distances beyond 50 km from a source, the CALPUFF model is recommended for use by the EPA and the Federal Land Manager (FLM). The CALPUFF model is a long-range transport model applicable for estimating the air quality impacts in areas that are more than 50 km from a source. The CALPUFF model is maintained by the EPA on the SCRAM internet website. The methods and assumptions used in the CALPUFF model are based on the latest recommendations for modeling analysis as presented in the following reports:

- Interagency Workgroup on Air Quality Models (IWAQM), *Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts*; and
- *Federal Land Manager's Air Quality Relative Values Workgroup (FLAG) Phase I Report.*

In addition, updates to the modeling methods and assumptions must be followed based on discussions with the FLM.



The CALPUFF model was used to perform a significant impact analysis for the West County Energy Center at the PSD Class I area of ENP and to assess the West County Energy Center's potential impact on regional haze and total nitrogen and sulfur deposition levels.

For modeling analyses that will undergo regulatory review, such as PSD permit applications, the following model features are recommended by EPA for rural mode and are referred to as the regulatory default options in the ISCST3 model and, where applicable, the CALPUFF model:

1. Final plume rise at all receptor locations,
2. Stack-tip downwash,
3. Buoyancy-induced dispersion,
4. Default wind speed profile coefficients for rural mode,
5. Default vertical potential temperature gradients, and
6. Calm wind processing.

The EPA regulatory default options would be used to address maximum impacts.

Meteorological Data

Meteorological data used in the ISCST3 model to determine air quality impacts consisted of a concurrent 5-year period of hourly surface weather observations and twice-daily upper air soundings from the NWS office located at the Palm Beach International (PBI) Airport. The 5-year period of meteorological data from 1987 through 1991 was used in the analysis. The NWS office at PBI is located approximately 30 km (18 miles) east of the Site and is the closest primary weather station to the study area considered to have meteorological data representative of the project site. These meteorological data have been approved by the FDEP and used for numerous air modeling studies submitted as part of air construction permits approved for sources located in Palm Beach County.

CALMET, the meteorological preprocessor to CALPUFF, was used to develop a 3-dimensional wind field necessary to perform the air modeling analysis to evaluate pollutant impacts at the PSD Class I area. The modeling domain covers an area over south Florida that consisted of a rectangular 3-dimensional grid that extended from approximately 79.0 to 83.5 degrees longitude and from 23.75 to 28.0 degrees latitude. The modeling domain includes the following meteorological and land use parameters:

- Surface weather data,

- Upper air data,
- A 1-degree land use data,
- A 1-degree Digital Elevation Model (DEM) terrain data,
- Mesoscale Model - Generation 4 and Generation 5 (MM4 and MM5) data (for initializing the wind field), and
- Hourly precipitation data.

These data were processed for the calendar years 1990, 1992, and 1996. The CALMET wind field and the CALPUFF model options must be consistent with the suggestions of the FLMs contained in the IWAQM and FLAG documents. Meteorological data used with the CALPUFF model consist of a CALMET-developed wind field covering South Florida.

Emission Inventory

West County Energy Center Sources--Emission rates for regulated pollutants and stack and operating parameters used in the air modeling analysis for the West County Energy Center covered the operating range that includes the operating loads and turbine inlet temperatures for the CTs. The stack, operating, and emission data for firing natural gas and ultra low-sulfur "light" oil used in the air dispersion modeling are those presented in SCA Appendix 10.1.5.

The design information for the GE CTs was reviewed and showed that the stack exit flow for the GE Frame 7FB CTs are lower than those for the GE Frame 7FA CTs. In addition, the pollutant emission rates are similar or higher for the GE Frame 7FB CTs than those for the GE Frame 7FA CTs. As a result, the air impact analyses for the GE CTs were performed for the GE Frame 7FB CTs to estimate the maximum air impacts for both the GE Frame 7FA CTs and the GE Frame 7FB CTs. Because the Frame G-Class CTs are uniquely different from the GE CTs, the air impact analyses for the G-Class CTs were performed as a separate modeling analysis from that for the GE 7FB CTs.

In an effort to obtain the maximum air quality impacts for a range of possible operating conditions, the air modeling used a range of emission rates and stack parameter data to predict air quality impacts.

For the 4-on-1 combined cycle configuration, the emission and stack operating parameters for the GE Frame 7FB CTs are presented for 3 operating loads and 35°F, 59°F and 95°F ambient temperatures

for the CTs firing natural gas and light oil. A total of 18 modeling scenarios were considered for combined cycle configuration with the CTs operating for the following conditions:

- CTs firing natural gas for ambient temperatures of 35, 59, and 95°F at:
 - 100 percent operating load with duct firing
 - 75 percent operating load
 - 60 percent operation load
- CTs firing light oil for ambient temperatures of 35, 59, and 95°F at:
 - 100 percent operating load
 - 75 percent operating load
 - 60 percent operation load

For the 3-on-1 combined cycle configuration, the emission and stack operating parameters for the Frame G CTs are presented for 2 operating loads and 35°F, 59°F, and 95°F ambient temperatures for the CTs firing natural gas and oil. A total of 12 modeling scenarios were considered for combined cycle configuration with the CTs operating for the following conditions:

- CTs firing natural gas for ambient temperatures of 35, 59, and 95°F at:
 - 100 percent operating load
 - 75 percent operating load
- CTs firing light oil for ambient temperatures of 35, 59, and 95°F at:
 - 100 percent operating load
 - 75 percent operating load

For the GE Frame 7FA and GE Frame 7FB units, the proposed CTs will have a HRSG stack height of 149 ft and an inner stack diameter of 19 ft. For the Frame G units, the proposed CTs will have a HRSG stack height of 149 ft and an inner stack diameter of 22 ft. Because the proposed stack heights are less than Good Engineering Practice (GEP), building downwash effects were included in the modeling analysis.

Background Sources—The maximum pollutant impacts for the West County Energy Center are predicted to be less than the significant impact levels for all pollutants and averaging periods except for PM₁₀ for the 24-hour averaging period (see Subsection 5.6.1.3) in the West County Energy Center's vicinity. As a result, cumulative source impact analyses are required to demonstrate

compliance with the 24-hour average PM_{10} AAQS and PSD Class II Increments. For these analyses, the PM_{10} emissions from the project and background sources are required to be modeled.

Data for background sources of PM_{10} were obtained from FDEP and were supplemented with current and available historical information. Facilities located within the West County Energy Center's significant impact areas were modeled explicitly (considered the modeling area).

Facilities within the significant impact areas plus 50 km were considered to be in the screening area. All facilities in the screening area were evaluated using the North Carolina screening technique. Based on this technique, facilities whose annual emissions (i.e., tons per year) are less than the threshold quantity, Q , are eliminated from the modeling analysis. Q is equal to $20 \times (D-SIA)$, where D is the distance in kilometers from the facility to the Site and SIA is the significant impact area. Facilities beyond the screening area but within 100 km of the Site and with PM_{10} emissions of 1,000 TPY were also modeled.

The maximum West County Energy Center impacts at the PSD Class I area of the ENP are predicted to be less than the proposed PSD Class I significant impact levels for the annual averaging periods for SO_2 , PM_{10} , and NO_2 but greater than the 24-hour averaging period for PM_{10} . As a result, cumulative source impact analyses are required to demonstrate compliance with the 24-hour average PM_{10} PSD Class I increments. Data for these background sources were also obtained from FDEP and are based on those used in recent PSD modeling analyses [e.g., FPL Turkey Point Expansion Project; Golder, 2003)].

Receptor Locations

To determine the maximum impact for all pollutants and averaging times in the vicinity of the West County Energy Center, concentrations were predicted at receptors located on detailed receptor grids centered at the western boundary within the 220-acre Site, the modeling origin, and extended from the property boundary out to 10 km.

Along the property boundary, a Cartesian receptor grid was used to predict concentrations for the West County Energy Center at 114 receptors spaced at 50-m intervals.



In addition, a general Cartesian grid was used to predict concentrations beyond the property boundary out to 10 km. Receptors were located at the following intervals and distances from the origin:

- Every 100 m from the plant property to 2,000 m;
- Every 250 m from 2,250 m to 3,000 m; and
- Every 500 m from 3,500 m to 10,000 m.

More than 3,500 receptors were used in the analysis to determine the maximum impacts for the West County Energy Center.

For addressing compliance with the PM₁₀ AAQS and PSD Class II Increments, the 24-hour average PM₁₀ concentrations were predicted using a receptor grid based on the receptor spacing used to determine the maximum impacts from the West County Energy Center.

Modeling refinements were performed, as needed, by employing a Cartesian receptor grid with a maximum spacing of 100 m centered on the receptor and for the year during which the maximum impact was predicted.

For the determining West County Energy Center's impacts at the PSD Class I area, pollutant concentrations were predicted in an array of 251 discrete receptors located at the PSD Class I area of the ENP. These receptors are a subset of the 901 receptors provided by the National Park Service (NPS). The 251 receptors include all of the NPS boundary receptors and an array of interior receptors.

Background Concentrations

For these analyses, total air quality impacts are predicted for the modeled sources that are added to a non-modeled background concentration. The non-modeled background concentrations are estimated from representative ambient air quality monitoring data obtained from air monitoring stations. The background concentrations developed for the West County Energy Center were based on monitoring data collected at the PM₁₀ monitoring station located in Belle Glade in Palm Beach County (AIRS number 12-099-0008), the nearest to the Site, which is approximately 28 km (17 miles) to the west of the Site. This station is operated by the Palm Beach County Health Department and measures

concentrations according to EPA procedures. The monitor is located in an area that has similar or more commercial and industrial activities as those near the Site.

Based on data collected from 2002 to 2004, the 24-hour average PM_{10} concentration of 30 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) was selected to represent background concentrations since it was the HSH 24-hour concentration measured during that period.

5.6.1.3 Model Results

West County Energy Center Impacts

The maximum SO_2 , NO_2 , CO , and PM_{10} concentrations predicted for the proposed West County Energy Center for the GE 7FB CTs and Frame G-Class CTs for the Project (i.e., nominal 2,200 MW) and the ultimate site capacity (i.e., nominal 3,300 MW) are given in Table 5.6.1-1. The modeling results indicate that the maximum concentrations due to the West County Energy Center are predicted to be less than the significant impact levels for all pollutants, except PM_{10} for the 24-hour averaging period.

As a result, additional modeling analyses were conducted for PM_{10} to demonstrate compliance with 24-hour average PM_{10} AAQS and PSD Class II increments. Since the 24-hour average PM_{10} impacts are predicted to be higher for light oil firing than that for natural gas firing, these modeling analyses were performed only for CTs firing light oil.

The maximum SO_2 , NO_x , and PM_{10} concentrations predicted for the Project with the GE 7FB CTs and Frame G-Class CTs at the PSD Class I area of the ENP are given in Table 5.6.1-2. The maximum impacts at the PSD Class I area of the ENP are predicted to be less than the proposed PSD Class I significant impact levels for the SO_2 , PM_{10} , and NO_2 , except for PM_{10} for the 24-hour averaging period for Frame G-Class CTs when firing light oil.

As a result, cumulative source impact analyses are not required to demonstrate compliance with the PSD Class I increments for these pollutants, except for PM_{10} for the 24-hour averaging period for the configurations indicated.

Cumulative Impacts for AAQS and PSD Increment Analyses

A summary of the results of the cumulative PM₁₀ AAQS analysis for the 24-hour average PM₁₀ concentrations for 2,200 and 3,300 MW are presented in Table 5.6.1-3. The cumulative PM₁₀ impacts are the total air quality impacts due to the West County Energy Center and other modeled sources added to a non-modeled background concentration. For the GE 7FB CTs, the highest, sixth-highest total 24-hour average PM₁₀ concentrations for both the Project and ultimate site capacity are predicted to be 40 µg/m³, which is below the 24-hour average AAQS of 150 µg/m³. For the G Class CTs, the highest, sixth-highest total 24-hour average PM₁₀ concentrations for both the Project and ultimate Site capacity are predicted to be 51 µg/m³, which is below the 24-hour average AAQS of 150 µg/m³.

Table 5.6.1-3 also presents a summary of the results of the cumulative PSD Class II increment analyses for the 24-hour average PM₁₀ concentrations for the Project and ultimate site capacity. For the GE 7FB CTs, the HSH 24-hour average PM₁₀ concentration of PSD increment consuming sources for both the Project and ultimate site capacity are less than 7 µg/m³, which is well below the allowable 24-hour PSD Class II increment of 30 µg/m³. For the G Class CTs, the highest, second-highest 24-hour average PM₁₀ concentration of PSD increment consuming sources for both the Project and ultimate site capacity are less than 10 µg/m³, which is well below the allowable 24-hour PSD Class II increment of 30 µg/m³.

The cumulative PSD Class I increment analyses for the 24-hour average PM₁₀ concentrations for the Project was also conducted. The HSH 24-hour average PM₁₀ concentration of PSD increment consuming sources for both the for GE 7FB CTs and G Class CTs are predicted to be 1.9 µg/m³, which is well below the allowable 24-hour PSD Class II increment 8 µg/m³.

Compliance with Palm Beach County Development Order

Approval of the West County Energy Center by Palm Beach County (Development Order, No. DOA 1989-052F) was conditioned upon the predicted impacts of the West County Energy Center and other sources not consuming more than 50 percent of the available Class II Increment for applicable pollutants. The modeling results indicated that for the ultimate site capacity (i.e., nominal 3,300 MW) the maximum PSD Class II Increment consumption for SO₂ and NO₂ were less than 4.4 and 2.9 percent, respectively. These maximum increment consumptions were over 10 times lower than the Palm Beach County requirement and were substantially less than the PSD Significant Impact

Levels. As such, multi-source modeling is not required by EPA and FDEP requirements and is therefore unnecessary. For PM_{10} , the maximum PSD Increments consumption was predicted to be less than 3 percent for the annual average and approximately 30 percent for 24-hour maximum. The maximum annual PM_{10} , PSD impacts was less than the PSD Significant Impact Level, while the maximum 24-hour impacts were above the PSD Significant Impact Level, requiring a multi-source analysis. The results of the multi-source impact analysis indicated that the maximum PSD Class II Increment consumption was 33 percent for 3,300 MW. The results of the modeling analysis clearly indicate that the West County Energy Center will comply with the Palm Beach County land development approval requirements.

5.6.1.4 Additional Impact Analysis

Impacts Due To Direct Growth

The West County Energy Center is needed to meet the growth in load demand expected from FPL customers in 2009 and beyond. FPL is obligated to provide reliable and adequate electric service to meet its customers' demand. Additional growth as a direct result of the additional electric power provided by the West County Energy Center is not expected.

Construction of the Project will occur over a 36-month period requiring an average of approximately 350 workers during that time. It is anticipated that many of these construction personnel will be drawn from surrounding metropolitan areas and will commute to the job site.

The Project will employ a total of about 50 operational workers. The operational workforce will also include annual contracted maintenance workers to be hired for periodic routine services. It is expected that most of these workers will be contracted from outside the region. The workforce needed to operate the West County Energy Center represents a small fraction of the population already present in the immediate area. Therefore, while there would be a very slight increase in vehicular traffic in the area, the effect on air quality levels would be minimal.

There are also expected to be no air quality impacts due to associated industrial/commercial growth given the West County Energy Center's location. The existing infrastructure should be more than adequate to provide any support services that the West County Energy Center might require.

Impacts on Soils, Vegetation, Wildlife, and Visibility

The potential effects of the West County Energy Center on soils, vegetation, wildlife, and visibility in the local vicinity of the Site and in the PSD Class I area of the ENP were analyzed and are also not expected to be significant. Certain air pollutants in acute concentrations or chronic exposures can impact soils, vegetation, and wildlife. Based on available literature, soils impacts can result from SO₂ and NO₂ deposition creating an acidic reaction or lowering of soil pH. Vegetation is sometimes affected by acute exposures to high concentrations of pollutants often resulting in foliar damage. Lower dose exposure over longer periods of time or chronic exposure can often affect physiological processes within plants causing internal and external damage. Based on an evaluation of the literature for effects from SO₂, acid rain (sulfuric acid mist), NO₂, CO, and combinations of these pollutants, emissions from the West County Energy Center are not expected to result in impacts that cause harm to soils and vegetation. Maximum concentrations of SO₂, PM₁₀, NO₂, and CO in the vicinity of the Site are lower than the EPA Class II Increments for all pollutants. No detrimental effects on soils or vegetation are expected to occur in the vicinity of the Site, since the West County Energy Center's impacts are less than the Class II Increments, which are more stringent than the AAQS. The AAQS are designed to protect the public welfare, including effects on soils and vegetation.

Maximum concentrations of SO₂, PM₁₀, and NO₂ at the PSD Class I area of the ENP are not expected to cause detrimental effects on soils or vegetation.

The major air quality risk to wildlife in the United States is from continuous exposure to pollutants above the National AAQS. This occurs in non-attainment areas, of which there are none in Florida. Risks to wildlife also may occur for wildlife living in the vicinity of an emission source that experiences frequent upsets or episodic conditions resulting from malfunctioning equipment, unique meteorological conditions, or startup operations. Under these conditions, chronic effects (e.g., particulate contamination) and acute effects (e.g., injury to health) have been observed. For impacts on wildlife, the lowest threshold values of SO₂, NO₂, and particulates that are reported to cause physiological changes are up to orders of magnitude higher in concentration, than maximum concentrations predicted from operation of the West County Energy Center. As a result, no adverse effects on wildlife due to SO₂, NO₂, and particulate impacts from the West County Energy Center are expected.

No adverse visibility impairment is expected from the West County Energy Center in the immediate vicinity of the Site due to the type and quantities of emissions from the West County Energy Center sources. Opacity levels from the combustion exhausts from the West County Energy Center will be low and are typically at or approaching zero. Emissions of PM₁₀ and SO₂ will also be low due to the primary use of low-sulfur content natural gas, the cleanest fuel commercially available. As a result, the West County Energy Center will not adversely affect visual qualities in the area.

The West County Energy Center will emit PM, NO_x, and SO₂ with potential impacts to regional haze in the ENP PSD Class I area. For the Project with GE 7FB CTs, the maximum impact on visibility at the ENP is predicted to be less than the 5-percent criteria. For the Project with G-Class CTs, the maximum impact on visibility at the ENP is predicted to be less than the 5 percent criteria for natural gas-firing. For light oil firing in the G-Class CT, there are 2 days over the 3-year period that are above the 5-percent threshold. Given that FPL is seeking approval to fire light oil for less than 21 days per year, there is a very low probability that the 5-percent threshold will be exceeded when firing light oil during the periods of worst-case meteorology. Therefore, the Project is not expected to have an adverse impact on regional haze in the ENP.

Impacts Due to Deposition

The use of the cleanest fuels and latest pollution prevention and control technology for the West County Energy Center will result in low levels of air emissions. An evaluation of atmospheric deposition of these low air emissions levels has determined that potential impacts will be minimal in the ENP as a result of the operation of West County Energy Center. The maximum nitrogen and sulfur depositions predicted for the Project in the PSD Class I area of the ENP are predicted to be below the FLM significant impact levels for nitrogen and sulfur of 0.01 kg/ha/yr.

As acid inputs (e.g., HNO₃⁻¹ and H₂SO₄⁻²), the maximum predicted deposition are extremely small compared to the buffering capacity of the soils in the ENP. The dominant soils of the ENP include organic histosols with extremely high buffering capacities and sandy entisols overlying limestone, which provide a buffer to acidic inputs. These soils are resistant to acidic atmospheric inputs. The averaging buffering capacity of histosols is 765,000 equivalents/hectare (eq/ha) (FADS, 1986). The groundwater table is highly buffered due to the interaction with subsurface limestone formations, which results in high alkalinity (as CaCO₃). The relatively low sensitivity of the soils to acid inputs coupled with the extremely low ground-level concentrations of contaminants projected for the ENP

from the West County Energy Center emissions precludes any impact on soils. Similarly, the total annual sulfur and nitrogen deposition rates at the ENP as a result of the West County Energy Center are not expected to alter soil and/or groundwater pH that may result in adverse effects on vegetation. The phytotoxic effects on the ENP from proposed West County Energy Center's emissions are predicted to be insignificant.

5.6.2 MONITORING PROGRAMS

5.6.2.1 Ambient Air Quality Monitoring

Pre- and post-construction ambient air quality monitoring is not required for this West County Energy Center since the air quality impacts are less than the *de minimis* monitoring thresholds. Air quality concentrations at and in the region of the Site comply and are anticipated to continue to comply with all applicable ambient standards.

5.6.2.2 Air Emissions Monitoring

The West County Energy Center will be subject to the applicable NSPS for the CTs and the duct burners (40 CFR Part 60, Subpart KKKK) and acid rain program (40 CFR 75). Continuous monitoring will be required for the West County Energy Center pursuant to applicable NSPS. Monitoring of fuel sulfur content will also be performed pursuant to the NSPS. Initial performance testing of the CTs for SO₂ and NO_x emissions will be conducted as required by Subpart KKKK.

Continuous emission monitoring (CEM) for SO₂ and NO_x is required for gas- and oil-fired affected units in accordance with the provisions of 40 CFR 75. SO₂ emissions may be determined using procedures established in Appendix D, 40 CFR Part 75. CO₂ emissions must also be determined either through CEM (e.g., as a diluent for NO_x monitoring) or calculation. Alternate procedures, test methods, and quality assurance/quality control (QA/QC) procedures for CEM are specified (Part 75 Appendices A through I). The CEM requirements, including QA/QC procedures are, in general, more stringent than those specified in the NSPS for Subpart GG. New units are required to meet the requirements not later than 90 days after the unit commences commercial operation. The West County Energy Center will be required to either install CEMs for NO_x or to meet the Part 75 requirements.

Initial and periodic compliance testing of pollutants emitted by the West County Energy Center will be conducted pursuant to the FDEP requirements as specified in the FDEP Air Construction PSD Permit in accordance with Chapter 62-297.401, F.A.C.

5.7 NOISE IMPACTS

Sound propagation involves three principal components: a noise source, a person or a group of people, and the transmission path. While two of these components, the noise source and the transmission path, are easily quantified (i.e., direct measurements or through predictive calculations), the effects of noise upon humans is the most difficult to determine due to the varying responses of humans to the same or similar noise patterns. The perception of sound (noise) by humans is very subjective, and just like odors and taste, is very difficult to predict a response from one individual to another.

The noise predictions for the West County Energy Center were developed using the CADNA A computer model. The noise impacts of the West County Energy Center were evaluated using the sound power levels (L_w) (see Appendix 10.5.2) for the various equipment associated with the West County Energy Center. The 4-on-1 combined cycle configuration was used since the number of noise sources is greater than the 3-on-1 combined cycle configuration. The sound power levels also represent worst-case far-field noise guarantee of typical of the equipment suppliers being considered for the West County Energy Center. The location of each noise source was based on its location in the computerized plot plan (see Figure 3.2.0-3). The computerized drawing was imported into the CADNA A model for the noise analysis.

CADNA A is an environmental noise propagation computer program that was developed to assist with noise propagation calculations for major noise sources and projects. Noise sources are entered as octave band sound power levels, L_w . Locations of the noise sources, buildings, and receptors are input directly on the base map and can be edited throughout the modeling process. All noise sources are assumed to be a point, line, area or vertical area source, and can be specified by the user. Sound propagation is calculated by accounting for hemispherical spreading and three other user-identified attenuation options: atmospheric attenuation, path-specific attenuation, and barrier attenuation. Atmospheric attenuation is calculated using the data specified by the Calculation of the Absorption of Sound by the Atmosphere (ANSI, 1999). Path-specific attenuation can be specified to account for the effects of vegetation, foliage, and wind shadow. Directional source characteristics and reflection

can be simulated using path-specific attenuation. Barrier attenuation is calculated by assuming an infinitely long barrier perpendicular to the source-receptor path. Total and A-weighted SPLs are calculated. Sources modeled included the CT air inlets, CT exhaust ducts, the HRSGs, and stack and power transformers, as well as the cooling tower.

The predicted levels for the Project (i.e., nominal 2,200 MW) are presented in Figure 5.7.0-1. The maximum sound level impact at the nearest residence is predicted to 46.2 dBA. A noise level of this magnitude would be lower than quantitative noise standards established in the Palm Beach County Unified Land Development Code. The maximum sound levels applicable to the West County Energy Center are 55 dBA during the daytime (7 a.m. to 8 p.m.) and 50 dBA during the nighttime (8 p.m. to 7 a.m.). The maximum predicted noise level does not include background, which can be variable depending upon the activities in the area. Background noise levels can be the dominate source of noise. The background values used to calculate the total noise level were 42.7 and 40.0 dBA for daytime and nighttime, respectively (see Section 2.3.8). Table 5.7.0-1 presents the maximum predicted impacts combined with background noise levels. The background noise levels in Table 5.7.0-1 included both transient noise (i.e., L_{90}) and overall noise levels (i.e., L_{eq}). The maximum impacts with background are calculated to be 47.8 dBA during the daytime and 47.1 dBA during the nighttime (see Table 5.7.0-1).

The predicted levels for the ultimate site capacity of the West County Energy Center (i.e., nominal 3,300 MW) are presented in Figure 5.7.0-2. The maximum sound level impact at the nearest residence is predicted to 47.2 dBA with three nominal 1,100-MW units. This predicted noise level would be lower than quantitative noise standards established in the Palm Beach County Unified Land Development Code. As discussed for the Project, the maximum predicted noise level does not include background noise sources, which can be highly variable. When combined with background noise levels taken near the residential area, the noise levels are calculated to be 48.5 dBA during the daytime and 48.0 dBA during the nighttime (see Table 5.7.0-1).

Intermittent noise sources during routine startup, testing and maintenance, and emergency conditions will include steam venting. Such activities would not normally occur simultaneously and would last for a short duration. The noise impacts of these conditions would not be expected to cause a nuisance.

5.8 CHANGES TO NON-AQUATIC SPECIES POPULATION

5.8.1 IMPACTS

The Site has been significantly disturbed during historical agricultural and mining activities, has been cleared of vegetative communities, and does not provide habitat for wildlife. Due to the existing degraded habitat at the Site, construction and operation of the West County Energy Center will not result in the reduction of any populations of non-aquatic species.

5.8.1.1 Impacts

No adverse impacts to non-aquatic species are anticipated during operation of the West County Energy Center, as the Site does not provide suitable habitat for wildlife. No adverse impacts to federal- or state-listed terrestrial plants or animals are expected, due to the existing developed nature of the habitat within the Site. The sand and shell-covered Site does not provide suitable habitat for listed plants or animals.

5.8.2 MONITORING

Because no significant impacts to non-aquatic species populations are anticipated, no monitoring program is proposed.

5.9 OTHER PLANT OPERATION EFFECTS

5.9.1 OPERATIONS TRAFFIC

Impacts to area roadways resulting from operation of the West County Energy Center will be minimal since employment is very small, with no more than about 20 employees working on any shift. In addition to employee traffic, fuel oil and ammonia deliveries and maintenance activities will also generate additional trips. Most of the fuel used to operate the plant will be delivered by natural gas pipeline. When light oil is used the maximum amount to be delivered represents no more than about six deliveries per hour for each unit. Ammonia deliveries are estimated to occur between 160 to 560 times per year or between 0.5 to 1.5 trips per day. Non-routine plant maintenance activities are infrequent and of short duration and were not included in the operation traffic impact assessment.

As a result of the estimates described above, a worst-case estimate of operational traffic for the Project indicates that up to 36 trips per peak hour could be expected (20 operations employees, 12 fuel oil truck trip ends, 2 ammonia truck trip ends, and 2 miscellaneous delivery trip ends). These

impacts were evaluated for a year 2010 buildout that represents the first year of commercial operation for both units.

The year 2010 non-project background traffic volumes were determined to be the 2003 non-project background volumes obtained from FDOT increased by means of a growth rate. A roadway-specific growth rate of 5 percent per year was applied to the 2003 non-project volumes to derive future volumes.

Trips associated with the operating conditions at the Site assumed trip distribution similar to construction. It is expected that 85 percent of the trips will depart the Site and travel to the east on State Road 80, with the remaining 15 percent traveling west on SR 80. In-bound trips would follow the same route.

The year 2010 non-project background peak hour two-way traffic volumes and operations traffic volumes were combined to provide a projection of year 2010 total traffic. The total traffic volume in the vicinity of the West County Energy Center was analyzed to determine the anticipated operating conditions for the three roadway segments evaluated in Subsection 4.6.2. The roadway segments are anticipated to operate without any degradation of LOS and at or above the State's LOS standard. No improvements are required to accommodate the traffic impacts from operation traffic of the Project.

5.10 ARCHAEOLOGICAL SITES

No sites of historic or archaeological significance will be impacted due to operation of the West County Energy Center. No sites listed, or eligible for listing, in the *National Register of Historic Places* are located in close proximity to the Site. No direct or indirect impacts are anticipated from any operation aspect of the West County Energy Center. The Site has received clearance from the Florida Department of State, Division of Historical Resources (see Appendix 10.5.3).

5.11 RESOURCES COMMITTED

The major irreversible and irretrievable commitments of national, State, and local resources due to the West County Energy Center are the use of land, the consumptive use of water, natural gas, ultra low-sulfur light oil, ammonia, and PSD increment.



The West County Energy Center will affect about 220 acres that have already been significantly impacted by mining activities and backfilling.

The consumption of water by the proposed West County Energy Center will be for condenser cooling, power augmentation, pollution control equipment (NO_x control when firing ultra low-sulfur light oil), other process water requirements, and potable water.

The West County Energy Center will consume PSD increment for several pollutants (NO_x, PM₁₀, and SO₂). However, the magnitude of increment consumption is very low compared to the PSD Class I and Class II increments. Indeed, the maximum impacts of the ultimate site capacity in the vicinity of the Site are less than 50 percent of the PSD Class II Increments.

Natural gas and light oil will be consumed during the operation of the West County Energy Center. The amounts are described in Section 3.3. This is an irreversible and irretrievable commitment of a national energy resource for the production of electricity for the people of Florida.

Ammonia will be required for the operation of the West County Energy Center's SCR systems with the amount depending upon the type of combustion turbine selected. While ammonia will be consumed, emissions of NO_x will be substantially reduced (70 percent or greater) as a result.

The West County Energy Center will effectively utilize national, State, and local resources, given the production of efficient electric power, low environmental impacts, and the use of a previously impacted site.

5.12 VARIANCES

No variances from any applicable standards of any State, regional, or local government agency are being requested as part of this application.



Table 5.1.4-1. Estimated Drift Emission Spectrum for the West County Energy Center Cooling Tower

Particle Size Range (micrometers)	Total in Size Range (percent)
0 - 50	50.00
51 - 100	25.00
101 - 150	12.00
151 - 250	9.10
251 - 400	3.15
401 - 500	0.48
>500	0.27

Source: Golder, 2005.

Table 5.1.4-2 Predicted Plume Characteristics and Drift Deposition from West County Energy Center Mechanical Draft Cooling Towers

	Distance from Tower (meters)	Winter		Spring		Summer		Fall		Annual	
		For Sector	For All Sectors	For Sector	For All Sectors	For Sector	For All Sectors	For Sector	For All Sectors	For Sector	For All Sectors
Plume Length (Units = Percent)	100	<u>Maximum</u>	<u>Sum</u>	<u>Maximum</u>	<u>Sum</u>	<u>Maximum</u>	<u>Sum</u>	<u>Maximum</u>	<u>Sum</u>	<u>Maximum</u>	<u>Sum</u>
	200	13.3	87.7	13.2	93.6	15.6	95.2	17.1	93.7	14.1	92.6
	300	1.2	6.5	0.8	4.6	0.4	2.2	0.9	3.6	0.7	4.2
Plume Height (Units = Percent)	100	0.2	0.9	0.2	0.6	0.2	0.3	0.1	0.4	0.2	0.5
	200	<u>Maximum</u>	<u>Sum</u>	<u>Maximum</u>	<u>Sum</u>	<u>Maximum</u>	<u>Sum</u>	<u>Maximum</u>	<u>Sum</u>	<u>Maximum</u>	<u>Sum</u>
	300	13.3	87.7	13.2	93.6	15.6	95.2	17.1	93.7	14.1	92.6
Plume Shadowing (Units = Hours)	10	1.9	10.8	1.5	7.79	2.9	8.3	1.5	8.2	1.7	8.8
	30	1.1	5.5	0.6	3.86	0.3	2.0	0.9	3.1	0.6	3.6
	50	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>	<u>Average</u>
Plume Fogging (Units = Hours)	200	954.4	620.6	1,193.1	683.6	911.7	564.1	817.7	560.1	3,443.0	2,428.4
	400	204.2	95.9	243.6	86.4	284.9	68.8	146.8	74.3	725.3	325.6
	600	52.2	18.7	86.9	20.5	127.4	24.3	60.6	21.8	261.7	85.4
Plume Fogging (Units = Hours)	200	<u>Maximum</u>	<u>Sum</u>	<u>Maximum</u>	<u>Sum</u>	<u>Maximum</u>	<u>Sum</u>	<u>Maximum</u>	<u>Sum</u>	<u>Maximum</u>	<u>Sum</u>
	400	0	0	0	0	0	0	0	0	0	0
	600	0	0	0	0	0	0	1.2	1.6	1.2	1.6
Rime Icing (Units = Hours)	200	0	0	0	0	0	0	1.1	1.4	1.1	1.4
	400	<u>Maximum</u>	<u>Sum</u>	<u>Maximum</u>	<u>Sum</u>	<u>Maximum</u>	<u>Sum</u>	<u>Maximum</u>	<u>Sum</u>	<u>Maximum</u>	<u>Sum</u>
	600	0	0	0	0	0	0	0	0	0	0
Deposition (Offsite) (Units = kg/km ² /month)	200	0	0	0	0	0	0	0	0	0	0
	400	0	0	0	0	0	0	0	0	0	0
	600	0	0	0	0	0	0	0	0	0	0
Deposition (Offsite) (Units = kg/km ² /month)	200	<u>Maximum</u>		<u>Maximum</u>		<u>Maximum</u>		<u>Maximum</u>		<u>Maximum</u>	
	400	555		596		218		256		406	
	600	69		117		121		100		92	
Deposition (Offsite) (Units = kg/km ² /month)	200	40		73		48		60		48	
	400										
	600										

Source: Golder, 2005.

Table 5.2.2-1. Injection Zone Pressure Results

Injection Well Analysis (Three Wells @ 7 MGD each)			
Injection Rate*	Qw =	21	MGD
Thickness of Confining Unit	B' =	800	ft
Vertical Conductivity of Confining Unit	Kv' =	1.60E-03	ft/day
Leakance Factor	L =	2.00E-06	ft/day/ft
Transmissivity of Boulder Zone	T =	1.00E+07	ft ² /day
Thickness of Boulder Zone	B =	300	ft
Specific Weight of B.Z. Formation fluid		1.025	
Specific Weight of Injection Fluid		1.001	
Density Factor (delta)		42.71	
Effective Radius of Injection Wells	rw =	1.30	ft
Thickness of Injection Zone (initial estimate)	hi =	89.1	ft
	hi/B =	0.2970	
Transmissivity of Injection Zone	Ti =	2.97E+06	ft ² /day
Lambda		1218602	ft
Thickness of Injection Zone (Calculated Value)		89.1	ft
Difference between Initial Estimate and Final Calculation		0.00	ft
Maximum Injection Pressure		2.1	ft-H2O

*A worst-case injection rate of 7 MGD per unit was assumed for the analysis.

Source: Golder, 2005.

Table 5.6.1-1. Summary of Maximum Pollutant Concentrations Predicted for the Project and Ultimate Site Capacity, Compared to the EPA Class II Significant Impact Levels

Pollutant	Averaging Time	Maximum Predicted Concentration (ug/m ³) ^a						EPA Class II Significant Impact Levels (ug/m ³)
		Project			Ultimate Site Capacity			
		Natural Gas	Light Oil	Maximum	Natural Gas	Light Oil	Maximum	
<u>GE 7FB CTs</u>								
CTs Only								
SO ₂	Annual	0.28	0.038	0.28	0.37	0.04	0.37	1
	24-Hour	3.72	0.55	3.72	4.02	0.61	4.02	5
	3-Hour	14.92	2.40	14.92	17.77	2.68	17.77	25
PM ₁₀	Annual	0.36	0.34	0.36	0.46	0.45	0.46	1
	24-Hour	4.48	4.76	4.76	4.67	5.55	5.55	5
NO ₂	Annual	0.52	1.11	0.55	0.69	1.36	0.72	1
CO	8-Hour	47.7	29.6	47.7	55.7	34.2	55.7	500
	1-Hour	127.5	80.0	127.5	153.2	93.6	153.2	2,000
CTs and Cooling Tower								
PM ₁₀	Annual	0.43	0.47	0.44	0.51	0.55	0.51	1
	24-Hour	5.26	5.97	5.97	5.26	5.97	5.97	5
<u>G-Class CTs</u>								
CTs Only								
SO ₂	Annual	0.22	0.026	0.22	0.26	0.03	0.26	1
	24-Hour	3.64	0.511	3.64	3.75	0.53	3.75	5
	3-Hour	13.8	2.07	13.8	14.6	2.1	14.6	25
PM ₁₀	Annual	0.16	0.54	0.18	0.19	0.61	0.22	1
	24-Hour	2.58	10.5	10.5	2.7	11.0	11.0	5
NO ₂	Annual	0.37	0.70	0.39	0.47	0.79	0.49	1
CO	8-Hour	31.2	52.2	52.2	35.7	59.2	59.2	500
	1-Hour	68.0	121.3	121.3	81.8	140.3	140.3	2,000
CTs and Cooling Tower								
PM ₁₀	Annual	0.24	0.61	0.26	0.27	0.66	0.29	1
	24-Hour	3.17	10.7	10.7	3.2	11.0	11.0	5

^a Maximum annual average concentration are based on prorating the maximum impacts for each operation by the following maximum number of hours requested for that operation:

Pollutant	Hours for Each Operation		
	Natural Gas	Light Oil	Total
SO ₂	8,760	0	8,760
PM ₁₀	8,260	500	8,760
NO ₂	8,260	500	8,760

Source: Golder, 2005.



Table 5.6.1-2. Summary of Maximum Pollutant Concentrations Predicted for the Project, Compared to the EPA Class I Significant Impact Levels

Pollutant	Averaging Time	Maximum Predicted Concentration (ug/m ³) ^a			EPA Class I Significant Impact Levels (ug/m ³)
		Project			
		Natural Gas	Light Oil	Maximum	
<u>GE 7FB CTs</u>					
CTs Only					
SO ₂	Annual	0.0046	0.0009	0.0046	0.1
	24-Hour	0.13	0.02	0.13	0.2
	3-Hour	0.41	0.08	0.41	1.0
PM ₁₀	Annual	0.0080	0.0077	0.0080	0.2
	24-Hour	0.21	0.21	0.21	0.3
NO ₂	Annual	0.005	0.014	0.005	0.1
<u>G-Class CTs</u>					
CTs Only					
SO ₂	Annual	0.0041	0.0008	0.0041	0.1
	24-Hour	0.11	0.022	0.11	0.2
	3-Hour	0.37	0.078	0.37	1.0
PM ₁₀	Annual	0.0064	0.014	0.006	0.2
	24-Hour	0.17	0.37	0.37	0.3
NO ₂	Annual	0.0044	0.012	0.0044	0.1

^a Maximum annual average concentration are based on prorating the maximum impacts for each operation by the following maximum number of hours requested for that operation:

Pollutant	Hours for Each Operation		
	Natural Gas	Light Oil	Total
SO ₂	8,760	0	8,760
PM ₁₀	8,260	500	8,760
NO ₂	8,260	500	8,760

Source: Golder, 2005.

Table 5.6.1-3. Maximum Predicted 24-hour Average PM₁₀ Impacts For Comparison to the AAQSand PSD Class II Increments

Scenario	AAQS Analysis			AAQS (µg/m³)	PSD Class II Increment Analysis	
	Concentration (µg/m³) ^a		Modeled Concentration ^a (µg/m³)		PSD Class II Increment (µg/m³)	
	Modeled Sources	Back- ground	Total			
Project (2,200 MW)						
GE 7FB CTs	9.9	30	40	150	6.6	30
G-Class CTs	23.1	30	51	150	9.3	30
Ultimate Site Capacity (3,300 MW)						
GE 7FB CTs	9.9	30	40	150	6.7	30
G-Class CTs	23.1	30	51	150	9.7	30

Note: NM= not modeled since project's impacts were predicted to be below significant impact level.

^a Based on light oil-firing for the project.

Source: Golder, 2005.



Table 5.7.0-1. Baseline Sound Levels and Sound Level Impacts (dBA)^a for the Operation of the FPL West County Energy Center

Site and Location		Time	Baseline Sound Levels (dBA) ^a	Predicted Sound Levels (dBA)
Project (Two 1,100 MW Units)	5 Nearest residence-L8 Canal ^b	Day	42.7	47.80
		Night	40.0	47.10
Ultimate Capacity (Three 1,100 MW Units)	5 Nearest residence-L8 Canal ^b	Day	42.7	48.50
		Night	40.0	48.00

NOTE: Capacity is nominal.

^aBased on L₉₀. Nighttime observations for background were adjusted for transient sounds (see discussion in Section 2.3.8).

^bLocated 5,200 ft northeast of the center of the power block for Unit 1.

Source: Golder, 2005.



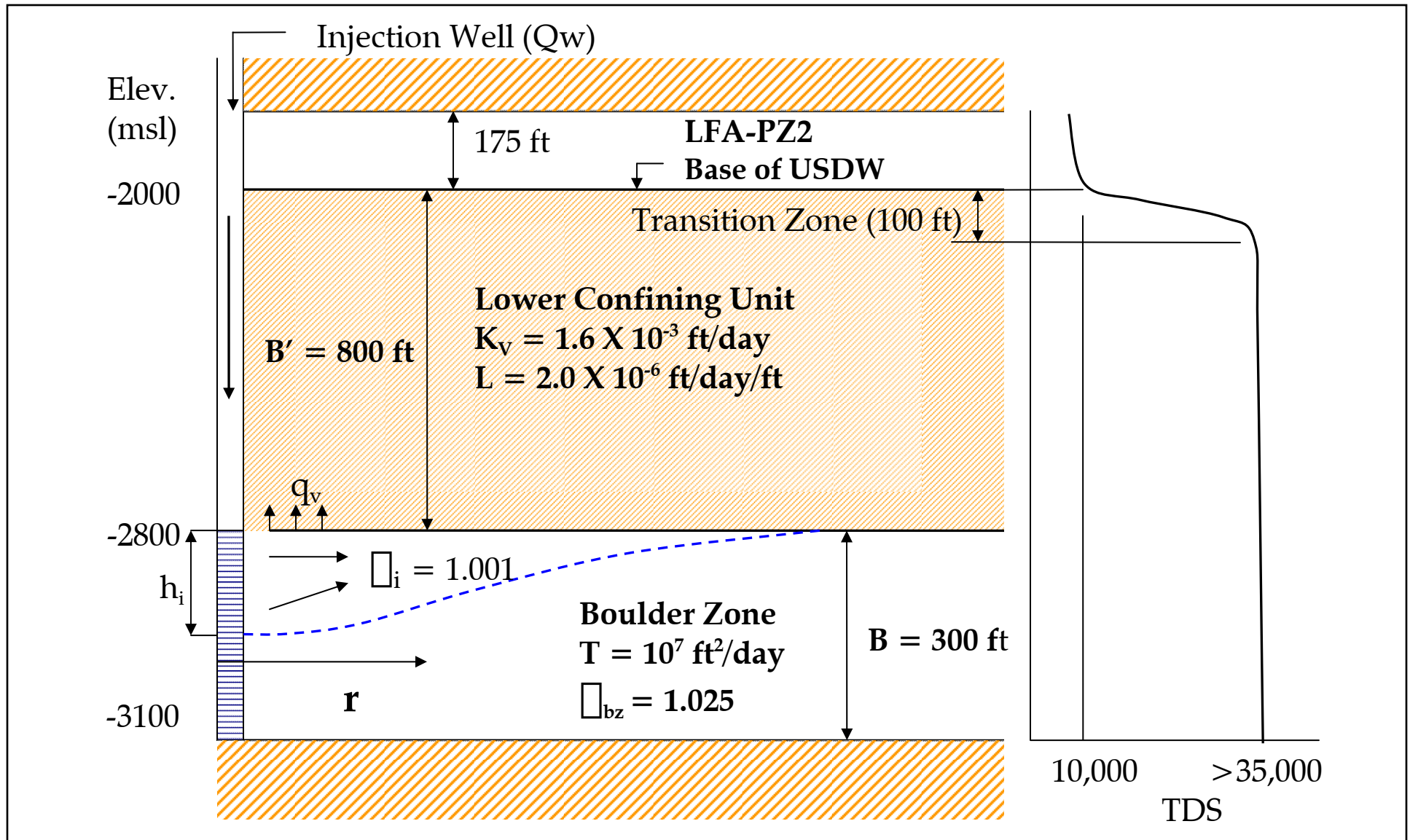


Figure 5.2.2-1
Schematic Model of Proposed Injection Well
West County Energy Center, Palm Beach, Florida

Source: Golder, 2005.



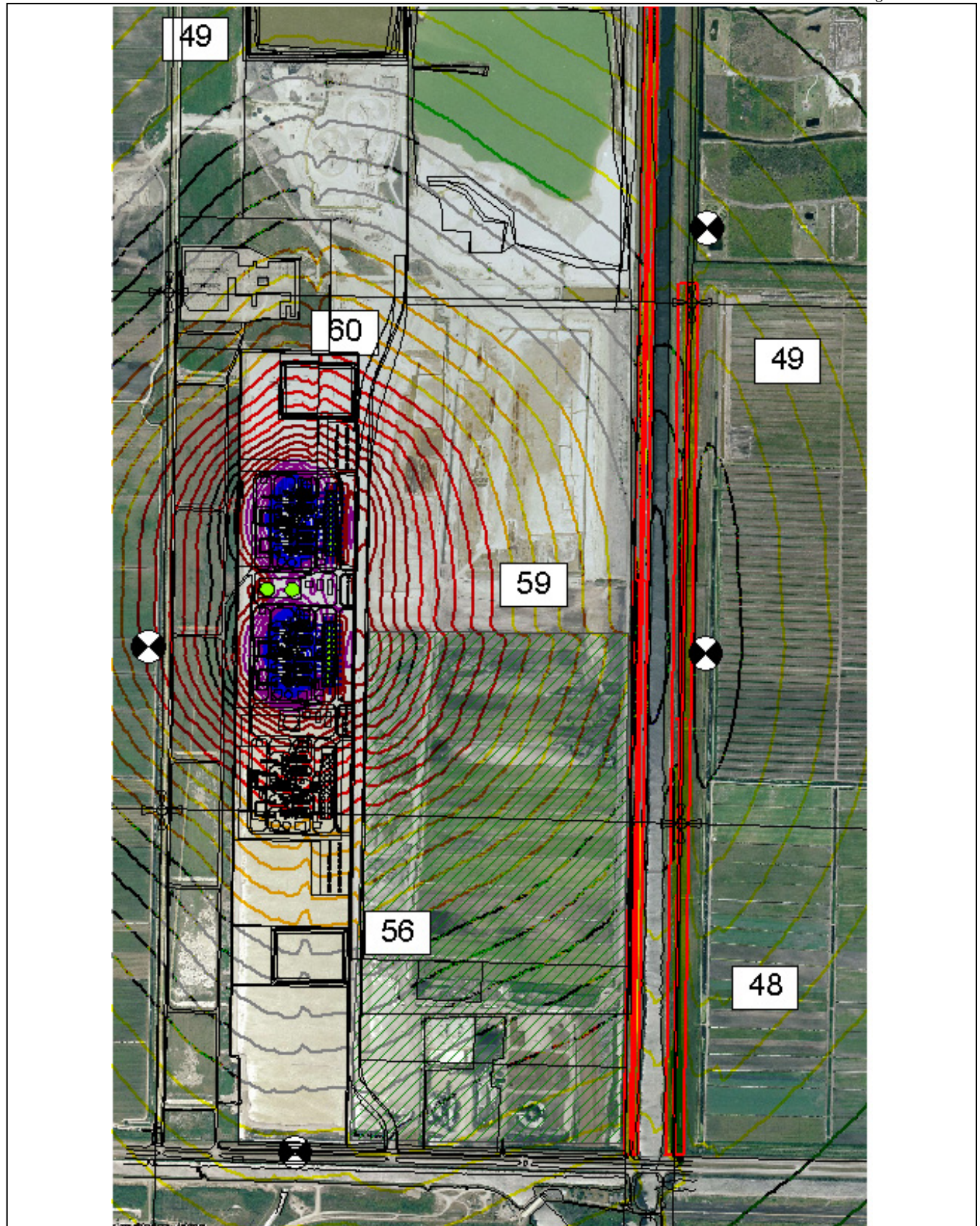


Figure 5.7.0-1
Maximum Predicted Noise Levels (dBA) for Project
(2,200-MW)
FPL West County Energy Center, Palm Beach, Florida
Source: Golder, 2005.

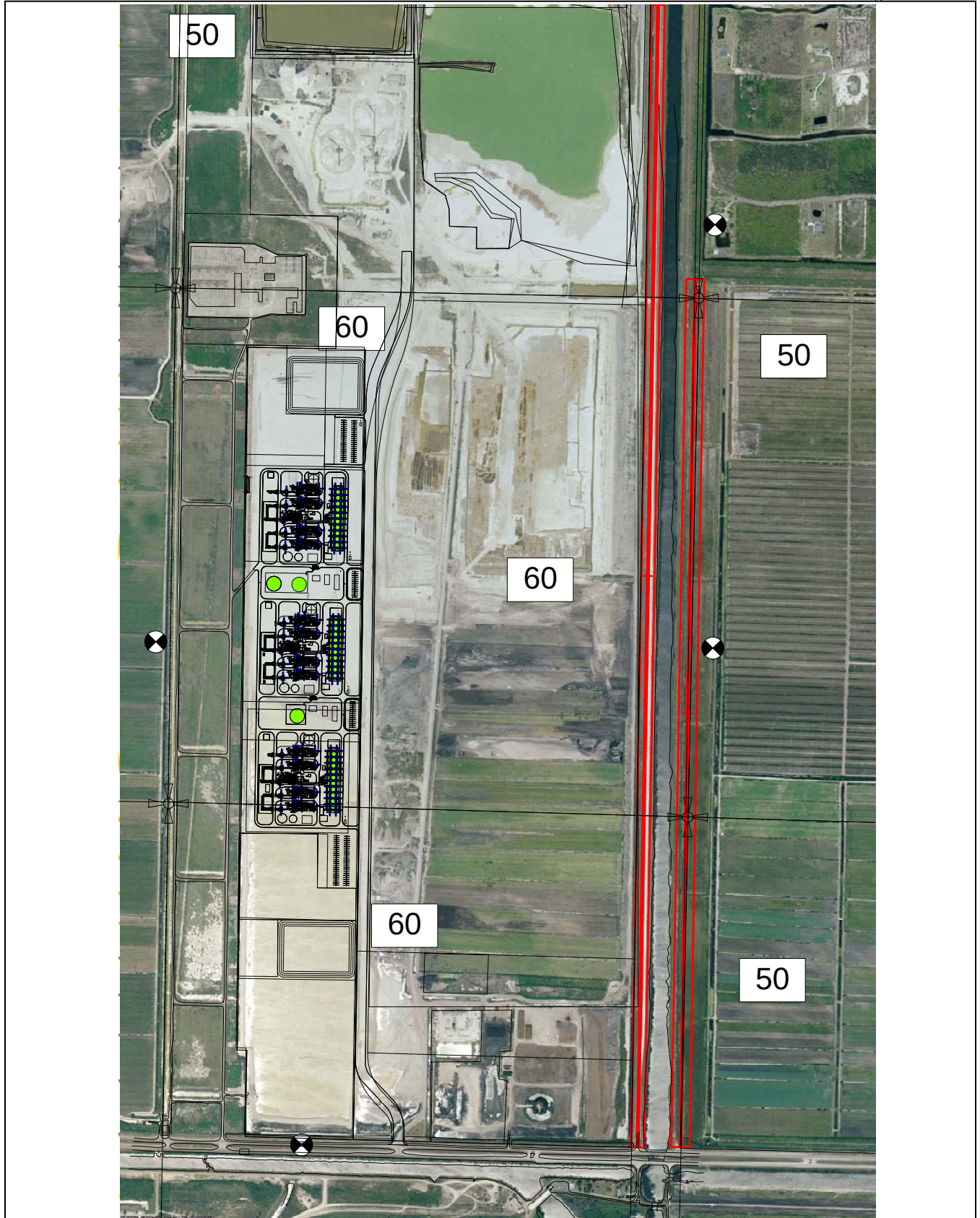


Figure 5.7.0-2
Maximum Predicted Noise Levels (dBA) for Ultimate Site Capacity
(3,300-MW)
FPL West County Energy Center, Palm Beach, Florida
Source: Golder, 2005.



6.0 TRANSMISSION LINES

The Project will not require certification of any associated linear facilities, such as electrical transmission lines or rail lines. Therefore, Chapter 6 is not necessary for this application.



7.0 ECONOMIC AND SOCIAL EFFECTS OF PLANT CONSTRUCTION AND OPERATION

7.1 SOCIO-ECONOMIC BENEFITS

The purposes of this chapter are to:

- Identify the economic and social effects of construction and operation of the Project, and
- Quantify the Project benefits and costs to the groups affected in the area surrounding the site as well as other people and businesses in Palm Beach County and the State of Florida.

Socio-economic effects can be classified as either direct or indirect effects. Direct effects are those that are the direct result of the construction or operation of the Project. Indirect costs and benefits affect people and business interests in the vicinity of the Project who, because of their proximity to the site, may experience changes in their local environment, such as increased spending by the Project construction and operation personnel. Many of these effects are difficult to measure, and qualitative assumptions must be made to assess the relative values of expected costs and benefits.

This chapter is divided into two parts. Section 7.1 deals with socio-economic benefits and consists of an analysis of the Project construction and operational expenditures. Section 7.2 addresses temporary and long-term indirect costs involving the construction and operational personnel's use of private and public services in the vicinity of the site. All cost and benefit values are based on present (2005) dollar values.

7.1.1 DIRECT SOCIO-ECONOMIC BENEFITS

The Project is expected to benefit the economies of Palm Beach County and surrounding areas. Direct benefits from the Project include employment opportunities created by the construction and operation of the Project. Construction of the Project is anticipated to begin in 2007 and conclude in 2010. The peak construction workforce is estimated to be about 1000 people with an average construction workforce estimated at 350 employees over a 3-year period. Construction employment during 2009 will average about 475 workers and management staff. Employment opportunities will result from construction job opportunities as well as jobs indirectly generated through the purchase of goods and services in the area. Additionally, with the addition of approximately 40 to 50 full-time equivalent jobs for the operation of the Project, the labor demands associated with the operation of



the Project will not create labor shortages. Due to the proximity of the Site to large labor markets in the South Florida metropolitan areas, the labor demand for both construction and operation is expected to be met by workers in these areas. Population and housing impacts from construction and operation will be minimal because little migration into the area is anticipated.

Sales and income tax benefits will accrue to the State of Florida as a result of the construction and operation of the Project.

The construction cost for the Project will be about \$1.2 billion. The major cost associated with construction will be the major equipment (about \$500 million), labor (about \$170 million), and materials (about \$200 million). The remaining cost is associated with engineering, licensing, contingencies, and other miscellaneous costs.

Based on the first 5 years of operation, an estimated \$2,000,000 in sales taxes will be paid to the State of Florida. These taxes will be placed in the State's general fund and will be available for any use deemed appropriate by the State. These figures are based on current sales tax rates.

Direct economic benefits of construction of the Project will also result from the purchase of materials and equipment. About \$30 to 50 million will be for materials and equipment purchased or leased within the State.

Among the primary direct benefits of the Project will be the increase in skilled job opportunities within the region associated with both plant construction and operation. Construction employment is expected to peak at approximately 1,000 workers. The total construction payroll for this facility is estimated at \$170 million, which will be paid over the 3-year construction period. The approximate type of workers over the 3-year construction period is presented in the following table.

Estimated Construction Workforce	
Cost Component	Percent
Laborers	12
Carpenters	6
Operators	5
Ironworkers	4
Millwrights	10
Boilermakers	6
Pipefitters	19
Insulators	2
Electricians	22
Painters	1
Supervision	13
Total	100

Ongoing operation of the Project will employ approximately 40-50 people. Assuming average wages of \$60,000 annually per person, the additional annual operational payroll will be approximately \$2,700,000. Other fixed operational costs, excluding fuel costs, would be about \$4,000,000 annually, which would generally be expended in the region.

7.1.2 INDIRECT ECONOMIC BENEFITS

The purchase of goods and services to support the construction of the Project is anticipated to occur over a 3-year period beginning in 2007 and ending in 2010. It is expected that the majority of the \$170 million in construction wages paid by for the Project will be spent within Palm Beach County and the surrounding region. These wages will create additional demands for goods and services. As this money is spent, it will create a multiplier effect within the area, thereby generating additional jobs and earnings. These earnings are indirect or secondary benefits of the Project, which will be enjoyed by other companies whose payroll will increase from the construction of the Project. Materials such as concrete, stone, drainage piping, and other building materials are normally manufactured or produced in the region. Rental of construction equipment would also be obtained locally.

The direct wages from ongoing operations will also generate indirect economic benefits. The direct wages will be spent mostly within the region and will increase the demand for goods and services. Using a typical economic multiplier for this effect, wages paid direct to plant personnel will



indirectly generate at least \$2,300,000 annually in additional earnings (wages and benefits) in the region.

7.1.3 OTHER ECONOMIC BENEFITS

The major operating costs for the West County Energy Center are associated with fuel, water treatment chemicals, and ammonia. These costs not only include the cost of the commodity but the cost of transportation to the site. For example, natural gas will be transported to the site by a regional pipeline. In addition, the alternate fuel, light oil, and ammonia will be transported by truck to the site. Some of the payments for both the commodity and transportation will benefit the region through additional employment, taxes and materials.

7.1.4 RECREATIONAL AND ENVIRONMENTAL VALUES

Construction and operation of the Project will not significantly impact the recreational value and visual qualities of any facilities in the vicinity of the Site. Any disturbance to these facilities during construction of the Project will be insignificant to non-existent since the recreational facilities are located outside of the area affected by Project construction and operation. Aesthetic and visual impact to nearby recreational facilities is expected to be minimal.

7.1.5 ONSITE ENHANCEMENTS

FPL desires to minimize the Project's impacts on the environment and the community. Accordingly, the Project design incorporates features that reduce the visual and other impacts to the local community. These major features include the low profile, noise attenuation, and air pollution control equipment. There are minimal transportation impacts to the local roadways during operation.

The use of these features and methods, combined with the location for the Project, will ensure minimal impacts to the community. For example, the location of the Project is well buffered from the borders of the Site by distance and raised berms. The Power Block area is approximately 0.75 mile from the closest residential area. Both the location on the Site and the design features for the Project will minimize the impacts to aesthetics, ambient noise levels and transportation.

7.1.6 OTHER ENVIRONMENTAL BENEFITS

The Project maximizes beneficial use of a previously mined area, thereby minimizing impact and using underutilized land. This minimizes the potential environmental impacts associated with the



generation of electrical power through the use of existing facilities (i.e., developed site, access roads, substation, and transmission lines). This directly avoids impacts to wetlands or wildlife habitat.

7.1.7 SUMMARY OF BENEFITS

Overall impacts to the economy associated with construction and operation of the Project are expected to be positive. Labor demands associated with the construction and operation of the Project are not expected to create any labor shortages. Expenditures for field materials and consumption by newly hired workers will boost incomes in Palm Beach and surrounding counties. Population and housing impacts associated with the Project will be slight due to minimal in-migration into the area.

Construction activities will increase tax revenues to the county and state governments due to sales taxes from the purchase of equipment and material to support construction activities.

Although the local community may experience some temporary impacts during the peak construction periods, overall, socioeconomic impacts associated with the construction and operation of the Project will be favorable.

7.2 SOCIO-ECONOMIC COSTS

7.2.1 TEMPORARY EXTERNAL COSTS

Over 70,000 construction workers reside within the region, with the majority of these in Palm Beach, Broward, and Miami-Dade Counties. Ample labor supply exists within commuting distance, and since a labor surplus exists within the region. Consequently, construction should have no adverse effect on permanent housing.

As is typical with longer duration construction projects, some workers commuting from longer distances may choose to live in transient accommodations (motels, hotels) on a weekly basis, returning to their permanent homes and families on weekends. Transient accommodations are plentiful in the area.

Since workers will mostly be commuting and not relocating permanently into the region, it is not anticipated that construction will create any new or unusual impacts or demands on public facilities or services.



Temporary external costs include the generation of construction traffic and noise from delivery trucks each day. Project construction will last approximately 3 years with a peak period of about 24 months from January 2008 through December 2009. The roadways utilized for the construction traffic associated with the Project will continue to operate at an acceptable LOS and impacts from construction traffic entering and leaving the Site on State Road 80 will be mitigated by using traffic management specialists (off-duty law enforcement officers).

7.2.2 LONG-TERM EXTERNAL COSTS

The Project's external cost impacts will be minimal and localized. The Site is located adjacent to the existing FPL Corbett Substation that will minimize the interconnection requirements for FPL's electric transmission and distribution system. Given the location of the West County Energy Center, there will be no impacts to public or private facilities used for recreational purposes. The operation of the West County Energy Center will not cause any impairment to recreational values, result in any deterioration of aesthetic and scenic values, or restrict access to areas of scenic values. The West County Energy Center also will not displace persons from the land, cause loss of income, or result in any significant costs to local government.

Since the operational workforce is expected to be approximately 50 employees, and most are assumed to reside within commuting distance to the plant, the Project's impacts to local services (e.g., schools, police) are expected to be minimal.



8.0 SITE AND DESIGN ALTERNATIVES

This optional Chapter of the SCA will not be submitted as part of this application because it is not anticipated that an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) would be required for the Project. Information on FPL's integrated resource planning process, projected resource additions, and a discussion of preferred and potential site locations can be found in FPL's Ten Year Power Plant Site Plan 2005-2014 (FPL, 2005).



9.0 COORDINATION

State, regional, and local governmental agencies were contacted by FPL representatives to inform these agencies about the West County Energy Center and to solicit input regarding the Project. The Agency staff contacted is listed below:

- U.S. Army Corps of Engineers
 - Tori White
- Florida Department of Community Affairs
 - Paul Darst
- Florida Department of Environmental Protection (Tallahassee)
 - Alan Bedwell
 - Colleen Castille
 - Stephany Culp
 - Scott Goorland
 - Jeff Koerner
 - Al Linero
 - Debbie Nelson
 - Hamilton Oven
 - Steven Palmer
 - Trina Vielhauer
- Treasure Coast Regional Planning Counsel
 - Mike Busha
 - Peter Merritt
- Florida Department of Environmental Protection (SE District, West Palm Beach)
 - Timothy Gray
 - Tricia Hoffer
 - Joe May
- Florida Department of Transportation
 - Sandra Whitmire
- Florida Fish and Wildlife Conservation Commission
 - Richard Brust
 - Barron Moody
- Palm Beach County
 - Barbara Alderman
- South Florida Water Management District
 - Scott Burns
 - Henry Dean
 - Jeff Giddings
 - Jim Golden
 - Tim Grey
 - Robert Kobza
 - Karlyn Kowalski
 - John Morgan
 - Jayantha Obeysekera

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