January 23, 2012

Cindy Mulkey, Program Administrator
Office of Siting Coordination
Department of Environmental Protection
3900 Commonwealth Blvd., MS #48
Tallahassee, FL 32399-2400

Re: FPL Port Everglades Next Generation Clean Energy Center Project
Application for Site Certification

Dear Ms. Mulkey:

Florida Power & Light Company (FPL) is pleased to submit to the Department of Environmental Protection (Department) its Site Certification Application (SCA) for the Port Everglades Next Generation Clean Energy Center Project (PEEC or Project) in Broward County, pursuant to the Florida Electrical Power Plant Siting Act, Section 403.501, et seq., F.S. and Section 62-17.051, F.A.C. Enclosed is FPL Check No. 5000054250, made payable to the Department in the amount of $125,500.00, and provided as the application fee pursuant to Section 62-17.293(1)(b)1 and 2, F.A.C. At this time, FPL is providing copies of the SCA to other agencies identified in Section 403.507(2)(a), F.S., pursuant to Section 403.5064(1)(a), F.S. and shown in the attached service list.

The SCA addresses all aspects of the PEEC Project by presenting information in accordance with the Department's draft "Application Instruction Guide: Electrical Power Plant Sites and Associated Facilities Electrical Transmission Lines" dated September 1, 2009 (draft PPSA/TLSA Application Guide). FPL is also separately filing with the Department an Application for Air Construction Permit for the Project and a Request for Modification of the existing Port Everglades Plant's Industrial Wastewater Facility Permit. In addition, FPL is separately filing a Prevention of Significant Deterioration (PSD) application with the U.S. Environmental Protection Agency Region IV for greenhouse gas emissions associated with the Project.

FPL looks forward to working with the Department and other interested agencies in the certification process. If you should have any questions regarding this SCA, please do not hesitate to call me at (561)691-7518 or Andy Flajole at (561)691-2766.

Sincerely,

Barbara P. Linkiewicz
Director of Environmental Licensing

cc: Dianne Hughes, Siting Liaison, FDEP Southeast District Office
Michael S. Tammaro, Esq., FPL
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DISTRIBUTION LIST FOR
FLORIDA POWER & LIGHT COMPANY
PORT EVERGLADES NEXT GENERATION CLEAN ENERGY CENTER
SITE CERTIFICATION APPLICATION

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LIST OF ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
°F	degrees Fahrenheit
µPa	micropascals
µS/cm	microsiemens per centimeter
AADT	annual average daily traffic
AAQS	Ambient Air Quality Standards
ABI	Applied Biology, Inc.
Act	Local Government Comprehensive Planning and Land Development Regulations Act of 1985, Chapter 163, Part II, F.S.
AERMOD	American Meteorological Society and EPA Regulatory Model
ANSI	American National Standards Institute
APPZ	Avon Park Permeable Zone
BACT	Best Available Control Technology
BMPs	Best Management Practices
BOR	Basis of Review
Btu/kWh	British thermal units per kilowatt-hour
Btu/lb	British thermal units per pound
Btu/scf	British thermal units per standard cubic foot
C&D	construction and demolition (waste)
C.I.E.	Commission Internationale de l'Eclairage (International Commission on Illumination)
CadnaA	Computer Aided Noise Abatement
CCEC	Cape Canaveral Next Generation Clean Energy Center
cd	candelas
cd/m^2	candelas per square meter
CEM	continuous emission monitoring
CESQG	Conditionally Exempt Small Quantity Generator
cf/yr	cubic feet per year
CFR	Code of Federal Regulations
CH_4	methane
City	City of Hollywood
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent emissions
County	Broward County
CT	combustion turbine or combustion turbine generator
CWA	Clean Water Act
dB	decibels
dBA	A-weighted decibels
DHR	Florida Division of Historical Resources
DLE	dry low emissions
DLN	dry low-NO_x
EDTA	ethylene diamine tetra-acetic acid
eGRID	Emissions & Generation Resource Integrated Database
EIA	U.S. Energy Information Administration

EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ERP	Environmental Resource Permit
ESP	electrostatic precipitator
F.A.C.	Florida Administrative Code
F.S.	Florida Statutes
FAS	Floridan Aquifer System
FCREPA	Florida Committee on Rare and Endangered Plants and Animals
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FWC	Florida Fish and Wildlife Conservation Commission
FGT	Florida Gas Transmission
FIU	Florida International University
FLL	Fort Lauderdale-Hollywood International Airport
FLUCFCS	Florida Land Use, Cover and Forms Classification System
FMSF	Florida Master Site File
FNAI	Florida Natural Areas Inventory
FPL	Florida Power & Light Company
FPSC	Florida Public Service Commission
ft	feet
ft/day	feet per day
ft/yr	feet per year
ft^2/day	square feet per day
ft-bgs	feet below ground surface
FWS	U.S. Fish and Wildlife Service
g/bhp-hr	grams per brake horsepower-hour
GEP	good engineering practice
GHG	greenhouse gas
GIS	geographic information systems
gpd	gallons per day
gpm	gallons per minute
gr/100 scf	grains per 100 standard cubic feet
GWP	Global Warming Potential
H_2SO_4	sulfuric acid
HAP	hazardous air pollutant
HHV	higher heating value
hp	horsepower
hr/yr	hours per year
HRSG	heat recovery steam generator
Hz	hertz
I	Interstate (highway)
ICU	Intermediate Confining Unit
ICW	Intracoastal Waterway
IMECS	Impingement Mortality and Entrainment Characterization Studies
in/yr	inches per year
ISO	International Organization for Standardization

IWW	Industrial Wastewater
kg	kilograms
klux	kilolux
km	kilometer
kV	kilovolts
kW	kilowatt
L_{50}	sound pressure level exceeded 50 percent of the time
L_{90}	sound pressure level exceeded 90 percent of the time
lb/hr	pounds per hour
lb/MMBtu	pounds per million British thermal units
lb/MW-hr	pounds per megawatt-hour
L_{eq}	equivalent sound pressure level
LFA	Lower Floridan Aquifer
LHV	lower heating value
L_{max}	maximum sound pressure level
L_{min}	minimum sound pressure level
LOS	Level of Service (traffic)
L_w	octave band sound power levels
m	meters
MACT	maximum achievable control technology
mag/arcsec^2	magnitudes per square arcsecond
MCU	Middle Confining Unit
MG	million gallons
mg/L	milligrams per liter
MGD	million gallons per day
MMBtu/hr	million British thermal units per hour
MMcf/hr	million cubic feet per hour
MPS	Mitsubishi Power Systems
MSW	municipal solid waste
MTHS	manatee temporary heating system
MW	megawatt
N_2O	nitrous oxide
NEPA	National Environmental Policy Act
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NGVD 29	National Geodetic Vertical Datum 1929
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NOT	Notice of Termination
NO_x	nitrogen oxides
NMFS	National Marine Fisheries Service
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards
NSR	New Source Review
NTU	nephelometric turbidity units
NWS	National Weather Service

O_2	oxygen
OFW	Outstanding Florida Waters
OSHA	Occupational Safety and Health Administration
PEDD	Port Everglades Development District
PEEC	Port Everglades Next Generation Clean Energy Center
Plan	Comprehensive Plan
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter of 10 micrometers or less
$PM_{2.5}$	particulate matter with an aerodynamic diameter of 2.5 micrometers or less
Port	Port Everglades
POTW	publicly owned treatment works
ppm	parts per million
ppmvd	parts per million by volume dry
PPSA	Florida Electrical Power Plant Siting Act
ppt	parts per thousand
PSD	Prevention of Significant Deterioration
PV	photovoltaic
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
RARE	Roadless Area Review and Evaluation
RBEC	Riviera Beach Next Generation Clean Energy Center
RFP	request for proposals
RICE	reciprocating internal combustion engines
RO/MB	reverse osmosis/mixed bed
S.R.	State Road
SAS	surficial aquifer system
SCA	Site Certification Application
SCR	selective catalytic reduction
SCRAM	Support Center for Regulatory Air Models
SFWMD	South Florida Water Management District
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide
SPL	sound pressure level
SWPPP	Storm Water Pollution Prevention Plan
TDS	total dissolved solids
TPD	tons per day
TPY	tons per year
TTN	Technology Transfer Network
UFA	Upper Floridan Aquifer
ULSD	ultra low sulfur distillate
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USGS	U.S. Geological Survey
VOC	volatile organic compound

SITE CERTIFICATION APPLICATION DEFINITIONS

1. "Port Everglades Plant" or "existing Plant" – refers to the existing Florida Power & Light Company (FPL) power plant, including Units 1 through 4 and the Gas Turbine Power Park located on the Port Everglades Plant Property.

2. "Port Everglades Units 1 through 4" or "Units 1 through 4" – refers to the existing 1960s vintage heavy oil and natural gas-fired fossil steam boilers, steam turbine/electric generators, and selected appurtenances.

3. "Port Everglades Plant Property" – refers to the approximately 94 acres of FPL-owned property.

4. "Port Everglades Next Generation Clean Energy Center Project", "PEEC", or "Project" – refers to the entire "Project" for which FPL seeks certification, including dismantlement of the existing Port Everglades Plant Units 1 through 4, construction of the proposed combined cycle generating unit, the construction parking and laydown areas, and related activities as described in the Site Certification Application. The existing Administration Building, natural gas yard, easements (intake canal and culvert, ULSD piping, aquatic organism return system piping, and discharge canal) are part of the Project. "Port Everglades Next Generation Clean Energy Center Project", "PEEC" or "Project" does not include the existing Gas Turbine Power Park on the Port Everglades Plant Property.

5. "Port Everglades Energy Center Site" or "Site" – refers to the property on which PEEC will be located, as the Site to be certified for the Port Everglades Next Generation Clean Energy Center, including the intake and discharge canals, the existing Administration Building and natural gas yard.

6. "Power Block" – refers to the area that will be occupied by the proposed combined cycle unit major equipment such as combustion turbines/heat recovery steam generators (CTs/HRSGs) and a steam turbine generator.

7. "construction parking and laydown areas" – refers to FPL-owned property located within the existing Port Everglades Plant Property that will be used during construction of the Project for parking and construction laydown.

8. "construction" – refers to work to be performed as part of the Project, including dismantlement of existing Units 1 through 4 facilities, as well as construction of the 3-on-1 combined cycle unit, the construction parking and laydown areas, and related activities as described in the Site Certification Application.

9. "dismantlement" – refers to all activities associated with the removal of existing Port Everglades Units 1 through 4 facilities.

10. "Gas Turbine Power Park - Port Everglades" consists of the 12 simple-cycle gas turbines and related appurtenances including, for example fuel oil storage tanks and support structures located on the Port Everglades Plant Property.

1.0 INTRODUCTION AND GENERAL INFORMATION

This chapter of the Site Certification Application (SCA) introduces Florida Power & Light Company (FPL or the Company), provides an overview of the Port Everglades Next Generation Clean Energy Center Project ("PEEC" or "Project") for which FPL seeks certification, including dismantlement of the existing Port Everglades Units 1 through 4 and construction of the modernized Plant, and provides a summary of FPL's public outreach program for the Project.

1.1 Introduction

FPL proposes to modernize the existing Port Everglades Plant Units 1 through 4 (i.e., conventional 1960s era residual oil and gas-fired generating units and support facilities) into a modern, highly efficient, lower-emission next generation clean energy center using the latest combined cycle technology. The modernized unit will be located wholly within the existing Port Everglades Plant Property. The modernization will result in a small increase in power generation without using additional land and using less water. The Project will be more energy efficient than the existing Units 1 through 4 and will provide cleaner energy to FPL's customers. The Project will use approximately 35 percent less fuel than the existing Units 1 through 4, for an equivalent amount of electricity production. The Project name is the Port Everglades Next Generation Clean Energy Center, with an in-service date for the Project of June 2016.

There will be significant benefits associated with the Project. The Project allows the redevelopment of the existing Port Everglades Plant Property and existing infrastructure. The Port Everglades Plant provides the infrastructure for a new combined cycle unit that includes an existing developed site dedicated to generation of electricity, existing cooling water systems, existing gas delivery infrastructure, and access to the FPL transmission system.

Regulated air emissions with the Project will be approximately 90 percent lower than the existing emissions for Units 1 through 4, resulting in significant air quality benefits. In addition, there will be a cumulative reduction of approximately 22 million tons of CO_2 emissions in FPL's system from 2016 through 2047 with the Project. The existing FPL Port Everglades Plant Property is located within the City of Hollywood on approximately 92.5 acres within the jurisdictional area of Port Everglades (mid-port section). The Site includes approximately 67.1 acres of the Plant property leaving the remaining acreage for the following non-associated facilities: 12 existing simple cycle gas turbines, fuel storage, system substation, and leased properties. The general location of the Port

Everglades Plant and the PEEC Site is presented in Figure 1.1.0-1.

FPL has operated a power plant on the Port Everglades Plant Property since 1960. Units 1 and 2, which are nominal 200 megawatt (MW) units, went into service in 1960 and 1961, respectively. The commercial in-service dates for Units 3 and 4, which are nominal 400 MW units, were 1964 and 1965, respectively. All four units have remained in service since those dates.

Exhibit A presents the Site legal description on FPL Port Everglades Plant property, and Section 3.2.4 and Appendix 10.12 (Leases, Easements, Title, Agency Works) present information on easements related to the intake and discharge canals and conveyances. Together these documents provide legal descriptions for the Certified Site.

FPL is seeking approval of the PEEC 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 (Section 403.519, F.S.). 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 either the Governor and Cabinet sitting as the Siting Board, or the Secretary of the FDEP. This SCA is being filed with FDEP pursuant to Chapter 62-17, Florida Administrative Code (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 facilities to be dismantled, constructed and operated; and the impacts of the Project on those environments. The format for this SCA follows the draft "*Application Instruction Guide: Electrical Power Plant Sites and Associated Facilities Electrical Transmission Lines*" issued by FDEP and revised September 1, 2009. FPL is concurrently filing with FDEP an Air Construction/Prevention of Significant Deterioration (PSD) Permit Application and an application to modify the Industrial Wastewater (IWW) Permit.

1.2 The Applicant

FPL, a subsidiary of NextEra Energy, Inc., is the largest electric utility in Florida. FPL serves approximately 4.5 million customer accounts, approximately 8.7 million people, with a service

territory in all or parts of 35 Florida counties (Figure 1.2.0-1).

FPL's existing generating resources are located at power plant sites (Figure 1.2.0-1) distributed geographically around its service territory, and also include partial ownership of two units located in Jacksonville, Florida, and one unit in Georgia. The total summer system firm generating capability as of December 31, 2010 is 23,687 MW consisting of nuclear units (2,939 MW), coal units (900 MW), combined cycle units (11,466 MW), oil/gas fossil steam units (6,159 MW), combustion turbines (315 MW), and gas turbines (1,908 MW) (FPL, 2011). In addition, there are two photovoltaic (PV) facilities with a generation capacity of 35 MW and a solar-thermal facility that is capable of producing steam that is equivalent to 75 MW. The solar-thermal facility is the world's first "hybrid" energy center to combine solar-thermal technology with an existing combined-cycle generation unit.

FPL's bulk transmission system is composed of approximately 6,721 circuit miles of transmission lines. Integration of the generation, transmission, and distribution system is achieved through FPL's approximately 587 substations (FPL, 2011).

FPL is a leader among the nation's electric utilities for its partnerships with customers in conservation and in energy management (see Appendix 10.8, NextEra Energy, Inc's and Florida Power & Light Company's Greenhouse Gas Strategy).

The following information addresses the applicant identification requirements:

Applicant's Official Name:	***Florida Power & 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***
Name and Title of Chief Executive Officer:	***Armando J. Olivera, CEO***
Name, Address, and Phone Number of Official Representative responsible for obtaining certification:	***Barbara Linkiewicz, Director of Environmental Licensing, New Generation Projects, Environmental Services Department, 700 Universe Boulevard, JES/JB, Juno Beach, FL 33408 Phone: (561) 691-7518 Fax: (561) 691-7049***
Site Location (county):	***Broward County***
Nearest Incorporated Cities:	***City of Hollywood***
Latitude and Longitude:	***26° 05' 08"; 80° 07' 31".***
UTM Coordinates:	Northerly ***2,885.25 kilometers (km) N;*** Easterly ***587.38 km E (Zone 17)***
Section, Township, Range:	***Portion of Section 23, Township 50 South, Range 42 East***
Name Plate Generating Capacity:	***Site Certification: Modernization of existing nominal 1,200-MW oil/gas steam electric generating facility into a nominal 1,250-MW (net) combined cycle unit***

1.3 Overview of the Project

The Project will be a 3-on-1 combined cycle unit, which will consist of three new advanced technology combustion turbine/electric generators (CTs), three new heat recovery steam generators (HRSGs), and one steam turbine/electric generator. The CTs are similar to, but much larger and more efficient than, traditional jet engines. The CTs 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 steam turbine generator to produce additional electricity. Natural gas will be the primary fuel for PEEC. Ultra low-sulfur distillate (ULSD) "light oil" will be used as a backup fuel for the CTs. The cooling water source for the Project will be seawater from the Intracoastal Waterway (ICW) via the

existing Port Everglades Slip No. 3 that will continue to provide once-through cooling water for PEEC. The municipal water supply for the existing Plant from the City of Fort Lauderdale will continue to be used for process and potable water. By using natural gas as the primary fuel for PEEC and technology that is recognized by FDEP as the Best Available Control Technology (BACT) for minimizing air emissions, PEEC will be among the cleanest and most efficient fossil fuel-fired, electric-power generating units in Florida.

Decommissioning and dismantling of the existing generating Units 1 through 4 will be part of the Project and will be required prior to the construction of the 3-on-1 combined cycle unit. Certain components, such as the cooling-water intake and discharge infrastructure and transmission facilities, will remain in use with the Project. The Project will interconnect with FPL's transmission network through the existing adjacent system substation.

The Project is estimated to generate approximately $372 million in tax revenue from 2016 to 2046. This is comprised of approximately $114 million to the City of Hollywood, approximately $126 million to Broward County, approximately $122 million to the Broward County School District, and approximately $10 million for other taxing authorities [South Florida Water Management District (SFWMD) and Florida Inland Navigation District].

1.4 Summary of Public Outreach Program

FPL believes it is important to involve the community in the licensing process of projects as they are designed to generate and deliver clean and reliable power to customers. Representatives of FPL have been involved with the local community surrounding the Port Everglades Plant for many years. At all times and utilizing several communication channels, FPL seeks constructive and collaborative dialogue with neighbors to both provide information on a project and gain input from the local community. FPL's goal is to ensure that interests and specific information particular to communities are taken into account.

The Project was formally announced on July 18, 2011. At that time, FPL took the initial step to seek state regulatory approval with the FPSC by filing a bid waiver. FPL reached out to approximately 50 stakeholder groups including elected officials, environmental groups, government agencies, and surrounding counties and cities (see Appendix 10.1 Coordination). Local TV, radio, and print media outlets were notified about the Project to inform residents surrounding the Site. On November 21, 2011, FPL filed a need determination with the FPSC. In February 2012 FPL will mail out more than

28,000 letters to residents and business owners within a 3-mile radius of the Site informing them of the Project and identifying several communication channels that they can use to provide feedback. Several presentations have been made to local community groups, including civic and neighborhood associations, as well as detailed Project presentations at public local meetings. Over the past 6 months and throughout the Project in the future, FPL has and will continue to maintain contact with the community utilizing the following methods:

- Project website: www.FPL.com/PortEverglades
- Email: PortEverglades@FPL.com
- Toll-free telephone number: 1-800-693-3267
- FPL Facebook: www.facebook.com/fplconnect
- FPL Twitter: www.twitter.com/insideFPL
- Direct mailing to adjacent area property owners, FPL customers, and concerned citizens.

FPL is committed to responding to comments and questions in a timely manner. FPL's goal is to be the first and best source of information about the Project.

Exhibit A

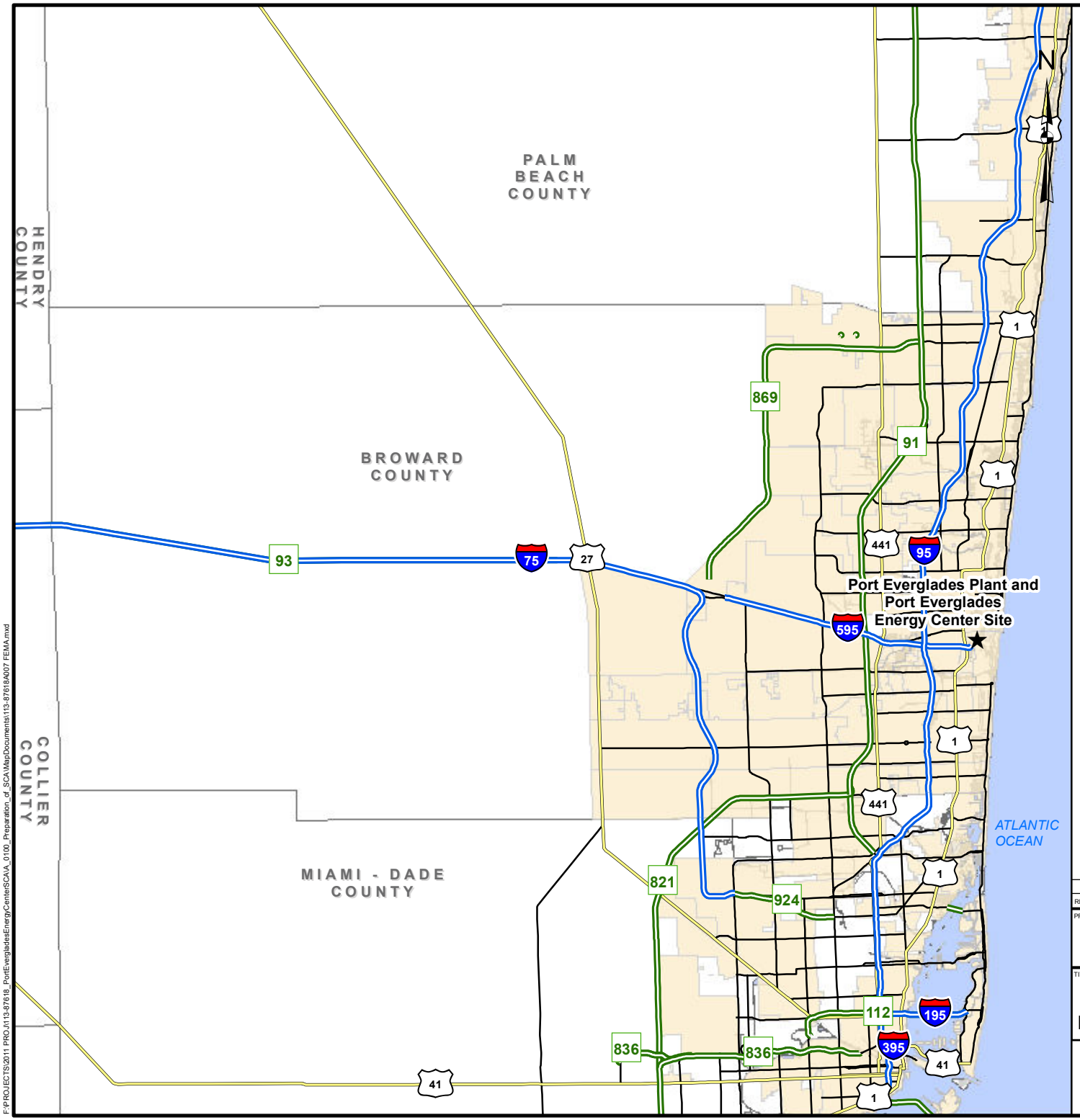
Site Legal Description on FPL Port Everglades Plant Property

A Parcel of land being a portion of Parcels I, K, 14, 15, 16, 17 and 18 of PORT EVERGLADES SUBDIVISION No. 1, Plat Book 26, Page 6 as recorded in the Public Records of Broward County, Florida and being in Section 23, Township 50 South, Range 42 East, Broward County,Florida, being described as follows:

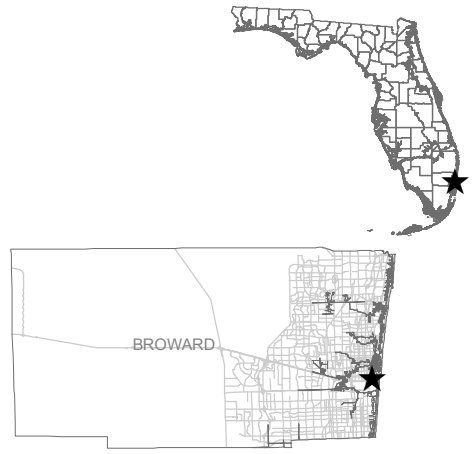
BEGINNING at the Northwest corner of Parcel 14 being on the South line of Parcel "E" (S.E. 26th Street); thence N 87°56'09" E, along said South line, 713.55 feet to a point on the East line of Parcel "K" (Eisenhower Boulevard): thence S 01°08'14" E, along said East line, 148.00 feet; thence S 88°20'39" W, 315.44 feet; thence S 02°49'02" E, 293.10 feet: thence N 87°39'22" E, 206.96 feet to the West line of Parcel "K" (Eisenhower Boulevard); thence S 01°08'26" E, along said West line, 212.22 feet to the Southwest corner of said Parcel "K"; thence S 87°54'32" W, along the North line of Parcel "J", 20.90 feet: thence S 02°02'58" E, along the West line of Parcel "J" (Eisenhower Boulevard), 1251.73 feet to the Southwest corner of Parcel "J"; thence N 88°02'16" E, along the South line of Parcel "J" and Parcel 12, a distance of 334.19 feet; thence S 01°48'28" E, 140.55 feet; thence N 87°37'41" E, 142.63 feet; thence S 02°01'16" E, 70.57 feet; thence N 88°29'10" E, 183.26 feet; thence S 02°45'20" E, 716.38 feet; thence S 88°43'31" E, 425.45 feet; thence N 88°01'47" E, 280.41 feet to a point on the East line of Section 23, Township 50 South, Range 42 East; thence S 02°30'52" E, along said East line, 149.94 feet to the North line of Parcel A of PORT EVERGLADES PLAT No. 8, Plat Book 157, Page 35 as recorded in the Public Records of Broward County, Florida; thence S 88°04'32" W along said North line, 1222.80 feet; thence N 51°09'59" W, 128.06 feet; thence N 12°22'36" W, 354.06 feet; thence N 27°04'22" W, 71.75 feet; thence N 75°54'11" W, 30.43 feet; thence N 85°41'53" W, 245.45 feet; thence S 80°33'28" W, 22.41 feet; thence N 87°19'28" W, 316.58 feet; thence N 46°50'43" W, 57.32 feet; thence N 02°04'13" W, 58.69 feet; thence S 87°56'04" W, 109.31 feet; thence N 02°04'16" W, 64.75 feet; thence S 87°55'53" W, 114.69 feet; thence N 01°50'29" W, 410.98 feet; thence S 86°52'30" W, 237.77 feet to the East line of Parcel "H" (S.E. 14th Avenue); thence N 02°04'04" W, along said East line, 364.18 feet; thence N 87°56'04" E, 278.82 feet; thence S 02°04'02" E, 159.39 feet; thence N 87°54'26" E, 285.80 feet; thence N 07°46'19" E, 127.53 feet; N 04°38'59" W, 396.50 feet; thence N 02°03'51" W, along the West line of Parcel 14, a distance of 1149.40 feet to the POINT OF BEGINNING.

Said lands situate in Broward County, Florida and containing 2,494,313 square feet, 57.262 acres, more or less.

See SCA Appendix 10.12 Leases, Easements, Title, Agency Works for the legal descriptions of easements related to the intake and discharge canals and conveyances. Together these documents provide descriptions for the Certified Site.



AREA MAP



LEGEND

★ Port Everglades Plant and Port Everglades Energy Center Site

REFERENCES

1. Port Everglades Plant and Port Everglades Energy Center Site Location, FPL 2011
2. Municipalities, Broward County Florida, 2011, Plam Beach County Florida, 2010, and Miami Dade County Florida. 2009
3. Roads, Florida Department of Transportation, 2011

7 3.5 0 Miles

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

GENERAL LOCATION OF THE FPL PORT EVERGLADES PLANT AND PORT EVERGLADES ENERGY CENTER

PROJECT No. 113-87618			FILE No. 113-87618A028	
DESIGN	RCM	12/21/2011	SCALE: AS SHOWN	REV. 0
GIS	NRL	1/13/2012		
CHECK	RCM	1/13/2012	FIGURE 1.1.0-1	
REVIEW	KFK	1/13/2012		

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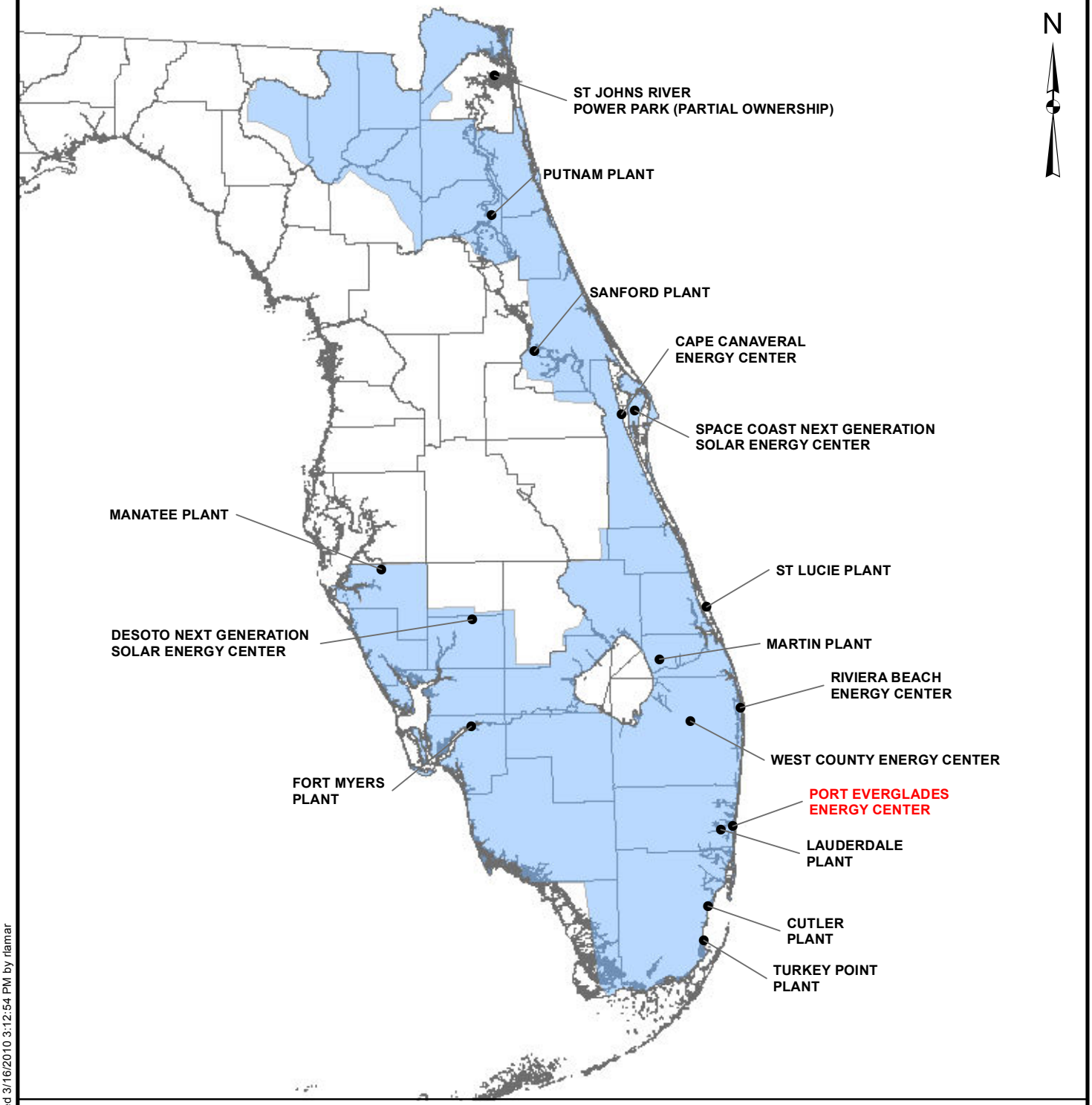

LEGEND

- FPL Power Plants
- Approximate FPL Service Territory

290,000 0 290,000
Feet

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

SERVICE TERRITORY AND POWER PLANTS

REFERENCES

1. FPL Power Plants, 2011, FPL
2. Approximate FPL Service Territory, FPL, 2007

PROJECT No.		113-87618	FILE No.		113-87618A005
DESIGN	NRL	11/3/2011	SCALE: AS SHOWN	REV.	0
GIS	NRL	11/3/2011			
CHECK	RCM	1/12/2012			
REVIEW	KFK	1/12/2012			

FIGURE 1.2.0-1

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1.0 INTRODUCTION AND GENERAL INFORMATION

This chapter of the Site Certification Application (SCA) introduces Florida Power & Light Company (FPL or the Company), provides an overview of the Port Everglades Next Generation Clean Energy Center Project ("PEEC" or "Project") for which FPL seeks certification, including dismantlement of the existing Port Everglades Units 1 through 4 and construction of the modernized Plant, and provides a summary of FPL's public outreach program for the Project.

1.1 Introduction

FPL proposes to modernize the existing Port Everglades Plant Units 1 through 4 (i.e., conventional 1960s era residual oil and gas-fired generating units and support facilities) into a modern, highly efficient, lower-emission next generation clean energy center using the latest combined cycle technology. The modernized unit will be located wholly within the existing Port Everglades Plant Property. The modernization will result in a small increase in power generation without using additional land and using less water. The Project will be more energy efficient than the existing Units 1 through 4 and will provide cleaner energy to FPL's customers. The Project will use approximately 35 percent less fuel than the existing Units 1 through 4, for an equivalent amount of electricity production. The Project name is the Port Everglades Next Generation Clean Energy Center, with an in-service date for the Project of June 2016.

There will be significant benefits associated with the Project. The Project allows the redevelopment of the existing Port Everglades Plant Property and existing infrastructure. The Port Everglades Plant provides the infrastructure for a new combined cycle unit that includes an existing developed site dedicated to generation of electricity, existing cooling water systems, existing gas delivery infrastructure, and access to the FPL transmission system.

Regulated air emissions with the Project will be approximately 90 percent lower than the existing emissions for Units 1 through 4, resulting in significant air quality benefits. In addition, there will be a cumulative reduction of approximately 22 million tons of CO_2 emissions in FPL's system from 2016 through 2047 with the Project. The existing FPL Port Everglades Plant Property is located within the City of Hollywood on approximately 92.5 acres within the jurisdictional area of Port Everglades (mid-port section). The Site includes approximately 67.1 acres of the Plant property leaving the remaining acreage for the following non-associated facilities: 12 existing simple cycle gas turbines, fuel storage, system substation, and leased properties. The general location of the Port

Everglades Plant and the PEEC Site is presented in Figure 1.1.0-1.

FPL has operated a power plant on the Port Everglades Plant Property since 1960. Units 1 and 2, which are nominal 200 megawatt (MW) units, went into service in 1960 and 1961, respectively. The commercial in-service dates for Units 3 and 4, which are nominal 400 MW units, were 1964 and 1965, respectively. All four units have remained in service since those dates.

Exhibit A presents the Site legal description on FPL Port Everglades Plant property, and Section 3.2.4 and Appendix 10.12 (Leases, Easements, Title, Agency Works) present information on easements related to the intake and discharge canals and conveyances. Together these documents provide legal descriptions for the Certified Site.

FPL is seeking approval of the PEEC 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 (Section 403.519, F.S.). 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 either the Governor and Cabinet sitting as the Siting Board, or the Secretary of the FDEP. This SCA is being filed with FDEP pursuant to Chapter 62-17, Florida Administrative Code (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 facilities to be dismantled, constructed and operated; and the impacts of the Project on those environments. The format for this SCA follows the draft "*Application Instruction Guide: Electrical Power Plant Sites and Associated Facilities Electrical Transmission Lines*" issued by FDEP and revised September 1, 2009. FPL is concurrently filing with FDEP an Air Construction/Prevention of Significant Deterioration (PSD) Permit Application and an application to modify the Industrial Wastewater (IWW) Permit.

1.2 The Applicant

FPL, a subsidiary of NextEra Energy, Inc., is the largest electric utility in Florida. FPL serves approximately 4.5 million customer accounts, approximately 8.7 million people, with a service

territory in all or parts of 35 Florida counties (Figure 1.2.0-1).

FPL's existing generating resources are located at power plant sites (Figure 1.2.0-1) distributed geographically around its service territory, and also include partial ownership of two units located in Jacksonville, Florida, and one unit in Georgia. The total summer system firm generating capability as of December 31, 2010 is 23,687 MW consisting of nuclear units (2,939 MW), coal units (900 MW), combined cycle units (11,466 MW), oil/gas fossil steam units (6,159 MW), combustion turbines (315 MW), and gas turbines (1,908 MW) (FPL, 2011). In addition, there are two photovoltaic (PV) facilities with a generation capacity of 35 MW and a solar-thermal facility that is capable of producing steam that is equivalent to 75 MW. The solar-thermal facility is the world's first "hybrid" energy center to combine solar-thermal technology with an existing combined-cycle generation unit.

FPL's bulk transmission system is composed of approximately 6,721 circuit miles of transmission lines. Integration of the generation, transmission, and distribution system is achieved through FPL's approximately 587 substations (FPL, 2011).

FPL is a leader among the nation's electric utilities for its partnerships with customers in conservation and in energy management (see Appendix 10.8, NextEra Energy, Inc's and Florida Power & Light Company's Greenhouse Gas Strategy).

The following information addresses the applicant identification requirements:

Applicant's Official Name:	***Florida Power & 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***
Name and Title of Chief Executive Officer:	***Armando J. Olivera, CEO***
Name, Address, and Phone Number of Official Representative responsible for obtaining certification:	***Barbara Linkiewicz, Director of Environmental Licensing, New Generation Projects, Environmental Services Department, 700 Universe Boulevard, JES/JB, Juno Beach, FL 33408 Phone: (561) 691-7518 Fax: (561) 691-7049***
Site Location (county):	***Broward County***
Nearest Incorporated Cities:	***City of Hollywood***
Latitude and Longitude:	***26° 05' 08"; 80° 07' 31".***
UTM Coordinates:	Northerly ***2,885.25 kilometers (km) N;*** Easterly ***587.38 km E (Zone 17)***
Section, Township, Range:	***Portion of Section 23, Township 50 South, Range 42 East***
Name Plate Generating Capacity:	***Site Certification: Modernization of existing nominal 1,200-MW oil/gas steam electric generating facility into a nominal 1,250-MW (net) combined cycle unit***

1.3 Overview of the Project

The Project will be a 3-on-1 combined cycle unit, which will consist of three new advanced technology combustion turbine/electric generators (CTs), three new heat recovery steam generators (HRSGs), and one steam turbine/electric generator. The CTs are similar to, but much larger and more efficient than, traditional jet engines. The CTs 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 steam turbine generator to produce additional electricity. Natural gas will be the primary fuel for PEEC. Ultra low-sulfur distillate (ULSD) "light oil" will be used as a backup fuel for the CTs. The cooling water source for the Project will be seawater from the Intracoastal Waterway (ICW) via the

existing Port Everglades Slip No. 3 that will continue to provide once-through cooling water for PEEC. The municipal water supply for the existing Plant from the City of Fort Lauderdale will continue to be used for process and potable water. By using natural gas as the primary fuel for PEEC and technology that is recognized by FDEP as the Best Available Control Technology (BACT) for minimizing air emissions, PEEC will be among the cleanest and most efficient fossil fuel-fired, electric-power generating units in Florida.

Decommissioning and dismantling of the existing generating Units 1 through 4 will be part of the Project and will be required prior to the construction of the 3-on-1 combined cycle unit. Certain components, such as the cooling-water intake and discharge infrastructure and transmission facilities, will remain in use with the Project. The Project will interconnect with FPL's transmission network through the existing adjacent system substation.

The Project is estimated to generate approximately $372 million in tax revenue from 2016 to 2046. This is comprised of approximately $114 million to the City of Hollywood, approximately $126 million to Broward County, approximately $122 million to the Broward County School District, and approximately $10 million for other taxing authorities [South Florida Water Management District (SFWMD) and Florida Inland Navigation District].

1.4 Summary of Public Outreach Program

FPL believes it is important to involve the community in the licensing process of projects as they are designed to generate and deliver clean and reliable power to customers. Representatives of FPL have been involved with the local community surrounding the Port Everglades Plant for many years. At all times and utilizing several communication channels, FPL seeks constructive and collaborative dialogue with neighbors to both provide information on a project and gain input from the local community. FPL's goal is to ensure that interests and specific information particular to communities are taken into account.

The Project was formally announced on July 18, 2011. At that time, FPL took the initial step to seek state regulatory approval with the FPSC by filing a bid waiver. FPL reached out to approximately 50 stakeholder groups including elected officials, environmental groups, government agencies, and surrounding counties and cities (see Appendix 10.1 Coordination). Local TV, radio, and print media outlets were notified about the Project to inform residents surrounding the Site. On November 21, 2011, FPL filed a need determination with the FPSC. In February 2012 FPL will mail out more than

28,000 letters to residents and business owners within a 3-mile radius of the Site informing them of the Project and identifying several communication channels that they can use to provide feedback. Several presentations have been made to local community groups, including civic and neighborhood associations, as well as detailed Project presentations at public local meetings. Over the past 6 months and throughout the Project in the future, FPL has and will continue to maintain contact with the community utilizing the following methods:

- Project website: www.FPL.com/PortEverglades
- Email: PortEverglades@FPL.com
- Toll-free telephone number: 1-800-693-3267
- FPL Facebook: www.facebook.com/fplconnect
- FPL Twitter: www.twitter.com/insideFPL
- Direct mailing to adjacent area property owners, FPL customers, and concerned citizens.

FPL is committed to responding to comments and questions in a timely manner. FPL's goal is to be the first and best source of information about the Project.

Exhibit A

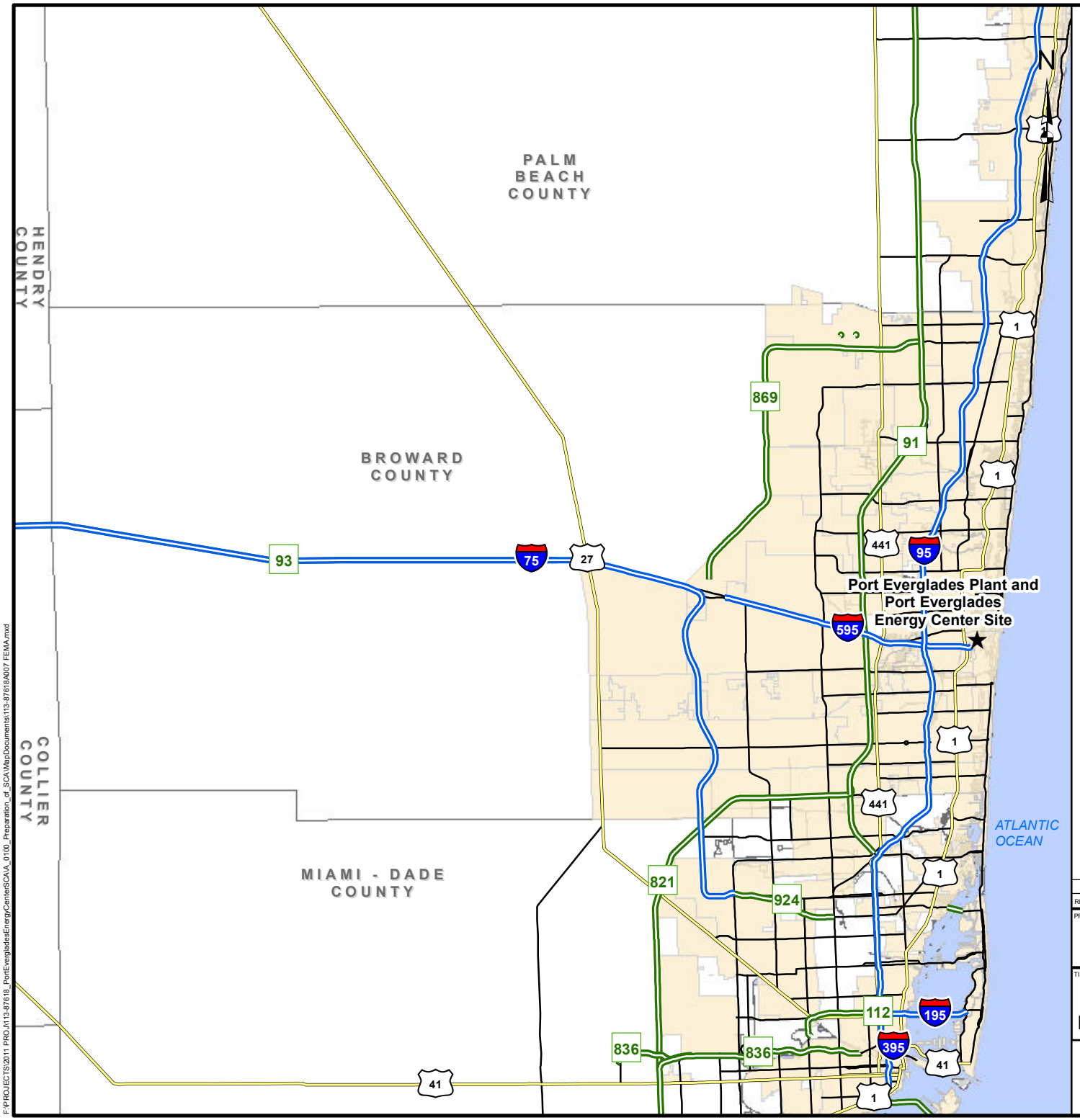
Site Legal Description on FPL Port Everglades Plant Property

A Parcel of land being a portion of Parcels I, K, 14, 15, 16, 17 and 18 of PORT EVERGLADES SUBDIVISION No. 1, Plat Book 26, Page 6 as recorded in the Public Records of Broward County, Florida and being in Section 23, Township 50 South, Range 42 East, Broward County,Florida, being described as follows:

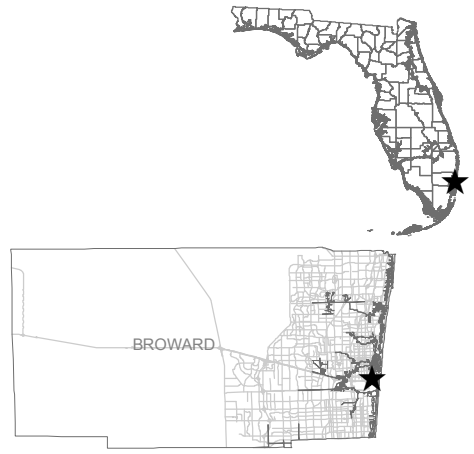
BEGINNING at the Northwest corner of Parcel 14 being on the South line of Parcel "E" (S.E. 26th Street); thence N 87°56'09" E, along said South line, 713.55 feet to a point on the East line of Parcel "K" (Eisenhower Boulevard): thence S 01°08'14" E, along said East line, 148.00 feet; thence S 88°20'39" W, 315.44 feet; thence S 02°49'02" E, 293.10 feet: thence N 87°39'22" E, 206.96 feet to the West line of Parcel "K" (Eisenhower Boulevard); thence S 01°08'26" E, along said West line, 212.22 feet to the Southwest corner of said Parcel "K"; thence S 87°54'32" W, along the North line of Parcel "J", 20.90 feet: thence S 02°02'58" E, along the West line of Parcel "J" (Eisenhower Boulevard), 1251.73 feet to the Southwest corner of Parcel "J"; thence N 88°02'16" E, along the South line of Parcel "J" and Parcel 12, a distance of 334.19 feet; thence S 01°48'28" E, 140.55 feet; thence N 87°37'41" E, 142.63 feet; thence S 02°01'16" E, 70.57 feet; thence N 88°29'10" E, 183.26 feet; thence S 02°45'20" E, 716.38 feet; thence S 88°43'31" E, 425.45 feet; thence N 88°01'47" E, 280.41 feet to a point on the East line of Section 23, Township 50 South, Range 42 East; thence S 02°30'52" E, along said East line, 149.94 feet to the North line of Parcel A of PORT EVERGLADES PLAT No. 8, Plat Book 157, Page 35 as recorded in the Public Records of Broward County, Florida; thence S 88°04'32" W along said North line, 1222.80 feet; thence N 51°09'59" W, 128.06 feet; thence N 12°22'36" W, 354.06 feet; thence N 27°04'22" W, 71.75 feet; thence N 75°54'11" W, 30.43 feet; thence N 85°41'53" W, 245.45 feet; thence S 80°33'28" W, 22.41 feet; thence N 87°19'28" W, 316.58 feet; thence N 46°50'43" W, 57.32 feet; thence N 02°04'13" W, 58.69 feet; thence S 87°56'04" W, 109.31 feet; thence N 02°04'16" W, 64.75 feet; thence S 87°55'53" W, 114.69 feet; thence N 01°50'29" W, 410.98 feet; thence S 86°52'30" W, 237.77 feet to the East line of Parcel "H" (S.E. 14th Avenue); thence N 02°04'04" W, along said East line, 364.18 feet; thence N 87°56'04" E, 278.82 feet; thence S 02°04'02" E, 159.39 feet; thence N 87°54'26" E, 285.80 feet; thence N 07°46'19" E, 127.53 feet; N 04°38'59" W, 396.50 feet; thence N 02°03'51" W, along the West line of Parcel 14, a distance of 1149.40 feet to the POINT OF BEGINNING.

Said lands situate in Broward County, Florida and containing 2,494,313 square feet, 57.262 acres, more or less.

See SCA Appendix 10.12 Leases, Easements, Title, Agency Works for the legal descriptions of easements related to the intake and discharge canals and conveyances. Together these documents provide descriptions for the Certified Site.



AREA MAP



LEGEND

★ Port Everglades Plant and Port Everglades Energy Center Site

REFERENCES

1. Port Everglades Plant and Port Everglades Energy Center Site Location, FPL 2011
2. Municipalities, Broward County Florida, 2011, Plam Beach County Florida, 2010, and Miami Dade County Florida. 2009
3. Roads, Florida Department of Transportation, 2011

7 3.5 0 Miles

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

GENERAL LOCATION OF THE FPL PORT EVERGLADES PLANT AND PORT EVERGLADES ENERGY CENTER

PROJECT No. 113-87618			FILE No. 113-87618A028	
DESIGN	RCM	12/21/2011	SCALE: AS SHOWN	REV. 0
GIS	NRL	1/13/2012		
CHECK	RCM	1/13/2012	FIGURE 1.1.0-1	
REVIEW	KFK	1/13/2012		

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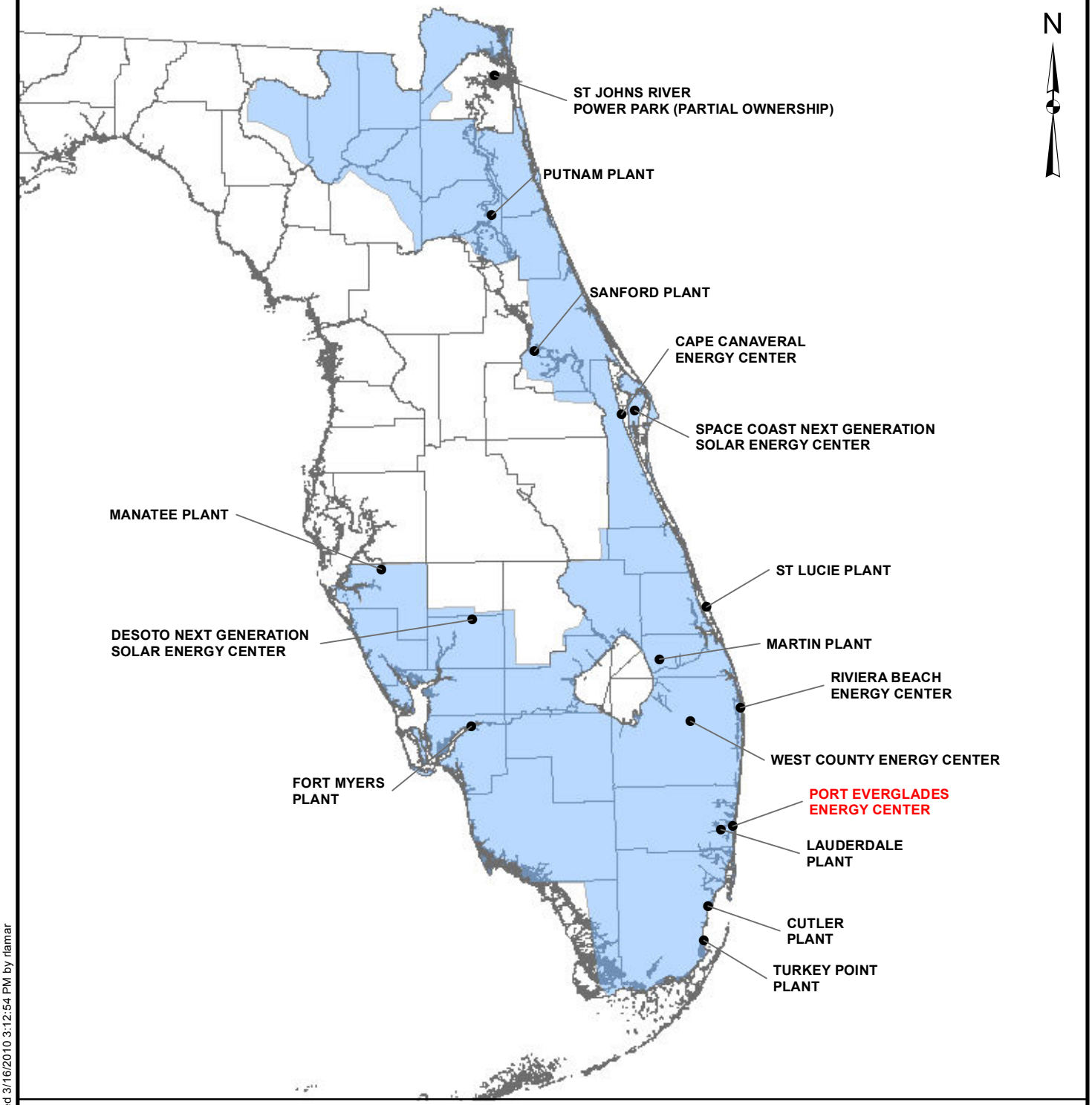


LEGEND

- FPL Power Plants
- Approximate FPL Service Territory

290,000 0 290,000
Feet

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

SERVICE TERRITORY AND POWER PLANTS

REFERENCES

1. FPL Power Plants, 2011, FPL
2. Approximate FPL Service Territory, FPL, 2007

PROJECT No.		113-87618	FILE No.		113-87618A005
DESIGN	NRL	11/3/2011	SCALE: AS SHOWN	REV.	0
GIS	NRL	11/3/2011			
CHECK	RCM	1/12/2012			
REVIEW	KFK	1/12/2012			

FIGURE 1.2.0-1

Map Document: TB-PS-A.mxt / Modified 3/15/2010 5:11:02 PM / Plotted 3/16/2010 3:12:54 PM by rlamar

2.0 NEED FOR THE PROPOSED FACILITY

The FPSC is the sole forum for the determination of need for a proposed facility subject to the PPSA (Section 403.519, F.S.). On July 18, 2011, FPL petitioned the FPSC and received an exemption from the requirement of Rule 25-22.082(18), F.A.C. that a request for proposals (RFP) be conducted for the modernization of the existing Port Everglades Units 1 through 4. In its order granting the exemption, the FPSC reached the following conclusions:

- FPL has demonstrated that PEEC will likely increase the reliable supply of electricity to the utility's ratepayers by providing base load generation to the area of most concentrated use on FPL's system;
- FPL has demonstrated that PEEC will otherwise serve the public welfare by providing benefits beyond the provision of electric service; and
- It is unlikely that a respondent to an RFP could provide similar benefits.

(FPSC Order No. PSC-11-0360-PAA-EI, dated August 26, 2011, at page 3, attached.)

On November 21, 2011, FPL filed a Petition to Determine Need for Modernization of the Port Everglades Plant with the FPSC (see FPSC Docket No. 110309 for the PEEC filing at http://www.psc.state.fl.us/dockets/cms/docketdetails2.aspx?docket=110309). The FPSC is expected to rule on this petition early 2012.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition for exemption under Rule 25-22.082(18), F.A.C., from issuing request for proposals (RFPs) for modernization of the Port Everglades Plant, by Florida Power & Light Company.	DOCKET NO. 110228-EI ORDER NO. PSC-11-0360-PAA-EI ISSUED: August 26, 2011

The following Commissioners participated in the disposition of this matter:

ART GRAHAM, Chairman
LISA POLAK EDGAR
RONALD A. BRISÉ
EDUARDO E. BALBIS
JULIE I. BROWN

NOTICE OF PROPOSED AGENCY ACTION
ORDER GRANTING PETITION FOR EXEMPTION

BY THE COMMISSION:

NOTICE is hereby given by the Florida Public Service Commission ("Commission") that the action discussed herein is preliminary in nature and will become final unless a person whose interests are substantially affected files a petition for a formal proceeding, pursuant to Rule 25-22.029, Florida Administrative Code ("F.A.C.").

Background

The scope and intent of Rule 25-22.082, F.A.C., also commonly referred to as the "Bid Rule" is,

> to provide the Commission information to evaluate a public utility's decision regarding the addition of generating capacity pursuant to Section 403.519, Florida Statutes. The use of a Request for Proposals . . . process is an appropriate means to ensure that a public utility's selection of a proposed generation addition is the most cost effective alternative available. [1]

As defined in Rule 25-22.082(2)(c), F.A.C., a Request for Proposal ("RFP") is "a document in which a public utility publishes the price and non-price attributes of its next planned generating unit in order to solicit and screen, for potential subsequent contract negotiations,

[1] *Id.* (Section 403.519, Florida Statutes, governs this Commission's determinations of need for electrical power plants subject to the Florida Electrical Power Plant Siting Act.).

competitive proposals for supply-side alternatives to the public utility's next planned generating unit."

At subsection (18), the Bid Rule provides for an exemption from the RFP process based on certain findings by this Commission. Pursuant to this subsection, on July 18, 2011, Florida Power & Light Company ("FPL" or "Company") filed its Petition to Request Exemption under Rule 25-22.082(18), F.A.C., from Issuing Requests for Proposal for the Modernization of the Port Everglades Plant ("Petition").

We have jurisdiction in this matter pursuant to Rule 25-22.082, F.A.C., Chapter 366, Florida Statutes, and Section 403.519, Florida Statutes.

Decision

Pursuant to Rule 25-22.082(18), F.A.C., in order for FPL to be granted the requested exemption from the Bid Rule, the Company must show and we must find, *one* of the following with respect to FPL's proposal for the modernization of the Port Everglades plant ("Project"):

A. it "will likely result in a lower cost supply of electricity to the utility's general body of ratepayers;"
B. it will "increase the reliable supply of electricity to the utility's general body of ratepayers;" *or*
C. it "otherwise will serve the public welfare." *Id.*

The Project will remove four 1960s-era oil and natural gas-fueled steam electric generating units that are located in eastern Broward County and total 1,200 MW of generating capacity, and replace them with a highly efficient, state-of-the-art combined-cycle power plant with up to 1,280 MW of generation. The Project will be centrally located to serve the most concentrated area of FPL's customer base. We have previously granted exemptions from the Bid Rule for the modernization of FPL's power plants at Cape Canaveral and Riviera Beach; these ongoing projects are very similar to the Project.

FPL asserts that the Project meets *all three* criteria outlined in Rule 25-22.082(18), F.A.C. In support of this assertion, FPL contends that the Project will: provide reliable base load capacity to a region on the FPL system where demand is the highest; improve the fuel efficiency of generation at the Port Everglades plant by approximately 35%; improve the environmental profile of this facility; reduce system emissions; reduce the need for new transmission investment; and, provide needed jobs for Florida's economy. FPL also argues that an RFP will add unnecessary time to the project development process and will not identify any alternative that will offer the economic and strategic benefits associated with the Project. FPL states that it will competitively bid the construction and procurement of major equipment for the new facility so that its customers will be ensured of lowest cost construction.

FPL asserts that the Project will result in more than $400 million Cumulative Present Value Revenue Requirements (CPVRR) savings compared to bringing back units from inactive reserve status. According to FPL, the savings will be derived from greater fuel efficiency of the

new unit, reduced emission costs, reduced operating and maintenance expenses, and enhanced unit availability.

The Port Everglades plant site is strategically located to serve FPL's customers in the most concentrated area of FPL's system. Locating generation sources as close to the load as possible reduces the reliance upon the transmission system and also reduces overall costs of service. Port Everglades has multiple advantages including (1) adequate land size and zoning, (2) access to fuel transportation infrastructure (gas pipeline), (3) transmission facilities, and (4) water supply and transportation. It is unlikely that a responder to an RFP could match these desirable attributes and resources. Since the existing Port Everglades units are older and less efficient, they are not used very often and the system relies on imported power via the transmission system. The Project will add base load generation close to the load and thereby, reduce the need for new transmission investment. Thus, the modernization of the Port Everglades site is expected to result in significant customer savings when compared to other viable greenfield sites upon which FPL, or a third party, might propose to construct a power plant.

FPL estimates that the proposed Project will create an estimated 650 direct jobs at its peak; provide more than $20 million in new tax revenue to local governments and school districts, and result in significant environmental benefits compared to the existing plant. In addition, use of the existing site, facilities, and committed resources such as water, should not result in additional land use impacts, such as impact on wetlands associated with locating new gas pipelines or transmission facilities. Thus, the Project will provide benefits beyond the provision of electric service.

Upon review, we find that by its Petition, the Company has demonstrated that:

- the Project will likely result in a lower cost supply of electricity to the utility's ratepayers by improving the fuel efficiency of FPL's generating resources;
- the Project will likely increase the reliable supply of electricity to the utility's ratepayers by providing base load generation to the area of most concentrated use on FPL's system; and,
- the Project will otherwise serve the public welfare by providing benefits beyond the provision of electric service.

We further find that it is unlikely that a respondent to an RFP could provide similar benefits.

Based on the foregoing, we shall grant FPL's petition for exemption from the RFP requirement of Rule 25-22.082, F.A.C., for the modernization of its Port Everglades plant. However, our granting the exemption to the Bid Rule does not relieve the Company of any requirements during a future need determination process, including a demonstration that the project is the most cost-effective source of power or whether conservation or renewable generation can mitigate the need for the modernization of the Port Everglades facility.

Based on the foregoing, it is

ORDERED by the Florida Public Service Commission that the July 18, 2011, Florida Power & Light Company Petition to Request Exemption under Rule 25-22.082(18), F.A.C., from Issuing Requests for Proposal for the Modernization of the Port Everglades Plant is hereby granted. It is further,

ORDERED that the provisions of this Order, issued as proposed agency action, shall become final and effective upon the issuance of a Consummating Order unless an appropriate petition, in the form provided by Rule 28-106.201, Florida Administrative Code, is received by the Commission Clerk, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850, by the close of business on the date set forth in the "Notice of Further Proceedings" attached hereto. It is further

ORDERED that in the event this Order becomes final, this docket shall be closed.

By ORDER of the Florida Public Service Commission this 26th day of August, 2011.

/s/ Ann Cole
ANN COLE
Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399
(850) 413-6770
www.floridapsc.com

CWM

NOTICE OF FURTHER PROCEEDINGS OR JUDICIAL REVIEW

The Florida Public Service Commission is required by Section 120.569(1), Florida Statutes, to notify parties of any administrative hearing that is available under Section 120.57, Florida Statutes, as well as the procedures and time limits that apply. This notice should not be construed to mean all requests for an administrative hearing will be granted or result in the relief sought.

Mediation may be available on a case-by-case basis. If mediation is conducted, it does not affect a substantially interested person's right to a hearing.

The action proposed herein is preliminary in nature. Any person whose substantial interests are affected by the action proposed by this order may file a petition for a formal proceeding, in the form provided by Rule 28-106.201, Florida Administrative Code. This petition must be received by the Office of Commission Clerk, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850, by the close of business on September 16, 2011.

In the absence of such a petition, this order shall become final and effective upon the issuance of a Consummating Order.

Any objection or protest filed in this/these docket(s) before the issuance date of this order is considered abandoned unless it satisfies the foregoing conditions and is renewed within the specified protest period.

3.0 SITE AND VICINITY CHARACTERIZATION

The existing FPL Port Everglades Plant is located within the City of Hollywood, in Broward County, Florida. The existing Site is situated within approximately 92.5 acres of land owned by FPL. The FPL owned property is also in the mid-port section within the jurisdictional area of Port Everglades (Port). The Site is surrounded by Port facilities and industrial activities, such as intermodal shipping, oil storage, cruise ship docking, and light commercial. The Site has convenient access to State Road (S.R.) 84 and Interstate (I)-595 and is locally accessible by Eller Drive to the south. Roadways that surround the Site include SE 14th Avenue to the east, Eisenhower Drive to the west, and SE 26th Street to the north. The Port entrance channel and the ICW are approximately 0.5 mile to the east of the FPL property. Figures 3.0.0-1 and 3.0.0-2 show the general vicinity around the FPL property. The Project will be located within the existing Port Everglades Plant boundaries except for the associated linear facilities outside the existing Port Everglades Plant boundary.

3.1 Site and Associated Facilities Delineation

The Project for which FPL seeks certification includes dismantlement of the existing Units 1 through 4 and construction of the combined cycle unit, the construction parking and laydown areas and certain transmission related activities. FPL is seeking a Site Certification that will include decommissioning and dismantling the existing four steam boilers and appurtenance equipment and constructing a 3-on-1 combined cycle natural gas-fired unit.

3.1.1 Existing Uses

The existing Port Everglades Plant has been operating at the current location since the 1960s. The commercial in service dates for these units are as follows:

- Unit 1 – June 1960,
- Unit 2 – April 1961,
- Unit 3 – July 1964, and
- Unit 4 – April 1965.

The existing 12 simple cycle natural gas turbine units, employee parking areas, switchyard, and transmission system are not proposed as part of the Site Certification. Figures 3.1.1-1, 3.1.1-2 and 3.1.1-3 show the existing Port Everglades Plant Property, PEEC Site, and parking and laydown areas during Project construction, respectively. The Site to be certified consists of approximately 67.1 acres while the existing Port Everglades Property consists of approximately 92.5 acres.

3.1.2 Adjacent Properties and Nearby Areas

Within one mile of the Site are the municipal jurisdictions of the City of Hollywood, the City of Fort Lauderdale, the City of Dania Beach, and the Fort Lauderdale-Hollywood International Airport (a County Regional Facility). The existing land uses within this distance are consistent with Port related activities that are predominantly industrial activities, such as oil storage, cruise ships, and light commercial. The closest residences are in the Harbor Inlet community, within the City of Fort Lauderdale in Broward County and approximately 0.8 mile to the northeast of the Site.

3.1.3 One Hundred Year Flood Zone

The Federal Emergency Management Agency (FEMA) Flood Zones map for the Site (FEMA, 1996) is shown as an overlay to the aerial image of the Site in Figure 3.1.3-1. As recorded on the Flood Insurance Rate Map, most of the Site is situated within Zone X, with the intake and discharge canals situated within Zone AE. Zone X is an area that is determined to be outside of the 100 year and 500 year flood zones. Zone AE is an area that is determined to be inundated by the 100 year flooding.

The hurricane evacuation routes and storm surge map for the Site is shown in Figure 3.1.3-2.

3.2 Social and Political Environment

3.2.1 Governmental Jurisdictions

The Site is located within the City of Hollywood, Broward County, Florida. The Site is also within the jurisdictional area of Port Everglades. Within 5 miles of the Site are a total of eight municipalities:

- City of Dania Beach,
- Town of Davie,
- City of Fort Lauderdale,
- City of Hollywood,
- City of Lauderhill,
- Village of Lazy Lake,
- City of Plantation, and
- City of Wilton Manors.

Also within 5 miles of the Site is property associated with Broward County and Broward County Regional Facilities.

The City of Hollywood, City of Dania Beach, City of Fort Lauderdale, and Broward County Regional Facility are all within 1 mile of the Site.

Figure 3.2.1-1 depicts an area map showing governmental jurisdictions within a 1 mile radius of the Site. Figure 3.2.1-2 depicts an area map with 1-, 2-, 3-, 4-, and 5-mile radii around the Site for municipalities, federal and state jurisdictions, county jurisdictions, and city parks.

There are 2 state parks (Hugh Taylor Birch State Park and John U. Lloyd Beach State Park) and 10 Broward County parks (Roosevelt Gardens Park, Franklin Park, Reverend Samuel Delevoe Park, Sunview Park, Secret Woods Nature Center, Boaters Park, Topeekeegee Yugnee Park, West Lake Park, Anne Kolb Nature Center, and Hollywood North Beach Park) located within 5 miles of the Site. There are also 2 areas identified as containing Critical Habitat [e.g., areas identified as Staghorn coral *Acropora cervicornis*) and Elkhorn coral (*Acropora palmata*)], and 4 locations designated as Outstanding Florida Waters (OFW): Hugh Taylor Birch State Park, John U. Lloyd Beach State Park, Hollywood North Beach Park, and West Lake Park, all located within 5 miles of the site. Table 3.2.1-1 presents a list of governmental jurisdictions within 5 miles of the Site.

None of the following governmental jurisdictions are located within 5 miles of the Site:

- National Parks, National Forests, National Seashores, National Wildlife Refuges, National Wilderness Areas, National Memorials or Monuments, National Historic Landmarks, National Wild & Scenic Rivers,
- Marine Sanctuaries, Estuarine Sanctuaries,
- Roadless Area Review and Evaluation (RARE) Areas,
- State Forests, State Wildlife Management Areas, State Areas of Critical State Concern, State Conservation and Recreation Lands, Save our Rivers Lands, State Archaeological Landmarks or landmark zones,
- Aquatic Preserves, Florida Springs, Florida Wild & Scenic Rivers, Indian Reservations, or Military Reservations.

3.2.2 Zoning and Land Use Plans

Both Broward County and the City of Hollywood adopted comprehensive plans (Plans) that meet the requirements of the Local Government Comprehensive Planning and Land Development Regulations Act of 1985, Chapter 163, Part II, F.S. (Act). The future land use element of each plan, which includes a future land use map, assigns specific land uses to defined land use classifications. The Broward County Planning Council determined that the County Plan is the effective plan for the Site. The Project is consistent with and conforms to the County Plan.

On June 2, 2011, the Act was redesignated as the Community Planning Act. Although some provisions of the Act have been repealed and amended, comprehensive plans which were adopted prior to June 2, 2011 are still valid. The State Community Planning Act does not create regulatory authority that is not otherwise authorized by State law.

3.2.2.1 Broward County Comprehensive Plan

Pursuant to the authority granted to it by the Broward County Charter, the Plan which the Board of County Commissioners adopted is applicable to both the unincorporated area of the County and the land within the incorporated municipalities of the County.

According to the County Land Use Plan Map, the 67-acre area of the Site upon which the new electrical generating unit will be constructed and operated is within the Electrical Generating Facility future land use classification and the remainder of the Site is within the Utilities future land use classification. The existing and proposed use of the Site for an electrical generating facility is and will remain consistent with the uses which are permitted by the County Plan. A letter from the Broward County Planning Council confirming consistency with the County Plan is included in SCA Appendix 10.5 Land Use Plan Descriptions.

3.2.2.2 City of Hollywood Comprehensive Plan

The County Plan has been determined to be the effective plan for the Site. Figure 3.2.2-1 indicates how and where the Project will interact with the land use categories of the County Plan.

3.2.2.3 Zoning

The Site is zoned Port Everglades Development District (PEDD) (Figure 3.2.2-2). PEDD zoning designation is intended to provide land use patterns that are appropriate and consistent with port activities irrespective of whether the land is regulated by the cities of Hollywood, Fort Lauderdale or Dania Beach. Utilities, including electric and gas facilities and services, are a permitted use within the PEDD. The existing and proposed use of the Site is consistent and will remain consistent with the uses permitted by the PEDD.

3.2.3 Demography and Ongoing Land Use

3.2.3.1 Demography

Within 5 miles of the Site there are a total of eight municipalities:

- City of Dania Beach,

- Town of Davie,
- City of Fort Lauderdale,
- City of Hollywood,
- City of Lauderhill,
- Village of Lazy Lake,
- City of Plantation, and
- City of Wilton Manors.

Within 5 miles of the Site there is also property associated with Broward County and Broward County Regional Facilities. The area is a mix of industrial, commercial and residential development.

From 2000 to 2010, the population for the City of Hollywood increased by 1.0 percent (U.S. Census Bureau, 2010), while the population within Broward County and Florida increased by 7.7 and 17.6 percent, respectively. Using the available U.S. Census information, the table below depicts the population changes between 2000 and 2010 for the County and municipal areas located within the 5 mile study area. In addition, 2009 population estimates from the Florida Statistical Abstracts for municipalities not available from the 2010 U.S. Census are also shown in the table (BEA, 2010).

Jurisdiction	U.S. Census 2000	U.S. Census 2010	Percent Change from 2000
City of Hollywood	139,357	140,768	1.0
City of Dania Beach	20,061	29,639	47.74
Town of Davie	75,720	91,992	21.49
City of Fort Lauderdale	152,397	165,521	8.61
City of Lauderhill	57,585	66,887	16.15
Village of Lazy Lake	38	24	-36.84
City of Plantation	82,934	84,955	2.44
City of Wilton Manors	12,697	11,632	-8.39
Broward County	1,623,018	1,748,066	7.7
Florida	15,982,378	18,801,310	17.6

According to the Florida Statistical Abstract (UF/BEBR, 2011), the median population projections for all of Broward County for 2035 indicates continued growth, with an estimated population of approximately 1,949,700, a 9 percent increase from 2010.

3.2.3.2 Ongoing Land Use

Existing land use patterns in the vicinity of the Site are depicted in Figure 3.2.3-1. Land uses that surround the Site consists of transportation services that include Port facilities and industrial activities, such as intermodal shipping, oil storage, cruise ship docking, and light commercial. Within the 5 mile radius are areas that consist of low density residential, regional activity centers, industrial, and commercial uses. The closest residences to the Site are located within the Harbor Inlet community, located in the City of Fort Lauderdale approximately 0.8 mile to the northeast of the Site.

Based on the population data and the existing land use data, there are no abnormal changes in the population or land use patterns in the vicinity of the Site. State, county, and local recreational areas are situated throughout the county in areas designated and used for parks and recreation. These areas are not in the immediate vicinity of the Site and would potentially not be affected by the construction or operation activities associated with the Project.

3.2.4 Leases, Easements, Title, Agency Works

3.2.4.1 Existing Easement and Authorizations

FPL utilizes a number of existing easements, licenses and other authorizations for facilities required for operations at the Port Everglades Plant. Some of these existing easements, licenses and authorizations will continue to be necessary with the operation of PEEC and some will require changes to support the Project. These authorizations include:

1) Perpetual easements for cooling water intake and discharge structures granted by Broward County,
2) A License Agreement with Broward County granting fuel oil piping easements from multiple Port berths,
3) A perpetual cooling water discharge canal easement to the ICW, issued by Broward County, and
4) A water discharge canal easement extending from FPL property due east along SE 32nd Street to the ICW, issued by Broward County.

Each of these existing easements and authorizations is summarized below.

(1) Intake and discharge structure water piping easements

In 1957, the Broward County Port Authority (Port), now the Port Everglades Department within Broward County, granted FPL easements for locating sub-grade water intake and discharge structures. The easement was amended in 1960, 1965 and again in 2011. These easements allow cooling water to be withdrawn from the ICW through the western end of Port Slip No. 3 and to be discharged to the discharge canal leading to the ICW. The intake easement to Slip No. 3 is 125 ft wide and continues from the northeast corner of the FPL owned property under the Port property to the western end of Port Slip No. 3. This easement contains four, 12 ft diameter culvert pipes. PEEC will require continued use of this perpetual easement.

The 1957 easement conveyance from Broward County also granted an easement for FPL to build an intake in an alternate location to the existing intake canal. The currently unused easement starts at the northeastern corner of the eastern fuel oil storage tanks area and runs northeast across Eisenhower Boulevard to the ICW, ending at the southeastern corner of the cruise ship terminal. PEEC may require the use of this easement as an alternative route for the aquatic organism return system as described further below. Attachment 10.12-1 in SCA Appendix 10.12 Current Leases and Easements contains drawings that identify this intake canal water piping and discharge structure easement.

(2) Fuel oil piping easements from multiple Port berths

The Port Everglades Plant has several fuel oil piping systems connecting the existing Plant to multiple Port berths. In 2008 Broward County and FPL entered into a "License Agreement" by which Broward County authorized the continued use of existing pipelines and multiple easements for these pipelines, as specifically described in the License Agreement and Exhibits thereto. The easements cover the piping systems for waterborne delivery of No. 6 and No. 2 fuel oil. Attachment 10.12-2 of SCA Appendix 10.12 Current Leases and Easements contains an easement survey for the fuel oil piping systems.

The No. 6 heavy fuel oil systems deliver fuel to the existing Port Everglades Plant Units 1 through 4 heavy oil storage tanks for the Plant's exclusive use. The No. 2 light fuel oil systems are dedicated to deliver Jet-A fuel to the existing light oil storage tanks owned by FPL but are leased to and operated by a third party. From those light oil storage tanks, Jet-A fuel is delivered to FPL's Gas Turbine Power Park - Port Everglades and to other offsite users such as FPL's Gas Turbine Power Park - Lauderdale and Fort Lauderdale-Hollywood International Airport. This No. 2 light fuel oil piping is not part of the PEEC Project. The easements and berths commence from the northeast corner of the

FPL property to multiple berths around Port Slips No. 3 and No. 1. The License Agreement is for a ten year term, after which the agreement provides that the facilities must be removed, deactivated or abandoned.

(3) Discharge canal water channel to the ICW

The 1957 easement conveyance from Broward County, as amended, granted an easement for a water discharge canal to the ICW. The existing discharge water canal easement is 125 feet wide and follows the channel centerline from the southeast corner of the FPL property to the ICW. The PEEC Project will require continued use of this existing perpetual easement. Attachment 10.12-1 in Appendix 10.12 Current Leases and Easements contains drawings that identify the easement for the discharge canal water channel to the ICW.

4) Water discharge canal easement

The 1945 easement conveyance from Broward County granted an easement for FPL that runs due east from the eastern edge of Eisenhower Boulevard (which is adjacent to the PEEC Site) north of and parallel to SE 32nd Street. The currently unused water discharge canal easement ends at the same location as the intake canal easement, namely the southeastern corner of the sea walls between Terminals 18 and 19.

All the easements summarized above are shown on Figure 3.2.4-1 with more detailed information contained in Attachment 10.12-1 in Appendix 10.12 Current Leases and Easements.

3.2.4.2 PEEC Associated Linear Facilities

FPL recognizes that locations of any easements or other authorizations for PEEC must account for future planned projects at the Port. As a result, FPL has taken a corridor approach in identifying associated linear facilities that maximizes the flexibility for coordinating the required PEEC associated linear facility easements with Broward County. This will allow the location of these associated linear facilities to avoid or minimize impacts to the Port's operations and future capital projects to the greatest extent possible.

ULSD Oil Pipeline Routes

The No. 6 piping and delivery systems within the easements will no longer be required for operation of PEEC. These No. 6 heavy fuel oil easements require some changes as described below. In this

SCA, FPL seeks to obtain the approval of these changes to the easements required for operation of PEEC. FPL also seeks to make the easements for the use of the property for the necessary associated linear facilities permanent. Coordination of changes to easements with the Broward County Port Everglades Department will occur in order to provide a planned modified system that will be consistent with the potential Port Slip No. 3 widening and future master vision plan projects.

Delivery of No. 6 heavy fuel oil to the Port Everglades Plant Units 1 through 4 will no longer continue with PEEC. Heavy fuel oil piping from Berths 10, 11, 12, 13, 14, and 15 that leads to the heavy oil storage tanks for the existing Port Everglades Plant will be taken out of service. The heavy fuel oil storage tanks will also be removed from service. FPL may release or abandon all or part of the easements used for No. 6 heavy fuel oil piping going to Berths 10, 11, 12, 14, and 15. FPL may seek changes of the No. 6 heavy fuel oil piping easement to Berth 13 to allow for the installation of new ULSD oil piping, providing FPL an offloading berth and connection to the Port's fuel oil delivery header system. Due to the age of the existing pipes, prior use for exclusive delivery of heavy oil, and to minimize environmental risk over the expected life of PEEC, it may be necessary for FPL to remove the existing No. 6 heavy fuel oil piping.

PEEC will use ULSD oil as the backup fuel supply. FPL requires the ability to receive waterborne deliveries of ULSD oil to ensure an adequate supply to PEEC under all circumstances and maximize the plant's ability to receive cost-effective fuel deliveries. Changes to the piping and easements are expected as required to result in multiple berth delivery capabilities for ULSD oil via the Port's fuel oil delivery header system. Per guidance from Port staff, PEEC anticipates connecting ULSD oil piping to the Port's fuel header near Berth 13 at Port Slip No. 3. The ULSD oil will be stored in a new storage tank on FPL property. Figure 3.2.4-2 shows FPL easements that are to be released, abandoned, or modified as part of the PEEC Project.

Aquatic Organism Return System Routes

FPL is required to install an aquatic organism return system as a provision of the Port Everglades Plant Industrial Wastewater Facility Permit No. FL0001538 issued by the FDEP. Aquatic organisms removed from the screens protecting PEEC's once-through cooling water infrastructure must be returned to the ICW. The aquatic organism return system will be located below grade on Port property and will require periodic at-grade access points to perform maintenance. The preferred northern route for the aquatic organism return system terminates at Port Slip No. 1.

Two alternatives to routing the aquatic organism return system to the proposed PEEC associated linear facilities corridor are possible using existing FPL easements. The alternative routes would place the aquatic organism return system piping within either the existing water discharge canal easement near SE 32nd Street or within unused intake canal easements described previously.

While the shorter overall distance of these alternate routes to return aquatic organisms to the ICW is beneficial, the endpoint of the system is less desirable as it would be in the southeastern corner of the seawalls in proximity of the Port's cruise ship terminal. Operations related to the docking of the largest cruise ships in the world, and the increased distance from currents originating in the inlet connecting the ICW to the Atlantic Ocean, are a few of the challenges to utilizing this location as the aquatic organism return system endpoint. In addition, the water discharge canal easement near SE 32nd Street is located within an area used for cruise ship passenger vehicle parking and stops on the eastern side of Eisenhower Boulevard just short of FPL property.

A short segment (approximately 114 ft) of new easement would be required to connect the existing water discharge canal easement near SE 32nd Street from its current endpoint at the eastern edge of Eisenhower Boulevard crossing westward to the PEEC Site. For these reasons, both alternative routes have not been evaluated in further detail at this time.

FPL seeks approval through this SCA of a Corridor within which a right-of-way for the PEEC associated linear facilities comprised of the aquatic organism return system piping and the ULSD oil system piping will be located and established in coordination with Broward County. The typical minimum width of the right-of-way necessary for the ULSD oil system and aquatic organism return system piping is 10 feet. The proposed corridor for these associated linear facilities and future easements are depicted on Figure 3.2.4-3.

3.2.5 Regional, Scenic, Cultural, and Natural Landmarks

There are two state parks, two areas identified as containing Critical Habitat, four locations designated as OFW, and ten Broward County Regional and Neighborhood Parks located within 5 miles of the Site.

The state parks i.e., Hugh Taylor Birch State Park and John U. Lloyd Beach State Park and the county parks, i.e., Roosevelt Gardens Parks, Franklin Park, Reverend Samuel Delevoe Park, Sunview Park, Secret Woods Nature Center, Boaters Park, Topeekeegee Yugnee Park, West Lake Park Anne Kolb

Nature Center, and Hollywood North Beach Park, offer outdoor recreational opportunities to residents and visitors and are identified in Figure 3.2.1-2, Government Jurisdictions (Municipalities) within 1-, 2-, 3-, 4-, and 5-Mile radii. Hugh Taylor Birch State Park, John U. Lloyd Beach State Park, West Lake Park and Hollywood North Beach Park are OFWs.

Located along the eastern shores of Florida, the Staghorn coral and Elkhorn coral were determined by the National Marine Fisheries Service (NMFS) as threatened in March 2005. The Acropora genus is the most abundant and species rich group of coral in the world.

3.2.6 Archaeological and Historical Sites

A desktop cultural resource survey was conducted in accordance with Chapter 267, F.S. (Florida Historical Resources Act), Chapter 1A-46 (Archaeological and Historical reporting Standards and Guidelines) to assist in identifying any previously recorded cultural resources and areas with the potential for containing unrecorded cultural resources within the Site. A copy of the desktop cultural survey report is provided in SCA Appendix 10.7.2 Cultural Resources. A brief description of the survey findings are provided in this section and a discussion of potential impacts from the Project are discussed in Section 5.9.

The survey consisted of researching and reviewing: the Florida Master Site File (FMSF); U.S. Geological Survey (USGS) quadrangle maps; previous cultural resource studies; property appraiser data; historic plat maps and aerials; and FPL records. A reconnaissance visit was also conducted. The FMSF serves as an archive and repository of information about Florida's recorded cultural resources that are listed, eligible, or potentially eligible for the National Historic Preservation Act (NHPA) and resources with potential or confirmed human remains. A review of the USGS quadrangle maps, historic plat maps, and historic aerials assist to establish the pre-development environment and land use history of a project area, as well as identify any potential historic resources within the area of the Site. The work of previous investigations is reviewed to gather information about the types of historic and cultural features that could be expected to occur within a project area.

The study determined that there were no previously recorded archaeological or historical sites within FPL's Port Everglades Plant property. The Port Everglades historic resource group that consists of most of the Port Everglades turning basin is located approximately 0.5 mile northeast of the Site. This area is potentially eligible for listing in the National Register of Historic Places (NRHP) but many of the historic elements or features have been altered or demolished.

Examination of aerial and maps indicate that the area of the Port Everglades Plant property was historically a low lying area that is considered to have a low probability for archaeological sites and features.

3.2.7 Social and Economic Characteristics and Public Services

3.2.7.1 Social and Economic Characteristics

The Project will be located entirely within the City of Hollywood in Broward County, Florida. The City of Dania Beach, City of Fort Lauderdale, and Broward County Regional Facility are all within 1 mile of the Site.

Labor Force

Broward County's labor force was reported at 985,607 as of December 2010, with approximately 885,009 residents listed as employed (Labor Statistics Workforce, 2011). According to Florida labor statistics, Broward County had an unemployment rate of 10.2 percent for December 2010, which is a 3.7 percent increase since the end of November 2008. For Florida and the U.S., unemployment was 12.0 and 9.4 percent, respectively, for December 2010. In November 2008, the unemployment rates were reported as 7.2 and 6.8 percent, respectively.

The average monthly private sector employment by major industry groups in Broward County for 2009, as reported by the Florida Statistical Abstract, is depicted in the following table. Construction and utilities provide approximately 5.33 and 0.21 percent of the county's employment, respectively, while the majority of the county employment is supplied by retail trade (16.14 percent) and health care and social assistance (12.76 percent).

Major Industry Group	Employment	Major Industry Group	Employment
All Industries	578,281	Agriculture, Forestry, Fishing, and Hunting	630
Mining	96	Utilities	1,231
Construction	30,798	Manufacturing	23,901
Wholesale Trade	38,248	Retail Trade	93,308
Transportation and Warehousing	19,408	Information Services	16,046
Finance and Insurance	34,207	Real Estate and Rental and Leasing	18,040
Professional and Technical Services	49,398	Management of Companies and Enterprises	5,029
Administrative and Waste Services	53,535	Educational Services	19,445
Health Care and Social Assistance	73,789	Arts, Entertainment, and Recreation	10,403
Accommodation and Food Services	65,218	Other Services	25,545

Source: UF/BEBR, 2011.

The Broward County employment annual projections for the construction and utilities industries are estimated to be 4.92 and 1.31 percent, respectively, between 2010 and 2018 (Florida Agency for Workforce Innovation, 2011).

3.2.7.2 General Income

Based on 2010 data, the City of Hollywood had an estimated per capita personal income of $23,729, which is an increase of $1,632 since 2000 (U.S. Census, 2011).

Based on 2010 data, Broward County had an estimated per capita personal income of $26,373 compared to Florida and United States per capita personal income of $24,272 and $26,059, respectively (U.S. Census, 2011).

The median household income in the City of Hollywood was $41,188 in 2010 (U.S. Census, 2011). When compared to the 2000 median household income, this was an 11 percent increase. In 2010, Broward County had a median household income of $48,063, while Florida had a median household income of $44,409, which was an increase of 13 percent and 12.6 percent from 2000, respectively.

Construction makes up approximately 6.0 percent of the total non-farm earnings in the county (2010 U.S. Census, 2011). The average wage per construction job in Broward County in 2009 was $44,802 (BEA, 2011).

3.2.7.3 Housing

Based on 2010 data, the total number of housing units in Broward County was 810,388, with 15.3 percent of those units vacant. For the City of Hollywood, the total number of housing units was 71,070, with 17.8 percent of those units vacant in 2010 (U.S. Census, 2011).

The total occupied housing units in Broward County for 2010 was 686,047 (City of Hollywood; 58,438), with 66.6 percent of those units occupied by the owners (City of Hollywood; 59.6 percent) and 33.4 percent occupied by renters (City of Hollywood; 40.4 percent). The average cost to purchase a home in Broward County in 2010 was estimated at $128,600 (City of Hollywood; $109,000) (U.S. Census, 2011).

In addition, Broward County has a total of 3,292 commercial lodgings, representing 137,799 lodging units. The total number of apartment buildings, rooming houses, rental condominiums, and transient apartment building units in the County was approximately 106,551 in 2010 (UF/BEBR, 2011).

3.2.8 Area Public Service and Utilities

3.2.8.1 Education

Public education in Florida is operated on a countywide basis. Each county's respective school district establishes educational policies and staffing requirements. The Broward County Public School District includes:

- 140 elementary schools,
- 1 K-8 school,
- 41 middle schools,
- 31 high schools,
- 16 adult/technical/centers,
- 1 virtual school, and
- 68 charter schools.

Broward County had a total enrollment of 256,872 for the 2010-2011 school year. This enrollment represents a 1,669-student increase since the 2009-2010 school year. Broward County schools

employed approximately 36,388 personnel (15,870 instructional staff; 10,894 clerical; 1,465 administrators; and 8,159 substitute/temporary teachers) for the 2009-2010 school year (Broward County District, 2011). By year 2016, the County anticipates an increase in the school enrollment to approximately 259,365 (approximately 1 percent increase).

Within 5 miles of the Site, there are approximately 48 public schools and 26 private schools. Within 1 mile of the Site, there are approximately 6 public schools and no private schools.

3.2.8.2 Transportation

The Project is located on the north side of Eller Drive between SE 14th Avenue and Eisenhower Boulevard/SE 19th Avenue. The primary roadway system providing access to and from the FPL property consists of one freeway (I-595), three arterial roadways (S.R. 84, Griffin Road, and U.S. 1), and one collector street (Eisenhower Boulevard).

I-595 is generally an 8 lane freeway extending from I-75 on the west to U.S. 1/Eller Drive on the east. S.R. 84 provides 4 through lanes in each direction (8 lane arterial roadway) from I-95 to SW 9th Avenue and becomes a 6 lane highway between SW 9th Avenue and U.S. 1. East of U.S. 1, S.R. 84 provides access to Port Everglades and to the Site via Eisenhower Boulevard. Griffin Road is a major east-west arterial roadway and provides three through lanes between I-95 and U.S. 1 (6 lane facility). Federal Highway (U.S. 1) provides north-south mobility through eastern Broward County and generally provides three through lanes (6 lane facility) in each direction between Griffin Road and S.R. 84. Eisenhower Boulevard is a north-south 4 lane divided collector roadway extending from 17th Street Causeway on the north to Eller Drive on the south.

Existing and future link traffic volumes on the main access routes (I-595, S.R. 84, Griffin Road, and U.S. 1/Federal Highway) were obtained from Broward County's Metropolitan Planning Organization. Table 3.2.8.2-1 documents the existing roadway conditions. The traffic volumes, published by the county, are also provided in Appendix 10.7.4. In addition, turning movement counts were conducted October 25, 2011, between 7:00 a.m. and 9:00 a.m. and from 4:00 p.m. to 6:00 p.m.

3.2.8.3 Medical Facilities

The Broward County Sheriff's Office, Department of Fire Rescue, will respond and provide emergency medical services to the Site. Broward Health is a nonprofit community health system that offers a full spectrum of services for residents and visitors of Broward County.

Broward Health includes approximately 30 healthcare facilities within Broward County. Broward County has 7 hospitals/medical centers (Broward Health, August 2011) and approximately 265 nursing and residential care facilities (UF/BEBR, 2011). There are approximately 4,372 licensed doctors of medicine and 653 licensed doctors of osteopathy, 1,248 dentists, 1,061 dental hygienists, 2,923 dental radiographers, 7,022 health practitioners (including chiropractors, optometrists, podiatrists, occupational therapists, physical therapists, massage therapists, nursing home administrators, and psychologists), 26,514 registered and practical nurses, 383 dispensing opticians, and 3,223 pharmacists and pharmacist interns in the county (UF/BEBR, 2011).

With 7 hospitals/medical centers located within the county, 5 provide emergency services: Broward General Medical Center is located approximately 1.5 miles north of the Site and has an Emergency Department and a Level 1 Trauma Center. The Trauma Center is 1 of 3 accredited centers in South Florida that provides around the clock care staffed with trauma surgeons, emergency medicine physicians, nurses and ancillary staff, and a rooftop helipad. The Broward General Medical Center is also a Certified Stroke Center that provides rapid diagnostic and treatment of stroke patients admitted to the Emergency Department.

3.2.8.4 Law Enforcement

The Broward County Sheriff's Office has provided law enforcement services for Port Everglades since 1991. The Broward County Sheriff's Office employs a staff of approximately 5,800. The services that are provided to Port Everglades include Harbor Patrol, Investigations Unit, Bomb Detection, and a K-9 Unit. The Broward County Sheriff's Office also manages the Security Operations Center Port Identification Office, which issues and monitors over 22,000 permanent identification cards and 15,000 temporary cards yearly. The Broward County Sheriff's Office Port Everglades District Office is located to the west and adjacent to the FPL property.

3.2.8.5 Fire Rescue

The Site is located within Port Everglades and is provided fire rescue support from the Broward County Sheriff's Office, Department of Fire Rescue. The Site is within Station No. 6 service area

that provides specialized firefighting and emergency response capabilities for the unique environment of Port Everglades. Station No. 6 maintains a multi-agency communication protocol between the airport, seaport, and the U.S. Coast Guard (USCG). The Station maintains two engines: an Advanced Life Support rescue unit and a specialized chemical truck (e.g., capable of deploying water, firefighting foam or dry chemical extinguishing agents). Fire Rescue Station No. 6 is located within the Broward County Sheriff's Office Port Everglades District Office and is west and adjacent to the FPL property on Eller Drive.

3.2.8.6 Recreational Facilities

Broward County and the municipalities within the County offer recreational activities to residents and visitors. Broward County Parks and Recreation Division includes 18 regional parks and nature centers, six neighborhood parks, and 21 natural areas, consisting of 6,500 total acres. Within 5 miles of the Site there are ten Broward County Regional and Neighborhood Parks:

- Roosevelt Gardens Parks,
- Franklin Park,
- Reverend Samuel Delevoe Park,
- Sunview Park,
- Secret Woods Nature Center,
- Boaters Park,
- Topeekeegee Yugnee Park,
- West Lake Park,
- Anne Kolb Nature Center, and
- Hollywood North Beach Park.

Figure 3.2.1-2 provides a location of park and recreational facilities that are within these jurisdictional areas. As previously indicated, within 5 miles of the Site there are a total of eight municipalities.

3.2.8.7 Electricity and Natural Gas

Electricity is provided by FPL to Broward County and the Site. Natural gas is supplied to Broward County and the Site by Florida Gas Transmission Company (FGT).

3.2.8.8 Water Supply and Sewage Treatment Facilities

Through the City of Fort Lauderdale Public Works Department, regional water and wastewater service is provided to approximately 300,000 residents and businesses in central Broward County.

The department operates and maintains two water treatment plants (i.e., Charles W. Fiveash and Peele-Dixie) and a regional wastewater treatment plant (i.e., G. T. Lohmeyer) for the city and adjacent municipalities.

The city gets its water from 36 wells that draw water from the Biscayne Aquifer. Water is treated and distributed through the 2 city-operated facilities. The Site receives water from the Charles W. Fiveash Regional Water Treatment Plant. The Fiveash facility has a distribution capability of 70 million gallons per day (MGD).

The George T. Lohmeyer Wastewater Treatment Plant is a central regional facility that receives and treats wastewater for the City of Fort Lauderdale, Wilton Manor, Oakland Park, and Port Everglades (including the Site), as well as sections of Tamarac and unincorporated Broward County. The Lohmeyer facility has a collection capability of 55.7 MGD.

3.2.8.9 Solid Waste Disposal

There are 38 licensed solid waste management facilities in Broward County. This includes two nominal 2,250 ton per day (TPD) municipal solid waste (MSW) resource recovery facilities, 10 transfer stations, 16 recycling facilities, 4 landfills (2 active, 2 long-term care), and 6 other licensed facilities (e.g, hauling). Existing solid waste from the Port Everglades Plant includes MSW and recycled materials. Approved contractors collect and transport the solid waste generated at the existing Port Everglades Plant for recycling or disposal. Minor amounts of hazardous wastes (waste solvents, oil, paints, and other chemicals) are generated from the existing operation. The existing FPL Port Everglades Plant is a Conditionally Exempt Small Quantity Generator (CESQG) of hazardous waste, and this is not expected to change with the operation of PEEC.

3.3 Physical and Biological Environment

The cooling-water intake withdraws water from the western end of Port Slip No. 3, which is connected to the Port Everglades Turning Basin, the ICW and the Atlantic Ocean through a tidal inlet (see Subsection 3.3.4.1). The Port Everglades Turning Basin and the ICW have a semi-diurnal tide range of approximately 2.53 feet (ft). Salinity in the Port Everglades Turning Basin and the ICW near the tidal inlet is approximately that of seawater.

PEEC is located within the jurisdictional boundaries of SFWMD. The SFWMD Basis of Review (BOR) for Water Use Permit Applications (March 18, 2010) defines seawater as water with a chloride

concentration at or above 19,000 milligrams per liter (mg/L). Based on the properties of seawater, a chloride concentration of 19,000 mg/L corresponds to a salinity of 34.3 parts per thousand (ppt) (Neumann & Pierson, 1966, p. 40). North and south of the harbor, the ICW is connected to numerous channels and waterways that carry stormwater runoff from upland areas. Consequently, downward excursions in the salinity concentration typically occur during wet periods. Salinity in the ICW approximately 1.5 miles north and south of the inlet is typically between 20 and 36 ppt (Broward County, FL, February 28, 2001).

3.3.1 Geology and Hydrology

The geology and hydrology of the Site vicinity are discussed below. The information presented in this Section provides a summary of the geohydrologic baseline information and draws heavily upon previously published regional studies. The regional studies include, but are not limited to:

- Reese, R.S., and Richardson, Emily, 2008, Synthesis of the Hydrogeologic Framework of the Floridan Aquifer System and Delineation of a Major Avon Park Permeable Zone in Central and Southern Florida: U.S. Geological Survey Scientific Investigations Report 2007-5207, 60 pp., 4 pls., plus apps.
- Preliminary Hydrogeologic Framework, ASR Regional Study, Final Report [Ron Reese (USGS) and Emily Richardson (SFWMD), October 4, 2004].
- Reese and Memberg, 2000. Hydrogeology and the Distribution of Salinity in Floridan Aquifer System, Palm Beach County, Florida, U.S. Geological Survey, Water Resources Investigations Report 99-4061.

Site specific subsurface information was obtained from borings performed by Ardaman & Associates, Inc. between December 2003 and January 2004 for the existing Port Everglades Plant.

3.3.1.1 Geologic Description of the Site and Area

A general description of the geology and hydrogeology of eastern Broward County, including the Site, is provided below. Based upon the FPL topographic survey by A.R. Toussaint & Associates, Inc. (June 17, 1994), the Site in the area of the Power Block is 15 ft to 17 ft National Geodetic Vertical Datum 1929 (NGVD 29). The Site slopes down between the Power Block and the property boundaries. Along the property boundaries the site elevation is typically 6 ft to 7 ft NGVD 29. According to the Soil Survey of Broward County, Florida, published by the U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS), the majority of the Site is occupied by Urban Land.

The Site lies in the physiographic region of the Atlantic Coastal Ridge (Fernald and Patton, 1984).

Based on the soil boring data, the uppermost undifferentiated deposits at the Site are primarily composed of sand and limestone fill material (20 ft thick; 16 ft to −4 ft NGVD 29). Below the fill material is a less permeable layer composed sandy silt with high organic content (5 ft thick; −4 ft to −9 ft NGVD 29). Underlying this layer is the top portion of the Biscayne Aquifer, which is composed of fine grained sand (40 ft thick; −9 ft to −49 ft NGVD 29). The limestone portion of the Biscayne Aquifer begins approximately −50 ft NGVD 29. The base of the Biscayne Aquifer is approximately −300 to −350 ft NGVD 29.

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 lower Eocene age; Avon Park Formation of middle Eocene age; Ocala Limestone of upper Eocene age; Hawthorn Group of Miocene; and undifferentiated deposits of Pliocene, Pleistocene, and Holocene age (Reese and Richardson, 2004).

The following is a summary of the lithology and approximate thickness of each geologic unit anticipated at the Site, based on regional geology.

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 top of the Cedar Keys Formation is found below the Boulder Zone. The massive anhydrite beds that form the base of the Floridan Aquifer System (FAS) are usually found 500 to 600 ft below the Boulder Zone (Reese and Memberg, 2000).

The Oldsmar Formation is limestone interbedded with dolomite. The Oldsmar Formation is approximately 1,100 to 1,500 ft thick in Broward County. The lower 300 to 600 ft 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. At the Site, the top of the Boulder Zone is approximately −2,900 to −3,000 ft NGVD 29 (Reese and Memberg, 2000).

The Avon Park Formation in Broward County is composed predominantly of limestone interbedded with dolostones. Cherty dolostones are typical in the lowermost Avon Park Formation. The Avon Park Formation is approximately 1,000 ft thick in the study area. In Broward County, the top of the Avon Park Formation is approximately −1,100 ft NGVD 29 to −1,200 ft NGVD 29. The upper portion of the Avon Park Formation is part of the Upper Floridan Aquifer (UFA). Confining units separate the UFA from the Lower Floridan Aquifer (LFA).

The Ocala Limestone overlies the Avon Park. The Ocala Limestone is micritic or chalky limestone, to a medium grained calcarenitic limestone, to a coquinoid limestone. Regionally, this unit varies in thickness from 0 to 300 ft. This unit is part of the UFA.

Rocks of Miocene age at the Site belong to the Hawthorn Group. The Hawthorn Group is divided into lower carbonate and upper clastic sequences. The lower 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. Clay beds in the Hawthorn Group function as the upper confining units for the FAS (Duncan et al, 1994). In the area of the Site, this unit ranges from 600 to 700 ft in thickness and the top of the Hawthorn Group is approximately −350 ft NGVD 29. The top of the Hawthorn Group occurs at a poorly consolidated sand or sandy silt beneath the biogenic limestones of the Tamiami Formation.

The formation of Pleistocene age consists of alternating beds of Miami Oolite, Anastasia, Fort Thompson and Key Largo Formations of sandstone, shell and limestone, which are intermixed with the Pamlico Sands (Reese, 1994).

The undifferentiated deposits consist of unconsolidated shell beds, sandy clay, quartz sands and sandy and shelly limestone. At the Site, the thickness of the surficial aquifer is approximately 350 ft.

3.3.1.2 Detailed Site Lithologic Description

Site lithology was determined from borings performed by Ardaman & Associates, Inc. for FPL between December 2003 and January 2004. The borings extended 50 to 60 ft below ground surface (ft-bgs). Based on the soil boring data, the uppermost undifferentiated deposits at the Site are primarily composed of sand and limestone fill material (20 ft thick; 16 ft to −4 ft NGVD 29). Below

the fill material is a less permeable layer composed sandy silt with high organic content (5 ft thick; −4 ft to −9 ft NGVD 29). Underlying this layer is the top portion of the Biscayne Aquifer, which is composed of fine grained sand (40 ft thick; −9 ft to −49 ft NGVD 29). The limestone portion of the Biscayne Aquifer begins approximately −50 ft NGVD 29. The base of the Biscayne Aquifer is approximately −300 to −350 ft NGVD 29.

3.3.1.3 Geologic Maps

Figure 3.3.1-1 presents hydrogeology, aquifer characteristics, and groundwater flow of the surficial aquifer system (SAS), Broward County (USGS, 1988). The Site is located just north and east of well G-2347 shown in Figure 3.3.1-1.

3.3.1.4 Bearing Strength

The Site is suitable for PEEC from a geotechnical standpoint. 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 will be supported on deep foundations such as piles, augured cast piles, stone columns, or other ground improvement methods to reduce settlement to acceptable levels.

3.3.2 Subsurface Hydrology

3.3.2.1 Subsurface Hydrology Data for the Site

There are four major components to the subsurface hydrogeologic framework in southern Florida: the unconfined SAS, which in coastal Broward County is part of the Biscayne Aquifer; the nearly impermeable sediments of the Hawthorn Group, which separates the surficial aquifer from the Floridan Aquifer; the confined FAS, which includes both the UFA and the LFA; and the Boulder Zone, which is part of the LFA. These components are discussed further below.

Surficial Aquifer System

The Biscayne Aquifer (surficial aquifer) is an unconfined aquifer that underlies approximately 4,000 square miles within Palm Beach, Broward, Miami-Dade, and Monroe Counties. In Broward County, the surficial aquifer is comprised primarily of sands, shell beds, and sandy limestone. In Broward County, the SAS varies in thickness from 200 to 350 ft. At the Port Everglades Plant, the SAS is between 250 and 300 ft thick.

Based on water table maps from Broward County, site boring data, one nearby monitoring well and National Oceanographic and Atmospheric Administration (NOAA) tide data, the water table at the

Site is estimated to be between 1.0 and 1.5 ft NGVD 29. The regional hydraulic gradient in the area of the Site is generally from west to east with a slope less than 1 ft per mile. Surface recharge in the area around the Port should be small [0.5 to 2 inches per year (in/yr)] due to the high percentage of directly connected impervious area.

At the Site, the hydraulic conductivity is less than 10 feet per day (ft/day) in the fill material between the ground surface and −9 ft NGVD 29. Slug test data reported in the SFWMD DBHYDRO database for shallow (10 to 15 ft) wells near the site give hydraulic conductivity values of between 2 and 4 ft/day. In the sand layer between −9 and −130 ft NGVD 29, the hydraulic conductivity should be much higher. The hydraulic conductivity in this layer, based on clean sand, is estimated to be between 10 and 35 ft/day and in the limestone below −130 ft NGVD 29 the hydraulic conductivity is estimated to be between 1,000 and 1,500 ft/day (Reese, 1994). Using a hydraulic gradient of 1 ft per mile and an effective porosity of 25 percent, the average groundwater flow velocity in the three layers described above would be approximately 1 foot per year (ft/yr), 10 ft/yr, and 415 ft/yr, respectively.

The Biscayne Aquifer is a designated Sole Source Aquifer of drinking water for Broward County. However, due to the close proximity of PEEC to the coast the surficial aquifer at the Site is only marginally fresh [total dissolved solids (TDS) concentrations <1,000 mg/L] in a relatively thin layer near the surface.

Intermediate Confining Beds

The Intermediate Confining Unit (ICU) is present throughout the Broward County and consists of phosphatic clay, silt, sand, limestone, and dolomite deposits of the Hawthorn Group. The Hawthorn Group sediments serve as a confining unit separating the SAS from the FAS. In the vicinity of the Site, the ICU is approximately 600 to 700 ft thick and well confined.

Floridan Aquifer

The FAS in the vicinity of the Site consists of the UFA, Middle Confining Unit (MCU), and LFA and ranges in age from Paleocene to Eocene. The uppermost permeable zones in the UFA occur in close association with an unconformity at the base of the Hawthorn Group. The top of the FAS near the site is approximately −950 ft NGVD 29. The thickness of the FAS near the site is between 2,800 and 2,900 ft. The MCU from −1,200 to −2,050 ft NGVD 29 is the primary confinement between the UFA and the LFA. The MCU contains a permeable zone, approximately 150 ft thick, called the Avon Park

Permeable Zone (APPZ). In the area of the Site, the APPZ is likely found between −1,400 and −1,650 ft NGVD 29. The LFA is approximately 1,700 ft thick and includes the Boulder Zone.

Reese and Richardson (2004) show the transmissivity of the UFA, in the area of the Site, to be approximately 20,000 square feet per day (ft^2/day). Near the Site, water in the UFA is brackish [total dissolved solids (TDS) concentrations range from approximately 2,500 to 3,500 mg/L].

The middle confining unit that separates the UFA and LFA consists of sediments from the Middle Eocene era with compositions similar to the UFA and LFA. Near the Site, the top of the MCU is approximately −1,200 ft NGVD 29 and the total thickness is approximately 800 ft. The confining unit separating the UFA and the APPZ is approximately 200 ft thick. The confining unit separating the APPZ and the LFA is approximately 400 ft thick. Near the Site, water in the APPZ has TDS concentrations between 5,000 mg/L and 35,000 mg/L.

The LFA is below the middle confining unit and above the sub-Floridan confining unit. The LFA consists of the thick complex sequence of limestone and dolostone. Near the coast, water in the LFA has TDS concentrations of 35,000 mg/L or more. The top of the LFA is approximately −2,050 ft NGVD 29. The thickness is estimated to be 1,700 ft. The LFA also contains the Boulder Zone.

Boulder Zone

The deeply buried zone of cavernous permeability, called the Boulder Zone, is found in fractured dolomite in the LFA and underlies most of southern Florida. The top of the Boulder Zone is irregular and near the Site the top is approximately −2,900 to −3,000 ft NGVD 29. The permeability of the Boulder Zone is extremely high because of its cavernous nature. 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 wastewaters. The Boulder Zone is overlain by approximately 700 ft of low permeability limestone and dolomite, which limits upward movement of injected fluids to shallower parts of the FAS.

3.3.2.2 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 (FDEP, November 4, 2011).

According to USGS Map Series No. 10, Sinkhole Type, Development, and Distribution in Florida, (Sinclair & Stewart, 1985), 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. Borings drilled at the Site do not show indications of Karst hydrogeology, such as voids or losses of circulation, within 50 ft of the surface.

3.3.3 Site Water Budget and Area Users

3.3.3.1 Site Water Budget

Climate and Meteorology

The Site is located in southeast peninsular Florida, which has a climate characterized as mild subtropical. Temperatures in the vicinity (measured at Fort Lauderdale-Hollywood International Airport, Florida) range from an average low of approximately 57 degrees Fahrenheit (°F) in January, to an average high of approximately 90°F in August, with an annual average of approximately 79°F.

The mean total annual rainfall in Fort Lauderdale, Florida, is 66.64 inches; with mean monthly totals ranging from 2.39 to 9.81 inches. Generally, the period of the year with the heaviest rainfall is from June to October. 62 percent of the annual rainfall occurs during the wet season [http://www.weather.com/weather/wxclimatology/monthly/graph/USFL0149].

Mean annual type-A pan evaporation is 74.5 inches (SFWMD, DBHYDRO Database, Station S140 SPW E, 1985 to 2011). Average pan evaporation is less than 6 inches per month from October through February and between 6.5 and 8.7 inches per month between March and September. Mean annual potential evaporation is approximately 54 in/yr (SFWMD DBHYDRO Station S140W, 2005 to 2011). Mean annual lake evaporation in eastern Broward County is approximately 51 in/yr (Fernald & Patton, 1984). Evapotranspiration from plants and soil, which is less than lake evaporation, is approximately 39 to 42 in/yr (Fernald & Patton, 1984). Consequently, regional surface water runoff and surficial aquifer recharge combined is between 13 and 28 in/yr. In the area of the Port and the Site, surficial aquifer recharge is limited due to the high percentage of directly connected impervious area. Therefore, most of the excess rainfall (precipitation minus evapotranspiration) is removed as stormwater runoff.

Groundwater Resources

The two major aquifers in Broward County are recharged from separate sources. The surficial aquifer is primarily supplied by rainfall in Broward and Palm Beach Counties. The UFA is supplied by

rainfall in the topographically high areas centered in Polk and Highlands Counties. A very small amount of water flow [i.e., less than 1 inch per year (in/yr)] recharges the surficial aquifer from the UFA due to the artesian pressures in the UFA.

Surface Water Resources

The Site is located directly adjacent to the Port Everglades Turning Basin, the ICW, and the Port Everglades tidal inlet that connects the ICW with the Atlantic Ocean. The intake canal to the north withdraws cooling water from Port Slip No. 3. The approximately 1 mile discharge canal flows south into the ICW. There are no other significant surface water bodies in the vicinity.

Groundwater/Surface Water Interactions

There is a complex hydrologic interaction between the SAS and the extensive network of navigation channels, water supply and drainage canals in southeast Florida. These canals, levees, pumps, and water control structures that were constructed by the U.S. Army Corps of Engineers (USACE) as part of the Central and South Florida Flood Control Project are currently operated by 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 in/yr.

3.3.3.2 Area Users

Use of surface water (other than "seawater") and fresh or saline groundwater is regulated by SFWMD. Information gathered from SFWMD was used to prepare the following summary of water uses near the Site.

There are no public supply wells permitted by the SFWMD within 1 mile of the Site. In addition, the Site is not located in any wellfield protection zone adopted by Broward County (Broward County, FL, February 27, 2001).

Figure 3.3.3-1 and Table 3.3.3-1 show the water use permits (surface and groundwater) within 5 miles of the Site, most of which are for irrigation, public supply, and industrial purposes. Sources of water used for these purposes include the surficial aquifer, the Floridan Aquifer, and small lakes/ponds. There are 416 permitted public supply withdrawals within 5 miles of the Site in the SFWMD database. The majority of the public supply is provided by the surficial aquifer.

The Port Everglades Plant currently uses water from the City of Fort Lauderdale and withdraws marine water from the ICW via the intake canal, the Port Everglades Turning Basin and the ICW. SFWMD has not required consumptive use permits for withdrawals of marine water for the existing Port Everglade Plant's once-through cooling system.

3.3.4 Surficial Hydrology

3.3.4.1 Hydrologic Characterization

The existing Site is west of the Port Everglades Turning Basin and the ICW, which are located at the west end of the 800 ft channel connecting the Port to the Atlantic Ocean. The Port Everglades Turning Basin is approximately 38 ft deep, approximately 1 mile long (north to south) and approximately 0.5 mile wide.

Port Everglades tidal inlet is a dredged maintained channel with design depth of 33 ft for a mid-width of 200 ft (NOAA NOS Nautical Chart 11472, 1985; see Figure 3.3.4-1). NOAA (2011) reports that the mean tidal range at the Port is 2.53 ft, the spring range is 2.81 ft, and the mean tide level is 0.74 ft NGVD 29.

The ICW is classified by FDEP as Class III Marine water. Salinity in the ICW approximately 1.5 miles north and south of the inlet is typically between 20 ppt and 36 ppt (Broward County, FL, February 28, 2001).

The existing Port Everglades Plant began operating in the 1960s and consists of four generating units (Units 1 through 4). Units 1 and 2 began commercial operation in 1960 and 1961, respectively. Units 3 and 4 began commercial operation in 1964 and 1965, respectively. The existing Port Everglades Plant configuration includes the withdrawal of once-through cooling water from the west end of Slip No. 3 of Port Everglades. The slip is 1,200 ft long and 280 ft wide. The withdrawal is made through four 244 ft long, 12 ft diameter concrete pipes that pass under Eisenhower Boulevard. The intake canal is approximately 2,100 ft long, 100 ft wide, and 13 ft deep at mean low water. The intake canal has been previously determined by the EPA not to be "waters of the U.S". and FDEP not to be "waters of the State." The total design intake flow rate of the existing Port Everglades Plant was 899,600 gallons per minute (gpm). The full load design temperature rise for the existing Port Everglades Plant was 13.8°F.

The discharge of once-through cooling water and other wastewaters is permitted under FDEP Industrial Wastewater (IWW) Permit No. FL0001538. FPL conducted Impingement Mortality and

Entrainment Characterization Studies (IMECS) at the Port Everglades facility between April 2006 and April 2007 (ENSR, March 2008). The IMECS report is included in Appendix 10.2.1. The outcome of these studies was that the current FDEP IWW permit (Condition I.B.15) requires FPL to develop a plan to return live fish, shellfish, and other aquatic organisms collected or trapped on the intake screens to their natural habitat. The plan will be developed and implemented as part of the PEEC Project.

The maximum extent of the thermal plume resulting from the existing Port Everglades Units 1 through 4 discharge was predicted using a mathematical model as part of a previous permit requirement. The surface area of the discharge canal between the Plant and the ICW is approximately 11.7 acres (Envirosphere Company, Inc., c. 1975). The area enclosed by the 5°F and the 10°F isotherms within the ICW were determined to be 7.6 acres and 1.7 acres, respectively. Biological impact assessments of the thermal discharges from the existing Port Everglades Plant were conducted by Applied Biology, Inc. (ABI) in 1975 and 1987. The 1987 study reached the following conclusions:

1. Based on results of 1975 studies, operation of the Port Everglades Plant appears to have had relatively little impact on resident fish and shellfish and plankton communities near the Plant.
2. Thermal impacts to benthic communities appear to be confined to the immediate discharge canal. Impacts are greatest during the summer when discharge temperatures exceed thermal tolerance limits of many resident organisms.
3. Following abatement of warm summer discharge temperatures, recruitment of benthic organisms into the discharge canal has historically been rapid.
4. Benthic communities within the ICW adjacent to the Port Everglades discharge canal appear unaffected by thermal discharges from the Plant.
5. No long-term negative impacts resulting from Plant operation have been documented for benthos of the ICW. During spring sampling periods, species richness in the ICW increased two to three fold between 1975 and 1987.

Water quality data submitted with the most recent NPDES permit renewal application is shown in Table 3.3.4-1.

3.3.4.2 Measurement Programs

Water quality, biological and flow data required to meet the conditions of the revised IWW Permit will be monitored and reported.

3.3.5 Vegetation/Land Use

Vegetation/land use surveys of the Port Everglades Plant Property and surrounding areas were completed in September 2011. The resulting vegetation/land use map of the Port Everglades Plant Property, the Site and surrounding area is found in Figure 3.3.5-1. This figure also shows the Site and the associated linear facilities corridor. Vegetative communities in and adjacent to the Port Everglades Plant Property, the Site and surrounding area as discussed in detail in Subsection 3.3.6.1. Vegetative communities in and adjacent to the associated linear facilities corridors are discussed in Subsection 3.3.6.2.

The FPL Port Everglades Plant Property and Site is located in a densely developed industrial area within Port Everglades. The Port Everglades Plant Property and Site are primarily occupied by electric power generating facilities, buildings, parking lots, and other infrastructure of the existing Port Everglades Plant [Florida Land Use, Cover and Forms Classification System (FLUCFCS)] 831 (Florida Department of Transportation, 1999), oil storage (FLUCFCS 146) and canals (FLUCFCS 512).

The surrounding vicinity is dominated by Port Everglades (FLUCFCS 815) and oil storage (FLUCFCS 146), located immediately east and west of the Port Everglades Plant Property (Figure 3.3.5-1). Additional land uses within the area surrounding the Port Everglades Plant Property include canals, port slips and turning basins, and the ICW (FLUCFCS 512), light industrial (FLUCFCS 155), commercial and service (FLUCFCS 140), mangrove swamp (FLUCFCS 612), and areas dominated by melaleuca (FLUCFCS 424) and Australian pine (FLUCFCS 437).

3.3.6 Ecology

3.3.6.1 Species Environmental Relationships

The following subsections include descriptions of important flora and fauna within the Port Everglades Plant Property, the Site and the surrounding area. This discussion includes information related to the presence of important wildlife species and the value of the vegetative habitats present. The following descriptions of the flora at or near the Port Everglades Plant Property and Site follow the FLUCFCS Level III codes.

Terrestrial Ecology Systems—Flora

The majority of the Port Everglades Plant Property is comprised of facilities related to electric power generation at the existing Port Everglades Plant (FLUCFCS Code 831). The existing electric power facilities do not include areas of significant natural vegetative habitats.

Within the existing Port Everglades Plant Property boundary, there is an area of open land on the northern side of the cooling water discharge canal adjacent to the pair of fuel oil tanks described below (FLUCFCS Code 190). This area is generally a mowed and maintained lawn with a small number of cabbage palm (*Sabal palmetto*). The ground cover is a mix of grasses and ruderal species.

The cooling-water intake (north side) and discharge (south side) canals are upland cut ditches (FLUCFCS Code 512). The banks of the canals are overgrown primarily with Brazilian pepper (*Schinus terebinthifolius*) and Australian pine (*Casuarina equisetifolia*) with scattered Mexican fireplant (*Poinsettia heterophylla*), Painted leaf (*Poinsettia cyathophora*), Durban crowfoot grass (*Dactyloctenium aegyptium*), Virginia creeper (*Parthenocissus quinquefolia*), and Prickly pear cactus (*Opuntia humifusa*).

). There is also a pair of oil storage tanks associated with the Gas Turbine Power Park – Port Everglades within the Port Everglades Plant Property. There are no natural or undeveloped areas within these portions of the Port Everglades Plant Property.

As described in Section 3.3.5, the area around the Port Everglades Plant Property is comprised of densely developed industrial and commercial areas. Natural terrestrial vegetative communities are scarce within the urban environment surrounding the Port Everglades Plant Property. Limited areas of mangrove wetlands and areas dominated by melaleuca and Australian pine occur near but not contiguous with the Port Everglades Plant Property.

A number of fuel oil storage tanks exist on the northern portions of the Port Everglades Property and Site east of the cooling water intake canal (FLUCFCS Code 146). A pair of fuel oil storage tanks exists on Port Everglades Property that are located north of the cooling water discharge canal and east of the Site. There is also a pair of oil storage tanks associated with the Gas Turbine Power Park – Port Everglades adjacent to the Site. There are no natural or undeveloped areas within these portions of the Port Everglades Property and Site.

Terrestrial Ecology Systems—Fauna

Wildlife habitat was altered in the late 1950s when the Port Everglades Plant was constructed. Natural vegetative communities have been cleared from the Port Everglades Plant Property and Site. Although small areas of mowed and maintained grass lawn are located within the Port Everglades Plant Property and Site, these areas do not provide quality wildlife habitat. Due to the prevalence of industrial and commercial development, vegetative communities adjacent to the Port Everglades Plant Property and Site are also disturbed and do not provide quality wildlife habitat.

Aquatic Systems

The only aquatic systems that occur within the Port Everglades Plant Property and the Site are the cooling-water intake and discharge canals (FLUCFCS Code 512). Previous studies have found no seagrasses within the canals, and there is no designated critical habitat for Johnson's seagrass (*Halophila johnsonii)* within all of Broward County.

Aquatic systems adjacent to the Port Everglades Plant Property include the ICW and Port Everglades slips and turning basin (FLUCFCS Code 512).

Threatened and Endangered Species

Plant and animal species designated by the U.S. Fish and Wildlife Service (FWS), the Florida Fish and Wildlife Conservation Commission (FWC), 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.

Literature review, geographic information systems (GIS) database queries, and field reconnaissance were utilized to determine the species that could potentially be present in the habitats found on the Port Everglades Plant Property. Primary sources of information are the Florida Natural Areas Inventory (FNAI) database (2008); 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.

No threatened or endangered species were observed at or adjacent to the Port Everglades Plant Property and Site during field surveys although the manatee, which is classified as endangered by both the FWS and FWC, is known to occur in the vicinity of the Port Everglades Plant.

Plant and Animal Surveys

A combination of evaluation of habitat conditions, literature reviews, previous studies, FNAI database queries, and field surveys were used to identify federally and state listed species whose ranges and habitat preferences include the Port Everglades Plant Property and Site. The rareness and seasonality of threatened and endangered species did not warrant either multi-season surveys or an evaluation of threatened and endangered species habitat conditions to determine their potential presence or absence on the Port Everglades Plant Property.

Flora

Threatened, endangered, and/or plant species of special concern that occur within Broward County are listed in Table 3.3.6-1. Due to the impacted nature of the Port Everglades Plant Property and Site, no suitable habitat for listed plant species exists within the Port Everglades Plant Property and Site. The data obtained from the FNAI did not include any documented occurrences of listed plant species within the Site. There was one historically documented occurrence of sea lavender (*Argusia gnaphalodes*) a Florida endangered species, within one mile of the Site. Within a 5 mile radius of the Port Everglades Plant Property, the FNAI data includes historical occurrences of sea lavender, Atlantic Coast Florida lantana (*Lantana depressa* var. *floridana*), golden leather fern (*Acrostichum aureum*, large-flowered rosemary (*Conradina grandiflora*), silver palm (*Coccothrinax argentata*), and West Indies mahogany (*Swietenia mahogany*) as shown in Figure 3.3.6-1.

Fauna

Threatened, endangered, and/or animal species of special concern that occur within Broward County are listed in Table 3.3.6-1. Due to the lack of suitable habitat and highly developed industrial and commercial surroundings, no threatened or endangered species occur within the Port Everglades Plant Property and Site. The FNAI database review did not result in any occurrences of listed animal species at the Port Everglades Plant Property and Site. However, a query of the FNAI database resulted in several documented occurrences of listed species within a 5 mile radius of the Site (see Figure 3.3.6-1, Listed and Observed Species Occurrences Within 5 Miles). In addition, manatees are known to congregate in the vicinity of the Site and a Manatee Protection Plan is included as part of the IWW permit requirements.

3.3.6.2 Associated Linear Facilities Corridors -- Ecology

The preferred corridor for the fuel oil pipeline and aquatic organism return system (corridor) is located in a previously developed portion of Port Everglades. The corridor is occupied by roads, an abandoned rail spur and other infrastructure of the existing Port Everglades [Florida Land Use, Cover and Forms Classification System (FLUCFCS)] 815 (Florida Department of Transportation, 1999) as shown in Figure 3.3.5-1.

The surrounding vicinity is dominated by Port Everglades, the existing power plant (FLUCFCS Code 831) and oil and natural gas storage (FLUCFCS Code 146). Additional land uses within the area surrounding the preferred corridor include port slips, canals and the ICW (FLUCFCS Code 512), light industrial (FLUCFCS Code 155), commercial and service (FLUCFCS Code 140).

The majority of the preferred corridor comprises paved roads and cargo processing areas for the port. There are scattered landscape islands with sod ground cover, planted cabbage palms (*Sabal palmetto*) and small oak trees.

Wetlands

Within the area of the preferred corridor, three agencies, the USACE, FDEP, and Broward County, have rules that apply to wetlands jurisdiction. To be jurisdictional, a wetland must ascribe to a minimum of two characteristics defined by rule: presence of vegetation listed as belonging in wetlands, having a certain defined hydrology, and/or the presence of hydric soils. There are no jurisdictional wetlands within the corridor, but it is immediately adjacent to wetlands associated with the outside of the cooling-water intake and barge canals.

Terrestrial Ecology Systems

Natural vegetative communities have been cleared from the preferred corridor. Although small areas of mowed and maintained grass lawn are located within the corridor, these areas do not provide quality wildlife habitat. Due to the prevalence of industrial and commercial development, vegetative communities adjacent to the preferred corridor are also disturbed and do not provide quality wildlife habitat.

Aquatic Systems

Aquatic systems adjacent to the preferred corridor include the cooling-water intake canal, ICW and Port Everglades slips and turning basin (FLUCFCS Code 512).

Threatened and Endangered Species

Due to the lack of suitable habitat and highly developed industrial and commercial surroundings, no threatened or endangered species are likely to occur within the preferred corridor. The FNAI database review did not result in any occurrences of listed animal species within the corridor.

3.3.6.3 Pre-Existing Stresses

Terrestrial Systems

The greatest pre-existing stress to terrestrial systems of the Port Everglades Plant Property, Site and surrounding area is the result of commercial and industrial development. The natural topography, soils, and hydrology of the Port Everglades Plant Property and Site are extensively altered as a result of the addition of fill material and topographic grading. Any natural ecosystems and wildlife habitat that may have previously been located at the Port Everglades Plant Property and Site have been lost, and natural drainage features have been modified.

Aquatic Systems

Aquatic systems in the vicinity of the Port Everglades Plant Property and Site are subjected to stress from numerous sources related to commercial, industrial and urban land use, development, and the construction and operation of water management systems. Pre-existing stresses include:

- Altered hydrology,
- Altered salinity,
- Elevated loads of nutrients and organic matter,
- Input of contaminants,
- Power plant intake/discharge,
- Port Everglades,
- Physical alterations, and
- Boating and fishing pressure.

3.3.6.4 Measurement Programs

Terrestrial Ecology

Terrestrial ecological resources were evaluated through reconnaissance, previous studies, and literature searches. Vegetative communities, wildlife utilization, and potential for threatened and endangered wildlife occurrence were addressed during reconnaissance surveys.

Wetland Methodology

Within the area of the Port Everglades Plant Property and Site, three agencies, the USACE, FDEP, and Broward County, have rules that apply to wetlands jurisdiction. To be jurisdictional, a wetland must ascribe to a minimum of two characteristics defined by rule: presence of vegetation listed as belonging in wetlands, having a certain defined hydrology, and/or the presence of hydric soils. The applicable characteristics for wetland determination as prescribed by the regulatory agencies were used. There are no jurisdictional wetlands on the Port Everglades Plant Property and Site outside of the cooling-water intake and discharge canals.

3.3.7 Noise

3.3.7.1 Background Information

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 these levels.

Noise above certain levels can impact the health and welfare of plant employees, the general public and wildlife. 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:

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

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

P_o = reference effective pressure of 20 µPa.

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 10,000 Hz).

Noise has two different types of effects on people: the direct physical effects such as hearing loss and the less direct effects involving interference with activities such as sleep and conversation. In the

early 1970s, the EPA established numerical noise standards (EPA, 1974). The noise standards were developed without considering cost or technical feasibility. In developing these standards, the EPA drew upon a large body of survey data describing the degree of activity interference and resulting annoyance for a variety of noise levels. However, these standards were not meant to be pragmatic or realistic for short term noise control purposes (Harris, 1991).

3.3.7.2 Local Noise Ordinances

There are no Florida or federal noise regulations applicable to the Project. PEEC is located within the City of Hollywood that has a noise ordinance codified in Chapter 100 Noise, Title IX General Regulations, City of Hollywood Code of Ordinances. The City of Hollywood noise ordinance does not have quantitative noise limits, rather the noise ordinance prohibits "uninvited noise" that is "unreasonably loud" as defined in the ordinance. Uninvited noise is defined as "noise not originating on the receiving property" while unreasonably loud is defined as "uninvited noise shall be deemed unreasonably loud if it is plainly audible inside of a receiving property across a property line and causes actual interference with a person's peaceful enjoyment of a residence or the peace and tranquility of the surrounding neighborhood" (Section 100.01). A violation of the ordinance is based on the filing of the complaint with information on circumstances of the noise and is enforced by a law enforcement officer. A violation of the noise ordinance is a nuisance under the City of Hollywood's ordinances. There is also a limitation on construction, alteration, repair, excavation, or demolition of any building or structure no earlier than 7:00 a.m. and no later than 6:00 p.m., Monday through Friday. Such work is also restricted to no earlier than 8:00 a.m. and no later than 6:00 p.m. on Saturday, and no times on Sunday. Construction work may proceed outside the time limitations with approval from the City of Hollywood. The City of Hollywood noise ordinance prohibits unreasonably loud noise as defined in the ordinance.

Broward County has a noise ordinance that sets maximum allowable sound levels (Broward County, Code of Ordinances, Part II, Chapter 27 - Pollution Control, Article VII. - Noise, Ordinance No. 2003-07). The ordinance identifies goals, applicability, prohibitions, and policies that are used to guide development with regards to noise in Broward County. The Broward County noise ordinance limits the maximum allowable sound levels measured at the receiving property boundary with governmental facilities, community service facilities, commercial/business facilities (shown in the table below).

MAXIMUM ALLOWABLE SOUND LEVELS

Receiving Property Category	Time	L_{50} Sound Level (dBA)[a]	L_{max} Sound Level (dBA)
Residential property, or residential portion of a multi use property	At all times	55	65
Government facilities, community service facilities, commercial/ business facilities	At all times	65	75

[a] L_{50} equals the sound pressure level exceed 50 percent of the time, based on any measurement period of not less than ten (10) minutes.
[b] A source of sound shall not be considered in violation of the sound level limits set for in the table, if the measured sound level exceeds the background sound level by less than five (5) dBA.

Exemptions from the Broward County maximum allowable sound levels include the operation of motor vehicles on a public and private right of way; the operation of boats, ships or vessels on a waterway, and movement of aircraft. Operation of any tools or equipment used in construction, drilling, dredge and fill, or demolition work is exempt from the maximum allowable sound levels from 7:00 a.m. to 7:00 p.m. Routine maintenance of public service utilities is also exempt from the maximum allowable sound levels from 7:00 a.m. to 7:00 p.m.

3.3.7.3 Ambient Noise Measurements

Ambient noise monitoring was conducted in August 2011 to obtain baseline noise measurements for this Project. The equipment and procedures used to monitor the baseline noise levels conformed with the requirements for procedures, methods, and equipment specified by the American National Standards Institute (ANSI) (1993, R2008). Specifically, the noise measurements followed the ANSI S12.9/Part 3-1993 (R2008): "Quantities and Procedures for Description and Measurement of Environmental Sound, Part 3: Short-term Measurements with an Observer Present."

Noise measurements were made using a sound level meter that was set to the slow response mode to obtain consistent, integrated, A-weighted SPLs. Concurrent one-third octave band frequencies were also measured at all monitoring locations. The octave band data from each monitoring location was measured and stored during each monitoring period. Both daytime and nighttime monitoring measurements were performed to accurately assess the baseline noise conditions.

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_{max} - The maximum sound pressure level for the sampling period;
- L_{min} - The minimum sound pressure level for the sampling period; and
- L_n - The sound pressure levels which were exceeded n percent of the time during the sampling period. For example, L_{90} is the level exceeded 90 percent of the time.

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

The SPL averages were calculated using the following formula:

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

where: N = number of observations, and

SPL_i = individual SPL in data set.

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

The noise monitoring equipment used during the study included:

- Larson Davis Model 824 Precision Integrating Sound Level Meter with Real Time Frequency Analyzer,
- Larson Davis Model PRM902 Microphone Preamplifier,
- Larson Davis Model 2560 Prepolarized ½ inch Condenser Microphone,
- Windscreen, tripod, and various cables,
- Sound Level Meter Calibration Unit, and
- 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 1.5 meters (m) (5 ft) above grade. A windscreen was used because all measurements were taken outdoors. The microphone was positioned so that a random incidence response 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.

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. The calibration certificates are provided in SCA Appendix 10.7.3.

3.3.7.4 Noise Monitoring Locations

Figure 3.3.7-1 presents the locations where SPLs and octave band data were collected during the August 2011 ambient noise monitoring. The eight monitoring locations were selected to measure the existing baseline ambient noise levels at or near the Port Everglades Plant property boundary. Since the plant is located in an industrial area, there are no sensitive receptors in the immediate area.

3.3.7.5 Measured Ambient Sound Pressure Levels

Table 3.3.7-1 presents the existing baseline ambient sound pressure levels obtained in August 2011. SPL data shown in the tables for this section are integrated over the monitoring period, and reflect the "equivalent," "minimum," "maximum," and "10th percentile" (L_{90} = the SPL exceeded 90 percent of the time during the monitoring period) noise levels.

The L_{eq} reflects the total noise energy over the monitoring periods at each location. As a result, loud transient noises such as noise from traffic, aircraft, insects, and barking dogs all influence the observed values. The more persistent the transient loud noises, the higher the L_{eq}. For this reason, a more appropriate indicator of background noise levels is the L_{90}, which is the sound pressure level exceeded 90 percent of the time. Transient noise is generally excluded unless almost continuous noise occurs during monitoring, such as along a heavily traveled highway. The L_{min} and L_{max} reflect the minimum and maximum observed sound pressure levels, respectively. When the magnitude of the L_{max} is close (within a few dBA) to the L_{eq}, the observed noise levels are typically influenced by a continuous source of noise. When the magnitude of the L_{min} is close (within a few dBA) to the L_{90}, the observed sound pressure levels typically indicate lower amounts of transient noises.

Units 1 through 4 were offline during all the periods when the daytime and nighttime noise monitoring was conducted. Several of the simple cycle natural gas turbine units associated with the Gas Turbine Power Park – Port Everglades were operating during the afternoon when measurements

were taken. These units will continue to operate in the future during the construction and operation of PEEC. Operation of several of the units on August 1 and 2 was typical for that time of year. However, these units are typically operated for only a few hundred hours per year to meet peak electric demands such as that observed during a summer afternoon.

The ambient daytime L_{eq} observed in August 2011 are shown in Table 3.3.7-1 and reflect the influence of several of the simple cycle natural gas turbine units associated with the Gas Turbine Power Park – Port Everglades on observed afternoon noise levels and the influence of air traffic from the Fort Lauderdale-Hollywood International Airport, highway and local traffic, and typical noise sources from surrounding industrial activity during the daytime and nighttime. The daytime L_{eq} for the property boundary monitoring locations ranged from 78.7 dBA at Monitoring Location 6 during the afternoon to 55.7 dBA at Monitoring Location 1 during the morning. The highest L_{eq} observed in the afternoon at Monitoring Location 6, as well as the 72.3 dBA observed in the afternoon at Monitoring Location 5, were a result of the operation of the nearby gas turbine units. All of FPL's electric generating units were offline during the nighttime and morning monitoring periods and, as shown in Table 3.3.7-1, the L_{eq} observed at Monitoring Locations 5 and 6 were much lower. The nighttime L_{eq} noise levels ranged from 63.4 dBA at Monitoring Location 6 to 44.9 dBA at Monitoring Location 3.

The L_{90} excludes most of the transient noise and is more reflective of continuous noise sources. For the boundary monitoring locations the daytime L_{90} ranged from 73.2 dBA at Monitoring Location 6 during the afternoon to 50.3 dBA at Monitoring Location 2 during the morning. The nighttime L_{90} noise levels ranged from 62.4 dBA at Monitoring Location 6 to 44.0 dBA at Monitoring Location 3.

The observed L_{90} that exclude transient noise sources at the monitoring locations are typical of industrial noise areas and heavily traveled transportation corridors. The area surrounding the Port Everglades Plant is industrial and many of the transient noise sources observed during the noise monitoring, such as traffic on public roads and aircraft, are exempt from the ordinance. As described previously, the Broward County noise ordinance does not include maximum allowable sound levels for an industrial receiving property category. The Broward County ordinance has maximum allowable sound levels of 75 dBA and 65 dBA for government facilities, community service facilities and commercial/business facilities a generally less intense land use than for industrial facilities. Nonetheless, the daytime measurement (morning and afternoon) L_{90} that excludes transient noise sources were all less than 75 dBA for all monitoring locations and less than 65 dBA for all

monitoring locations except Monitoring Locations 5 and 6. The latter were influenced by the operation of the gas turbine units.

Several nearby communities, such as the City of Dania Beach located west of the Site and the City of Fort Lauderdale located north and west of the Site, have noise ordinances that include industrial land use. Both cities have a maximum permissible sound level of 75 dBA for a receiving land use classified as industrial. As shown in Table 3.3.7-1, all L_{90} measurements, which excludes transient noise sources, were less than 75 dBA.

3.3.8 Other Environmental Features

Outdoor lighting for PEEC will be necessary to satisfy Occupational Safety and Health Administration (OSHA) requirements for safety and security. Unconstrained lighting can cause "light pollution," which includes "sky glow" and "light trespass." Sky glow is the result of stray light being scattered in the atmosphere brightening the natural sky background level. Light trespass is the term used to describe light or illuminance that strays from its intended purpose and potentially becomes an annoyance. To evaluate the potential lighting impacts for the Project, an ambient outdoor lighting study was conducted and is presented in this section.

3.3.8.1 Background

Light is part of the electromagnetic spectrum, which ranges from radio waves to gamma rays. Electromagnetic radiation waves are fluctuations of electric and magnetic fields, which can transport energy from one location to another. Visible light is not inherently different from the other parts of the electromagnetic spectrum with the exception that the human eye has evolved to detect visible waves. The human eye responds to light based on its frequency. The frequency of light that is within the visible range establishes the observed color. While the response varies from person to person, the Commission Internationale de l'Eclairage (C.I.E., International Commission on Illumination) defined standard luminosity coefficients for the human eye in 1931.

A "candela" refers to the luminous intensity of a lighting source and is measured in candelas (cd). A "lumen" is the total luminous flux of a light source of one candela of luminous intensity. Illuminance is the total luminous flux incident on a surface per unit area. A "lux" is the measure of illumination (1 lumen) that falls on one square meter. The English measurement is the "foot-candle," which is the same illumination (1 lumen) falling on one square feet. A lux is equivalent to 0.093 foot-candle; one foot-candle is 10.76 lux. Luminance is the perceived brightness of an object which has been

illuminated by a source. Common examples of luminance are presented in Table 3.3.8-1. The luminance of an object depends on its material characteristics and reflectance and is measured in candelas per square meter (cd/m^2).

Light Trespass

Some municipalities and states have established programs to reduce light trespass. Light trespass standards are typically based on the amount of light from a light source that is transmitted onto adjoining properties. Light trespass standards are typically different for different land uses. Florida, the City of Hollywood, and Broward County do not have quantitative requirements pertaining to light trespass.

Sky Glow

The earliest measures of sky glow, also called sky brightness, were based on a scale upon which the magnitude of stars visible to the human eye is divided into 6 levels. The brightest star is a magnitude 1 and the dimmest (faintest) star is a magnitude 6. More recently, the magnitude scale was modified to express astronomical surface brightness (stars, planets, etc.) in units known as magnitudes per square arcsecond ($mag/arcsec^2$). The measurement scale is inverse and logarithmic, and is generally used in small area photometry and astronomy. Due to the land use in the area, sky glow measurements were not collected due to the relatively bright nature of the security, safety, street, and industrial lighting in the area.

3.3.8.2 Ambient Illumination Measurements

Illuminance measurements were taken to assess the existing ambient conditions in the vicinity of the Site. Measurements were taken at locations along the fence line of the FPL plant property to determine ambient illumination conditions. The illumination monitoring field efforts were conducted during August 2011. The August 2011 baseline monitoring events were conducted to obtain ambient nighttime light (illuminance) measurements. Measurements were taken using a calibrated Li-Cor LI-189 Photometer and recorded in kilolux (Klux).

The August 2011 illuminance measurements were collected at eight light monitoring locations in three different directions at a height of 5 ft above grade. The first measurement was collected with the meter facing directly up to the night sky. The second measurement was collected with the meter facing offsite light sources perpendicular to the ground. The third measurement was collected with the meter facing onsite light sources also aligned perpendicular to the ground. This was done to

address the light emitted on to and from the existing Port Everglades Plant. The light monitoring locations were the identical to noise monitoring locations presented in Figure 3.3.7-1.

The nighttime ambient illuminance measurements for August 2011 at locations around the Port Everglades Plant property boundary are summarized in Table 3.3.8-2. The observations were collected during a new moon during a clear evening with little to no cloud cover.

The nighttime illuminance with the photometer pointing straight up ranged from 2.2 klux at Location 8 to 0.3 klux recorded at Location 4. The maximum onsite and offsite facing measurements were also located at Location 8, 1.4 klux and 2.3 klux, respectively. The elevated illuminance level measured at Location 8 was due to the nearby bright street lights and Port security lighting in the area of the security gate off of Eisenhower Boulevard. The measurements show that both offsite and onsite light sources contributed to the overall illuminance at Port Everglades Plant property boundary. The range of measurements, when compared to examples in Table 3.3.8-1, reflect the industrial and urban nature of the Site that contains considerable facility and street lighting for continued operations and safety.

TABLE 3.2.1-1

GOVERNMENTAL JURISDICTIONS WITHIN 5-MILES OF THE SITE

County Parks		
City	**Map ID**	**Park Name**
Fort Lauderdale	1	Secret Woods Nature Center
Hollywood	2	West Lake Park
Fort Lauderdale	3	Franklin Park
Fort Lauderdale	4	Roosevelt Gardens Park
Fort Lauderdale	5	Delevoe Park
Hollywood	6	Hollywood North Beach
Fort Lauderdale	7	Lewis Chisolm Park
Fort Lauderdale	8	Lafayette Hart Park
Dania Beach	9	Boater's Park
Hollywood	10	Topeekeegee Yugnee Park

City Parks		
City	**Map ID**	**Park Name**
Hollywood	1	Hollywood Beach Community Center
Hollywood	2	Oakridge Park
Wilton Manors	3	Rachel Richardson Park
Hollywood	4	Hollywood Marina
Fort Lauderdale	5	Sunview Park
Fort Lauderdale	6	Boulevard Gardens Park
Fort Lauderdale	7	Stranahan Park
Fort Lauderdale	8	Greenfield Park
Fort Lauderdale	9	Swimming Hall Of Fame
Fort Lauderdale	10	Lincoln Park
Fort Lauderdale	11	Townsend Park
Fort Lauderdale	12	J C Carter Park
Fort Lauderdale	13	Maj William Lauderdale Park
Fort Lauderdale	14	Hardy, Florence C Park
Fort Lauderdale	15	Bubier Park
Fort Lauderdale	16	Ft Lauderdale High School Park
Fort Lauderdale	17	Birch Los Olas Anchorage
Fort Lauderdale	18	Riverland Elementary Park
Fort Lauderdale	19	Westwood Heights (triangle) Park
Fort Lauderdale	20	Hortt Park
Fort Lauderdale	21	Provident Park
Fort Lauderdale	22	Tarpon Cove Park
Fort Lauderdale	23	Holiday Park
Fort Lauderdale	24	Victoria Park
Fort Lauderdale	25	Bennett Elem School Park
Fort Lauderdale	26	Idlewyld Park

TABLE 3.2.1-1

GOVERNMENTAL JURISDICTIONS WITHIN 5-MILES OF THE SITE

City Parks		
City	**Map ID**	**Park Name**
Fort Lauderdale	27	D C Alexander Park
Fort Lauderdale	28	Riverland Park
Fort Lauderdale	29	Stranahan High School Park
Fort Lauderdale	30	Denison Property Site 125
Fort Lauderdale	31	Coontie Hatchee Landing
Fort Lauderdale	32	Esplanade Park (discovery Park)
Fort Lauderdale	33	Riverwalk Park - South Ii
Fort Lauderdale	34	Harbordale School/park
Fort Lauderdale	35	Flagler Heights
Hollywood	36	Waterview Park
Fort Lauderdale	37	Flamingo Park
Fort Lauderdale	38	Tarpon River Park
Fort Lauderdale	39	Sweeting Park
Fort Lauderdale	40	Sailboat Bend Preserve
Fort Lauderdale	41	Snyder Park
Fort Lauderdale	42	Riverwalk Park - North Iii
Fort Lauderdale	43	Sistrunk Park
Fort Lauderdale	44	Middle River Terrace Park
Fort Lauderdale	45	Virginia S Young Park
Fort Lauderdale	46	Benenson Park
Fort Lauderdale	47	Mizell Center
Fort Lauderdale	48	Floyd Hull Stadium
Fort Lauderdale	49	Riverside Park
Fort Lauderdale	50	Riverwalk Park - North I
Fort Lauderdale	51	15th St Boat Basin
Fort Lauderdale	52	Melrose Park
Fort Lauderdale	53	Guthrie-blake Park
Fort Lauderdale	54	Dillard Park
Fort Lauderdale	55	North Fork School/park
Fort Lauderdale	56	Lauderdale Manors Park
Fort Lauderdale	57	Lauderdale Villas Park
Fort Lauderdale	58	Riverwalk Park - South I
Fort Lauderdale	59	Riverwalk Park - North Ii
Fort Lauderdale	60	Sunrise Middle School/pool Only
Fort Lauderdale	61	Annie Beck Park
Fort Lauderdale	62	Sunset School/park
Fort Lauderdale	63	North Fork Riverfront Park
Fort Lauderdale	64	Warfield Park
Fort Lauderdale	65	Poinciana Park
Fort Lauderdale	66	Riverwalk Park - South

TABLE 3.2.1-1

GOVERNMENTAL JURISDICTIONS WITHIN 5-MILES OF THE SITE

City Parks		
City	**Map ID**	**Park Name**
Fort Lauderdale	67	Himarshee Park
Fort Lauderdale	68	Hector Park
Fort Lauderdale	69	Purple Pickle Park
Fort Lauderdale	70	Civic Peoples Park
Fort Lauderdale	71	Ann Herman Park
Fort Lauderdale	72	St Thomas Aquinas School
Fort Lauderdale	73	Georgian Oaks (pud)
Fort Lauderdale	74	Rogers School
Fort Lauderdale	75	Colleys Landing
Fort Lauderdale	76	Walker School Park
Fort Lauderdale	77	Bryant H Peney Park
Fort Lauderdale	78	Welcome Park
Fort Lauderdale	79	Francis I Abreu Place
Fort Lauderdale	80	Virginia Shuman Young Park
Fort Lauderdale	81	Cliff Lake Park
Fort Lauderdale	82	Dillard Park Green Space
Fort Lauderdale	83	Bayview Dr Canal Ends
Fort Lauderdale	84	South Beach
Parkland	85	Equestrian Center At Temple Park
Fort Lauderdale	86	Croissant Park Center
Fort Lauderdale	87	Merle Fogg Park
Fort Lauderdale	88	Collie Hammock Park
Fort Lauderdale	89	New River Dockage
Fort Lauderdale	90	Jack Kaye Park
Fort Lauderdale	91	George W English Park/boat Ramps
Fort Lauderdale	92	Westwood Heights School/park
Fort Lauderdale	93	Willingham Park
Fort Lauderdale	94	Public Beach
Wilton Manors	95	Colohatchee Park
Dania Beach	96	C W Thomas Park
Dania Beach	97	Byrd Park
Dania Beach	98	Mildred V Jones Park
Dania Beach	99	Frost Park
Wilton Manors	100	Colohatchee Boat Ramp
Dania Beach	101	It Parker Community Ctr
Wilton Manors	102	Hagen Park
Hollywood	103	Holland Park
Hollywood	104	Hollywood Beach Bandshell/theater
Hollywood	105	Charnow Park
Hollywood	106	Eppleman Park

TABLE 3.2.1-1

GOVERNMENTAL JURISDICTIONS WITHIN 5-MILES OF THE SITE

City Parks		
City	**Map ID**	**Park Name**
Hollywood	107	Henry Graham Park
Hollywood	108	Martin Luther King Jr Park/commcenter
Dania Beach	109	Nyberg Swanson House
Dania Beach	110	Sun Garden Isles Park
Hollywood	111	Mara Berman Giulianti Park
Wilton Manors	112	Veterans Park
Hollywood	113	Boggs Field
Hollywood	114	Eco Grande Golf Course
Hollywood	115	Rainbow Tot Lot
Hollywood	116	Emerald Hills Park
Dania Beach	117	Northside Melaleuca Park
Dania Beach	118	Tigertail Park
Dania Beach	119	Ocean Park
Dania Beach	120	Patrick J Meli Park
Dania Beach	121	Mullikin Park
Hollywood	122	Oakwood Hills Park
Hollywood	123	Rotary Park
Hollywood	124	Dowdy Baseball Park
Hollywood	125	Hollywood Beach Golf & Country Club
Hollywood	126	John B Kooser Memorial Park
Wilton Manors	127	Richardson Park & Preserve

State Parks		
City	**Map ID**	**Park Name**
Fort Lauderdale	1	H Taylor Birch State Park
Hollywood	2	John U Lloyd State Park

Historic Preservations		
City	**Map ID**	**Park Name**
Fort Lauderdale	1	Bonnet House

Note: See Figure 3.2.1-2

TABLE 3.2.8.2-1.
PORT EVERGLADES ENERGY CENTER
EXISTING TRAFFIC CONDITIONS

Roadway	From	To	Number of Lanes	2009 Current AADT	Level of Service*	
					Adopted	Current
Griffin Road	I-95	U.S. 1	6	29,500	D	C
S.R. 84	I-95	SW 9th Ave	8	55,000	D	D
	SW 9th Ave.	U.S. 1	6	44,000	D	D
I-595	I-95	U.S. 1	8	108,000	D	C
I-595/ Eller Drive	U.S. 1	SW 14th Ave	4	15,500	D	B
U.S. 1/ Federal Highway	Griffin Road	I-595/ Eller Drive	6	48,000	D	C
	I-595/ Eller Drive	S.R. 84	6	23,000	D	B

Source: Broward County Metropolitan Planning Organization, 2011.

Note: AADT= annual average daily traffic.

*Level of Service (LOS) Descriptions (Florida Department of Transportation)

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.

TABLE 3.3.3-1
WATER USE PERMITS WITHIN 5 MILES OF PEEC

Permit Number	Facility ID	Project Name	Status	Section	Range	Township	County	Source	Pump Capacity (Gallons per Minute)
06-01474-W	164591	BROWARD COUNTY SOUTH REGIONAL WELLFIELD	Abandoned	25,36	41	50	Broward	Aquifer Unspecified	0
06-01474-W	164600	BROWARD COUNTY SOUTH REGIONAL WELLFIELD	Abandoned	25,36	41	50	Broward	Aquifer Unspecified	0
06-05997-W	254438	FGT 6" FORT LAUDERDALE LOOP HYDROTEST	Primary	30	42	50	Broward	Biscayne Aquifer	90
06-06359-W	260230	SR 826 / EXPRESS CONNECTOR (FM 403984-1)	Primary	23	42	50	Broward	Biscayne Aquifer	600
06-02074-W	6450	12 AVENUE SITE	Standby	16	42	48	Broward	Biscayne Aquifer	110
06-01934-W	4128	THE 110 TOWER BUILDING GROUNDWATER REMEDIATION	Standby	10	42	50	Broward	Biscayne Aquifer	12
06-01837-W	2194	1505 SOUTH FEDERAL HWY	Standby	3	42	51	Broward	Biscayne Aquifer	40
06-01837-W	2195	1505 SOUTH FEDERAL HWY	Standby	3	42	51	Broward	Biscayne Aquifer	40
06-01837-W	2196	1505 SOUTH FEDERAL HWY	Standby	3	42	51	Broward	Biscayne Aquifer	40
06-01845-W	2291	ARDCO	Standby	22	42	50	Broward	Biscayne Aquifer	25
06-01845-W	2292	ARDCO	Standby	22	42	50	Broward	Biscayne Aquifer	15
06-01697-W	9947	AMERADA HESS 09291	Standby	14	42	50	Broward	Biscayne Aquifer	25
06-01608-W	9327	SHELL PORT EVERGLADES DISTRIBUTION PLANT	Standby	23	42	50	Broward	Biscayne Aquifer	15
06-01904-W	3389	NATIONAL LINEN SERVICE	Standby	3	42	50	Broward	Biscayne Aquifer	20
06-00122-W	16521	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	80
06-00122-W	16522	CITY WIDE IRRIGATION	Standby	12,13	41	49	Broward	Biscayne Aquifer	80
06-00122-W	16523	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	80
06-00122-W	16524	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	80
06-00122-W	16525	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	80
06-00122-W	16526	CITY WIDE IRRIGATION	Standby	12,13	41	49	Broward	Biscayne Aquifer	80
06-00122-W	16527	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	150
06-00122-W	16528	CITY WIDE IRRIGATION	Standby	12,13	41	49	Broward	Biscayne Aquifer	0
06-00122-W	16549	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	150
06-00122-W	16550	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	150
06-00122-W	16551	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	400
06-00122-W	16552	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	300
06-00122-W	16553	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	300
06-00122-W	16555	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	150
06-00122-W	24562	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	80
06-00122-W	24563	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	150
06-00122-W	24564	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	0
06-00122-W	24566	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	150
06-00122-W	24567	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	150
06-02035-W	5743	MELROSE PARK	Standby	18	42	50	Broward	Biscayne Aquifer	400
06-01600-W	9473	EXXON STATION 4-4961	Standby	2	42	50	Broward	Biscayne Aquifer	32
06-01873-W	2688	HESS STATION NO 09304	Primary	3	42	50	Broward	Biscayne Aquifer	25
06-02001-W	5020	BETHUNE ELEMENTARY	Standby	4	42	51	Broward	Biscayne Aquifer	300
06-01626-W	9530	MOBIL STATION 02-FGR	Standby	17	42	50	Broward	Biscayne Aquifer	25
06-00122-W	16529	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	150
06-00122-W	16530	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	150
06-00122-W	16531	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	500
06-00122-W	16532	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	500
06-00122-W	16533	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	500
06-00122-W	16538	CITY WIDE IRRIGATION	Primary	12,13	41	49	Broward	Biscayne Aquifer	150
06-01382-W	8725	EAST SUNRISE BOULEVARD TEXACO (1420 E. SUNRISE & 14TH AVE)	Primary	2	42	50	Broward	Biscayne Aquifer	10
06-01382-W	8726	EAST SUNRISE BOULEVARD TEXACO (1420 E. SUNRISE & 14TH AVE)	Primary	2	42	50	Broward	Biscayne Aquifer	20
06-01382-W	8727	EAST SUNRISE BOULEVARD TEXACO (1420 E. SUNRISE & 14TH AVE)	Primary	2	42	50	Broward	Biscayne Aquifer	20
06-01383-W	8736	7-ELEVEN STORE NO 30000 - RECOVERY WELL	Standby	10	42	50	Broward	Biscayne Aquifer	65
06-01455-W	8973	ALAMO FORT LAUDERDALE	Standby	22	42	50	Broward	Biscayne Aquifer	20
06-01311-W	8538	SHELL 88 39998.26	Standby	3	42	50	Broward	Biscayne Aquifer	20
06-01335-W	8617	SHELL SERVICE STATION	Standby	4	42	51	Broward	Biscayne Aquifer	20
06-01530-W	9222	FIRESTONE STORE #1822	Standby	10	42	50	Broward	Biscayne Aquifer	25

TABLE 3.3.3-1
WATER USE PERMITS WITHIN 5 MILES OF PEEC

Permit Number	Facility ID	Project Name	Status	Section	Range	Township	County	Source	Pump Capacity (Gallons per Minute)
06-01566-W	9346	TEXACO STATION 24-021-1343	Standby	33	42	49	Broward	Biscayne Aquifer	25
06-01566-W	9347	TEXACO STATION 24-021-1343	Standby	33	42	49	Broward	Biscayne Aquifer	20
06-01843-W	2280	MOBIL STATION 02-HYT	Standby	21	42	50	Broward	Biscayne Aquifer	8
06-01795-W	13790	FOREST LAWN CENTRAL	Primary	5	42	50	Broward	Biscayne Aquifer	300
06-01839-W	2199	EXXON STATION NO 4-5893 (2330 S FEDERAL HIGHWAY)	Standby	14	42	50	Broward	Biscayne Aquifer	15
06-01534-W	9217	HARBOUR TOWNE MARINA	Standby	35	42	50	Broward	Biscayne Aquifer	30
06-01902-W	3245	EXXON STATION NO 4-5272 (FDEP# 068502009)	Standby	2	42	50	Broward	Biscayne Aquifer	3
06-01902-W	3246	EXXON STATION NO 4-5272 (FDEP# 068502009)	Standby	2	42	50	Broward	Biscayne Aquifer	3
06-01258-W	8347	GREENSPACE NURSERY	Primary	4	42	50	Broward	Biscayne Aquifer	50
06-01246-W	24786	AMOCO SERVICE STATION #829	Primary	34	42	49	Broward	Biscayne Aquifer	40
06-01270-W	8392	AMOCO SERVICE STATION #743 (601 SW 17TH ST & N FEDERAL HWY)	Primary	18	42	49	Broward	Biscayne Aquifer	30
06-01270-W	8393	AMOCO SERVICE STATION #743 (601 SW 17TH ST & N FEDERAL HWY)	Primary	18	42	49	Broward	Biscayne Aquifer	30
06-01599-W	9337	COMMERCE COMPLEX	Primary	20	42	50	Broward	Biscayne Aquifer	50
06-01899-W	3013	REMEDIAL ACTION PLAN	Standby	10	42	51	Broward	Biscayne Aquifer	0
06-01899-W	3014	REMEDIAL ACTION PLAN	Standby	10	42	51	Broward	Biscayne Aquifer	50
06-01895-W	3015	TEXACO RETAIL FACILITY DEP FACILITY NO 068502666	Primary	14	42	50	Broward	Biscayne Aquifer	7
06-01895-W	3016	TEXACO RETAIL FACILITY DEP FACILITY NO 068502666	Primary	14	42	50	Broward	Biscayne Aquifer	7
06-01895-W	3017	TEXACO RETAIL FACILITY DEP FACILITY NO 068502666	Primary	14	42	50	Broward	Biscayne Aquifer	7
06-01895-W	3018	TEXACO RETAIL FACILITY DEP FACILITY NO 068502666	Primary	14	42	50	Broward	Biscayne Aquifer	7
06-01895-W	3019	TEXACO RETAIL FACILITY DEP FACILITY NO 068502666	Primary	14	42	50	Broward	Biscayne Aquifer	7
06-02423-W	25516	STATE ROAD 7 (US 441) RIVERLAND ROAD TO BROWARD BOULEVARD	Primary	6,7,18	42	50	Broward	Biscayne Aquifer	110
06-02423-W	25517	STATE ROAD 7 (US 441) RIVERLAND ROAD TO BROWARD BOULEVARD	Primary	6,7,18	42	50	Broward	Biscayne Aquifer	110
06-02857-W	30649	BUSINESS PARK/HOTEL IRRIGATION	Primary	33	42	50	Broward	Biscayne Aquifer	50
06-01474-W	5619	BROWARD COUNTY SOUTH REGIONAL WELLFIELD	Standby	25,36	41	50	Broward	Biscayne Aquifer	0
06-01474-W	5620	BROWARD COUNTY SOUTH REGIONAL WELLFIELD	Standby	25,36	41	50	Broward	Biscayne Aquifer	0
06-02733-W	29180	DANIA FARMS INC	Primary	34	42	50	Broward	Biscayne Aquifer	200
06-01474-W	136899	BROWARD COUNTY SOUTH REGIONAL WELLFIELD	#N/A	25,36	41	50	Broward	Biscayne Aquifer	0
06-01474-W	136901	BROWARD COUNTY SOUTH REGIONAL WELLFIELD	Monitor	25,36	41	50	Broward	Biscayne Aquifer	0
06-01474-W	136903	BROWARD COUNTY SOUTH REGIONAL WELLFIELD	#N/A	25,36	41	50	Broward	Biscayne Aquifer	0
06-02299-W	22430	TACO BELL RESTAURANT	Standby	7	42	50	Broward	Biscayne Aquifer	55
06-02801-W	29948	INTERNATIONAL GAME FISH ASSOCIATON	Primary	33	42	50	Broward	Biscayne Aquifer	30
06-02837-W	30268	FRANKLIN PARK	Primary	5	42	50	Broward	Biscayne Aquifer	110
06-02239-W	21544	RINKER MATERIALS/HOLLYWOOD	Primary	8	42	51	Broward	Biscayne Aquifer	220
06-02239-W	21545	RINKER MATERIALS/HOLLYWOOD	Primary	8	42	51	Broward	Biscayne Aquifer	220
06-02239-W	21546	RINKER MATERIALS/HOLLYWOOD	Primary	8	42	51	Broward	Biscayne Aquifer	100
06-02671-W	28525	RHONDA HOLLANDER	Primary	3	42	51	Broward	Biscayne Aquifer	58
06-02685-W	28623	WILLOW MANOR NORTH	Primary	34	42	50	Broward	Biscayne Aquifer	30
06-02683-W	30297	ESTATES OF FT LAUDERDALE	Primary	32	42	50	Broward	Biscayne Aquifer	175
06-02683-W	30298	ESTATES OF FT LAUDERDALE	Primary	32	42	50	Broward	Biscayne Aquifer	175
06-01575-W	1471	PORT 95 COMMERCE PARK	Abandoned	20	42	50	Broward	Biscayne Aquifer	0
06-01575-W	1472	PORT 95 COMMERCE PARK	Abandoned	20	42	50	Broward	Biscayne Aquifer	0
06-02624-W	27682	CONNER WAREHOUSE	Primary	20	42	50	Broward	Biscayne Aquifer	30
06-03512-W	118907	KINGSTON BUILDING	Primary	7	42	50	Broward	Biscayne Aquifer	55
06-03417-W	115861	HAGEN PARK	Primary	27	42	49	Broward	Biscayne Aquifer	75
06-03417-W	115862	HAGEN PARK	Standby	27	42	49	Broward	Biscayne Aquifer	40
06-02791-W	29934	SOFTSCAPES INC	Primary	9	42	50	Broward	Biscayne Aquifer	60
06-02791-W	29935	SOFTSCAPES INC	Primary	9	42	50	Broward	Biscayne Aquifer	60
06-03749-W	129274	SUN HARBOUR	Primary	9	42	50	Broward	Biscayne Aquifer	45
06-03572-W	121578	FAMILY NUTRITION CENTER	Primary	6	42	50	Broward	Biscayne Aquifer	50
06-03595-W	122170	STIRLING BUSINESS PARK	Primary	34	42	50	Broward	Biscayne Aquifer	90
06-02678-W	28585	VICTORY LIVING PROGRAMS	Primary	33	42	50	Broward	Biscayne Aquifer	115
06-02678-W	122092	VICTORY LIVING PROGRAMS	Primary	33	42	50	Broward	Biscayne Aquifer	40
06-02930-W	32018	EDGEWOOD DRAINAGE IMPROVEMENTS & (PASSIVE PARK)	Primary	21	42	50	Broward	Biscayne Aquifer	150

TABLE 3.3.3-1
WATER USE PERMITS WITHIN 5 MILES OF PEEC

Permit Number	Facility ID	Project Name	Status	Section	Range	Township	County	Source	Pump Capacity (Gallons per Minute)
06-02797-W	29933	GULFSTREAM APARTMENTS	Primary	34	42	50	Broward	Biscayne Aquifer	30
06-02929-W	31855	MAVERICK MANAGEMENT INC	Primary	6	42	50	Broward	Biscayne Aquifer	45
06-03499-W	118304	ANGLERS LANDING CENTER	Primary	29	42	50	Broward	Biscayne Aquifer	75
06-03185-W	105280	DOWDY PARK	Primary	10	42	51	Broward	Biscayne Aquifer	250
06-03184-W	105273	BOGGS FIELD	Primary	9	42	51	Broward	Biscayne Aquifer	250
06-03371-W	112972	FLORIDA EAST COAST RAILWAY	Primary	34	42	50	Broward	Biscayne Aquifer	40
06-03717-W	127612	TREASURE COVE YACHT CLUB TOWNHOMES	Primary	29	42	50	Broward	Biscayne Aquifer	50
06-03380-W	113211	RENAISSANCE ON THE OCEAN	Production	36	42	50	Broward	Biscayne Aquifer	40
06-03380-W	113212	RENAISSANCE ON THE OCEAN	Injection	36	42	50	Broward	Biscayne Aquifer	0
06-03380-W	113666	RENAISSANCE ON THE OCEAN	Production	36	42	50	Broward	Biscayne Aquifer	100
06-03380-W	113667	RENAISSANCE ON THE OCEAN	Injection	36	42	50	Broward	Biscayne Aquifer	0
06-04246-W	162908	WATER IRRIGATION PROJECT	Primary	33	42	50	Broward	Biscayne Aquifer	100
06-03665-W	125078	AMERICAN TELECOM PARTNERS	Primary	21	42	50	Broward	Biscayne Aquifer	30
06-04036-W	146407	THUNDERBIRD DEVELOPMENT AKA VILLAS AT HARBOR ISLES WEST	Primary	32	42	50	Broward	Biscayne Aquifer	90
06-03315-W	110781	SUNTRUST BANK - BROWARD	Primary	9	41	48	Broward	Biscayne Aquifer	20
06-04001-W	144915	WILTON PINES TOWNHOMES	Primary	26	42	49	Broward	Biscayne Aquifer	100
06-04001-W	144918	WILTON PINES TOWNHOMES	e Plugged and Abanc	26	42	49	Broward	Biscayne Aquifer	0
06-03289-W	109979	YOUNG ISRAEL OF HOLLYWOOD	Primary	31	42	50	Broward	Biscayne Aquifer	50
06-03635-W	123352	OLDIE GOLDIE BAR	Primary	5	42	50	Broward	Biscayne Aquifer	40
06-04742-W	213534	DELL MANOR CONDOMINIUM	Primary	51	10	42	Broward	Biscayne Aquifer	60
06-04742-W	213535	DELL MANOR CONDOMINIUM	Injection	51	10	42	Broward	Biscayne Aquifer	0
06-03696-W	126680	DILLARD HIGH SCHOOL	Primary	32	42	49	Broward	Biscayne Aquifer	85
06-03696-W	133659	DILLARD HIGH SCHOOL	Primary	32	42	49	Broward	Biscayne Aquifer	90
06-03696-W	169124	DILLARD HIGH SCHOOL	Primary	32	42	49	Broward	Biscayne Aquifer	60
06-04358-W	170948	RIVERLAND PARK	Primary	8	42	50	Broward	Biscayne Aquifer	125
06-04241-W	161528	WILTON GARDENS	Primary	26	42	49	Broward	Biscayne Aquifer	60
06-04474-W	184774	NORTH WEST 6TH STREET (SISTRUNK BLVD LANDSCAPE)	Primary	5	42	50	Broward	Biscayne Aquifer	120
06-04199-W	158671	PLUMMER CONVENIENCE STORE	Primary	5	42	50	Broward	Biscayne Aquifer	75
06-04071-W	149945	WELL	Primary	5	42	50	Broward	Biscayne Aquifer	40
06-03834-W	133478	NW 21ST/23RD AVENUE ROADWAY IMPROVEMENTS	Primary	32,33	42	49	Broward	Biscayne Aquifer	60
06-04342-W	169207	STRANAHAN HIGH SCHOOL	Primary	9	42	50	Broward	Biscayne Aquifer	275
06-04342-W	169208	STRANAHAN HIGH SCHOOL	Primary	9	42	50	Broward	Biscayne Aquifer	90
06-04342-W	169209	STRANAHAN HIGH SCHOOL	Primary	9	42	50	Broward	Biscayne Aquifer	120
06-04342-W	169210	STRANAHAN HIGH SCHOOL	Primary	9	42	50	Broward	Biscayne Aquifer	60
06-05121-W	221483	HALLANDALE/W HOLLYWOOD/RIVERLAND/SHERIDAN HILLS ELEM/HOLLYWO	Primary		0	0	Broward	Biscayne Aquifer	200
06-04630-W	191863	COLLINS ELEM/ATTUCKS MIDDLE/OLSEN MIDDLE/SEAGULL SCHOOL	Primary	3,4	42	51	Broward	Biscayne Aquifer	300
06-04630-W	191864	COLLINS ELEM/ATTUCKS MIDDLE/OLSEN MIDDLE/SEAGULL SCHOOL	Primary	3,4	42	51	Broward	Biscayne Aquifer	200
06-04630-W	191865	COLLINS ELEM/ATTUCKS MIDDLE/OLSEN MIDDLE/SEAGULL SCHOOL	Primary	3,4	42	51	Broward	Biscayne Aquifer	200
06-04630-W	191866	COLLINS ELEM/ATTUCKS MIDDLE/OLSEN MIDDLE/SEAGULL SCHOOL	Primary	3,4	42	51	Broward	Biscayne Aquifer	100
06-04713-W	193167	NORTH FORK ELEMENTARY	Primary	4	42	50	Broward	Biscayne Aquifer	200
06-05163-W	215577	CROISSANT PARK, VIRGINIA YOUNG, SUNLAND PARK, PLANTATION ELE	Primary		0	0	Broward	Biscayne Aquifer	150
06-05163-W	215578	CROISSANT PARK, VIRGINIA YOUNG, SUNLAND PARK, PLANTATION ELE	Primary		0	0	Broward	Biscayne Aquifer	100
06-05163-W	215580	CROISSANT PARK, VIRGINIA YOUNG, SUNLAND PARK, PLANTATION ELE	Primary		0	0	Broward	Biscayne Aquifer	350
06-05163-W	215581	CROISSANT PARK, VIRGINIA YOUNG, SUNLAND PARK, PLANTATION ELE	Primary		0	0	Broward	Biscayne Aquifer	120
06-05163-W	215582	CROISSANT PARK, VIRGINIA YOUNG, SUNLAND PARK, PLANTATION ELE	Primary		0	0	Broward	Biscayne Aquifer	200
06-05163-W	215583	CROISSANT PARK, VIRGINIA YOUNG, SUNLAND PARK, PLANTATION ELE	Primary		0	0	Broward	Biscayne Aquifer	200
06-04696-W	192971	ORIOLE ELEM/JAMES S RICKARDS, SUNRISE & LAUDERDALE LAKES MID	Primary	11,20,35	42	49	Broward	Biscayne Aquifer	200
06-05122-W	214682	EDGEWOOD, LLOYD ESTATES, WELLEBY ELEM	Primary	20	41	49	Broward	Biscayne Aquifer	350
06-05123-W	214694	BENNETT, SAWGRASS, PARK LAKES ELEM/CHARLES DREW FAMILY RESOU	Primary	22	42	49	Broward	Biscayne Aquifer	120
06-04520-W	188740	CRYSTAL LAKES	Primary	4	42	51	Broward	Biscayne Aquifer	140
06-04692-W	192805	LAKE MAYAN APARTMENTS	Primary	13	42	50	Broward	Biscayne Aquifer	32
06-04692-W	192806	LAKE MAYAN APARTMENTS	Injection	13	42	50	Broward	Biscayne Aquifer	0
06-01225-W	8276	RUNWAY GROWERS, INC. NURSERY	Primary	20	42	50	Broward	Biscayne Aquifer	250

TABLE 3.3.3-1
WATER USE PERMITS WITHIN 5 MILES OF PEEC

Permit Number	Facility ID	Project Name	Status	Section	Range	Township	County	Source	Pump Capacity (Gallons per Minute)
06-01225-W	8277	RUNWAY GROWERS, INC. NURSERY	Primary	20	42	50	Broward	Biscayne Aquifer	250
06-05870-W	231401	SUN RECYCLING I I I	Primary	20	42	50	Broward	Biscayne Aquifer	120
06-05744-W	228029	ANCHOR BAY APARTMENTS	Primary	26	42	50	Broward	Biscayne Aquifer	50
06-05969-W	253868	STIRLING OFFICE	Primary	4	42	51	Broward	Biscayne Aquifer	50
06-05745-W	228034	MOTOR SERVICES HUGO STAMP	Primary	22	42	50	Broward	Biscayne Aquifer	50
06-05056-W	213490	ARDEN PARK	Recharge	31	42	50	Broward	Biscayne Aquifer	70
06-05056-W	213491	ARDEN PARK	Recharge	31	42	50	Broward	Biscayne Aquifer	100
06-01279-W	8471	SOUTH BROWARD HIGH SCHOOL	Primary	10	42	51	Broward	Biscayne Aquifer	300
06-01279-W	168558	SOUTH BROWARD HIGH SCHOOL	Primary	10	42	51	Broward	Biscayne Aquifer	60
06-04448-W	179993	SHERIDAN STREET TRI-RAIL STATION	Primary	5	42	51	Broward	Biscayne Aquifer	36
06-05642-W	226688	OAKWOOD CENTER	Primary	33	42	50	Broward	Biscayne Aquifer	40
06-05013-W	198502	LAFAYETTE HART PARK	Primary	5	42	50	Broward	Biscayne Aquifer	35
06-05111-W	214493	LETO ACRES	Primary	32	42	50	Broward	Biscayne Aquifer	90
06-05111-W	214494	LETO ACRES	Primary	32	42	50	Broward	Biscayne Aquifer	50
06-06073-W	255877	FORT LAUDERDALE HIGH SCHOOL POOL	Primary	34	42	49	Broward	Biscayne Aquifer	240
06-06073-W	255878	FORT LAUDERDALE HIGH SCHOOL POOL	Injection	34	42	49	Broward	Biscayne Aquifer	0
06-05039-W	212890	DIXIE COURT HOUSING AUTHORITY	Primary	4	42	50	Broward	Biscayne Aquifer	70
06-04980-W	197266	BOYMIC FARMS LTD	Primary	21	42	50	Broward	Biscayne Aquifer	80
06-05485-W	223346	DIXIE COURT PHASE 3	Primary	4	42	50	Broward	Biscayne Aquifer	170
06-01714-W	221478	CONSERVATION SUBSTATION	Primary	18,19,23,25,	39	47	Broward	Biscayne Aquifer	50
06-05305-W	218636	RIO A C WELL	Primary	16	42	50	Broward	Biscayne Aquifer	65
06-05305-W	218637	RIO A C WELL	Abandoned	16	42	50	Broward	Biscayne Aquifer	0
06-05478-W	223113	FORT LAUDERDALE READY MIX BATCH PLANT	Primary	22	42	50	Broward	Biscayne Aquifer	375
06-05478-W	223114	FORT LAUDERDALE READY MIX BATCH PLANT	Primary	22	42	50	Broward	Biscayne Aquifer	375
06-03545-W	219063	BROWARD AREA OFFICE	Primary	3,4,15,33	41	50	Broward	Biscayne Aquifer	160
06-03545-W	219064	BROWARD AREA OFFICE	Primary	3,4,15,33	41	50	Broward	Biscayne Aquifer	160
06-05473-W	223041	SECURE STORAGE AT 84	Primary	21	42	50	Broward	Biscayne Aquifer	100
06-05048-W	213182	AIRPORT/SEAPORT EMS WAREHOUSE FIRE STATION	Primary	29	42	50	Broward	Biscayne Aquifer	70
06-05837-W	231169	UNI WELD	Primary	29	42	50	Broward	Biscayne Aquifer	40
06-05837-W	231170	UNI WELD	e Plugged and Abanc	29	42	50	Broward	Biscayne Aquifer	0
06-04926-W	196304	BROWARD COUNTY POLICE BENEVOLENT	Primary	20	42	50	Broward	Biscayne Aquifer	35
06-04971-W	197143	ALL STEEL & GYPSUM PRODUCTS	Primary	32	42	50	Broward	Biscayne Aquifer	60
06-05161-W	215527	BARCAR WAREHOUSE	Primary	2	42	50	Broward	Biscayne Aquifer	40
06-04981-W	219074	FLORIDA POWER AND LIGHT ANDREWS SUBSTATION	Primary	16,18,28	42	48	Broward	Biscayne Aquifer	100
06-04981-W	219075	FLORIDA POWER AND LIGHT ANDREWS SUBSTATION	Primary	16,18,28	42	48	Broward	Biscayne Aquifer	100
06-04981-W	219077	FLORIDA POWER AND LIGHT ANDREWS SUBSTATION	Primary	16,18,28	42	48	Broward	Biscayne Aquifer	100
06-05097-W	214151	HIDDEN HARBOR CONDOMINIUM	Primary	34	42	49	Broward	Biscayne Aquifer	69
06-05097-W	214152	HIDDEN HARBOR CONDOMINIUM	Primary	34	42	49	Broward	Biscayne Aquifer	0
06-05606-W	225726	CITY OF WILTON MANORS	Primary		0	0	Broward	Biscayne Aquifer	55
06-05606-W	225727	CITY OF WILTON MANORS	Primary		0	0	Broward	Biscayne Aquifer	55
06-05606-W	225728	CITY OF WILTON MANORS	Primary		0	0	Broward	Biscayne Aquifer	55
06-05606-W	225730	CITY OF WILTON MANORS	Primary		0	0	Broward	Biscayne Aquifer	70
06-05606-W	225731	CITY OF WILTON MANORS	Primary		0	0	Broward	Biscayne Aquifer	55
06-05606-W	225733	CITY OF WILTON MANORS	Primary		0	0	Broward	Biscayne Aquifer	120
06-05606-W	225735	CITY OF WILTON MANORS	Primary		0	0	Broward	Biscayne Aquifer	55
06-05287-W	218064	84 COMMERCE CENTER	Primary	20	42	50	Broward	Biscayne Aquifer	40
06-05961-W	253736	FIRST MT PLEASANT MISSIONARY BAPTIST CHURCH	Primary	5	42	50	Broward	Biscayne Aquifer	8.5
06-05961-W	253737	FIRST MT PLEASANT MISSIONARY BAPTIST CHURCH	Primary	5	42	50	Broward	Biscayne Aquifer	8.5
06-04263-W	167991	COOLING TOWER MAKE UP WATER	Primary	15	42	40	Broward	Biscayne Aquifer	300
06-04263-W	169668	COOLING TOWER MAKE UP WATER	Standby	15	42	40	Broward	Biscayne Aquifer	55
06-04263-W	169669	COOLING TOWER MAKE UP WATER	Standby	15	42	40	Broward	Biscayne Aquifer	55
06-04263-W	257869	COOLING TOWER MAKE UP WATER	Monitor	15	42	40	Broward	Biscayne Aquifer	0
06-05416-W	220821	LOW KEY MEATS	Primary	5	42	50	Broward	Biscayne Aquifer	50

TABLE 3.3.3-1
WATER USE PERMITS WITHIN 5 MILES OF PEEC

Permit Number	Facility ID	Project Name	Status	Section	Range	Township	County	Source	Pump Capacity (Gallons per Minute)
06-00130-W	14613	TOPEEKEEGEE YUGNEE PARK	Primary	5,8	42	51	Broward	Biscayne Aquifer	400
06-00130-W	14614	TOPEEKEEGEE YUGNEE PARK	Standby	5,8	42	51	Broward	Biscayne Aquifer	200
06-00130-W	14615	TOPEEKEEGEE YUGNEE PARK	Plugged and Abanc	5,8	42	51	Broward	Biscayne Aquifer	0
06-00130-W	24454	TOPEEKEEGEE YUGNEE PARK	Standby	5,8	42	51	Broward	Biscayne Aquifer	200
06-06176-W	258072	RIVERBEND SOUTH	Primary	5	42	50	Broward	Biscayne Aquifer	200
06-01426-W	8864	CEMEX - SOUTH FORT LAUDERDALE READY-MIX	Primary	22	42	50	Broward	Biscayne Aquifer	225
06-00123-W	31028	FORT LAUDERDALE PUBLIC WATER SUPPLY	Abandoned	13332	42	49	Broward	Biscayne Aquifer	0
06-00038-W	138200	HOLLYWOOD WATER TREATMENT PLANT	Monitor	25,36	41	50	Broward	Biscayne Aquifer	0
06-00038-W	138201	HOLLYWOOD WATER TREATMENT PLANT	Monitor	25,36	41	50	Broward	Biscayne Aquifer	0
06-00123-W	31028	FORT LAUDERDALE PUBLIC WATER SUPPLY	Abandoned	13332	42	49	Broward	Biscayne Aquifer	0
06-00123-W	31030	FORT LAUDERDALE PUBLIC WATER SUPPLY	Abandoned	13332	42	49	Broward	Biscayne Aquifer	0
06-00123-W	31030	FORT LAUDERDALE PUBLIC WATER SUPPLY	Abandoned	13332	42	49	Broward	Biscayne Aquifer	0
06-00123-W	117164	FORT LAUDERDALE PUBLIC WATER SUPPLY	Monitor	13332	42	49	Broward	Biscayne Aquifer	0
06-00123-W	117165	FORT LAUDERDALE PUBLIC WATER SUPPLY	Monitor	13332	42	49	Broward	Biscayne Aquifer	0
06-00123-W	117166	FORT LAUDERDALE PUBLIC WATER SUPPLY	Monitor	13332	42	49	Broward	Biscayne Aquifer	0
06-00123-W	212902	FORT LAUDERDALE PUBLIC WATER SUPPLY	Monitor	13332	42	49	Broward	Biscayne Aquifer	0
06-00123-W	212903	FORT LAUDERDALE PUBLIC WATER SUPPLY	Monitor	13332	42	49	Broward	Biscayne Aquifer	0
06-00123-W	212904	FORT LAUDERDALE PUBLIC WATER SUPPLY	Monitor	13332	42	49	Broward	Biscayne Aquifer	0
06-00123-W	212912	FORT LAUDERDALE PUBLIC WATER SUPPLY	Monitor	13332	42	49	Broward	Biscayne Aquifer	0
06-00431-W	28612	FORT LAUDERDALE-HOLLYWOOD INTERNATIONAL AIRPORT	Plugged and Abanc	22,27,34	42	50	Broward	Biscayne Aquifer	0
06-00431-W	28613	FORT LAUDERDALE-HOLLYWOOD INTERNATIONAL AIRPORT	Standby	22,27,34	42	50	Broward	Biscayne Aquifer	90
06-00431-W	28614	FORT LAUDERDALE-HOLLYWOOD INTERNATIONAL AIRPORT	Plugged and Abanc	22,27,34	42	50	Broward	Biscayne Aquifer	0
06-00431-W	28615	FORT LAUDERDALE-HOLLYWOOD INTERNATIONAL AIRPORT	Primary	22,27,34	42	50	Broward	Biscayne Aquifer	500
06-00431-W	28616	FORT LAUDERDALE-HOLLYWOOD INTERNATIONAL AIRPORT	Standby	22,27,34	42	50	Broward	Biscayne Aquifer	0
06-00431-W	28617	FORT LAUDERDALE-HOLLYWOOD INTERNATIONAL AIRPORT	Primary	22,27,34	42	50	Broward	Biscayne Aquifer	300
06-00431-W	163665	FORT LAUDERDALE-HOLLYWOOD INTERNATIONAL AIRPORT	Primary	22,27,34	42	50	Broward	Biscayne Aquifer	150
06-01419-W	8866	CEMEX - SUNRISE READY-MIX	Primary	34	42	49	Broward	Biscayne Aquifer	225
06-06329-W	259735	THE GARDEN CENTER LLC	Primary	3	42	51	Broward	Biscayne Aquifer	100
06-03910-W	138789	FORT LAUDERDALE HIGH SCHOOL	Primary	34	42	49	Broward	Biscayne Aquifer	240
06-01562-W	9319	HILLS ENTERPRISES, INC.	Primary	33	42	50	Broward	Biscayne Aquifer	45
06-01562-W	9320	HILLS ENTERPRISES, INC.	Primary	33	42	50	Broward	Biscayne Aquifer	45
06-01562-W	259895	HILLS ENTERPRISES, INC.	Primary	33	42	50	Broward	Biscayne Aquifer	45
06-01562-W	259896	HILLS ENTERPRISES, INC.	Primary	33	42	50	Broward	Biscayne Aquifer	45
06-06344-W	259941	NEW CHURCH BUILDING	Primary	18	42	50	Broward	Biscayne Aquifer	60
06-06257-W	258833	SATORI	Primary	35	42	49	Broward	Biscayne Aquifer	70
06-00187-W	21916	CITY OF DANIA BEACH	#N/A	23,26-36	42	50	Broward	Biscayne Aquifer	0
06-00187-W	21917	CITY OF DANIA BEACH	Primary	23,26-36	42	50	Broward	Biscayne Aquifer	1400
06-00187-W	136781	CITY OF DANIA BEACH	Monitor	23,26-36	42	50	Broward	Biscayne Aquifer	0
06-00187-W	136781	CITY OF DANIA BEACH	Monitor	23,26-36	42	50	Broward	Biscayne Aquifer	0
06-00187-W	136782	CITY OF DANIA BEACH	Monitor	23,26-36	42	50	Broward	Biscayne Aquifer	0
06-00187-W	136782	CITY OF DANIA BEACH	Monitor	23,26-36	42	50	Broward	Biscayne Aquifer	0
06-00187-W	136783	CITY OF DANIA BEACH	Monitor	23,26-36	42	50	Broward	Biscayne Aquifer	0
06-00187-W	136783	CITY OF DANIA BEACH	Monitor	23,26-36	42	50	Broward	Biscayne Aquifer	0
06-00187-W	136784	CITY OF DANIA BEACH	Monitor	23,26-36	42	50	Broward	Biscayne Aquifer	0
06-00187-W	136784	CITY OF DANIA BEACH	Monitor	23,26-36	42	50	Broward	Biscayne Aquifer	0
06-00187-W	136785	CITY OF DANIA BEACH	Monitor	23,26-36	42	50	Broward	Biscayne Aquifer	0
06-00187-W	136785	CITY OF DANIA BEACH	Monitor	23,26-36	42	50	Broward	Biscayne Aquifer	0
06-00187-W	260022	CITY OF DANIA BEACH	Primary	23,26-36	42	50	Broward	Biscayne Aquifer	800
06-02472-W	40571	PORT 95 COMMERCE PARK PARCEL G BUILDINGS 200 AND 300	Primary	29,30	42	50	Broward	Lake	80
06-02834-W	42197	PORT 95 COMMERCE PARK	Primary	29	42	50	Broward	Lake	150
06-02834-W	42198	PORT 95 COMMERCE PARK	Primary	29	42	50	Broward	Lake	80
06-06335-W	259818	CRYSTAL LAKE TOWNHOMES	Primary	4	42	51	Broward	Off-site Lake(s)	50
06-03519-W	119468	MERIDIAN	Primary	4	42	51	Broward	Off-site Lake(s)	79

TABLE 3.3.3-1
WATER USE PERMITS WITHIN 5 MILES OF PEEC

Permit Number	Facility ID	Project Name	Status	Section	Range	Township	County	Source	Pump Capacity (Gallons per Minute)
06-03470-W	117423	PORT 95 800	Primary	30	42	50	Broward	On-site Borrow Pit(s)	175
06-05939-W	253368	TRANSMONTAIGNE TERMINAL SOUTH PIPELINE CONSTRUCTION	Primary	23	42	50	Broward	On-site Borrow Pit(s)	600
06-05964-W	253735	BODENWEBER	Primary	5	42	11	Broward	On-site Borrow Pit(s)	245
06-02934-W	42710	PARCEL F AT PORT 95 COMMERCE PARK	Primary	29	42	50	Broward	On-site Canal(s)	200
06-02022-W	34978	G AND K SERVICES AT PORT 95 COMMERCE PARK	Production	30	42	50	Broward	On-site Lake(s)	80
06-02017-W	34527	DANIA MOTORCROSS PARK	Production	29	42	50	Broward	On-site Lake(s)	600
06-02078-W	35225	SHERIDAN 300	Production	3	42	51	Broward	On-site Lake(s)	100
06-01795-W	35681	FOREST LAWN CENTRAL	Production	5	42	50	Broward	On-site Lake(s)	500
06-02162-W	35467	PORT 95 COMMERCE PARK	Production	29	42	50	Broward	On-site Lake(s)	120
06-01941-W	34615	KENAN TRANSPORT	Production	20	42	50	Broward	On-site Lake(s)	150
06-02504-W	40829	PORT 95 COMMERCE PARK PARCEL J	Primary	29	42	50	Broward	On-site Lake(s)	50
06-02586-W	41152	RAVENSWOOD PARKING	Production	29	42	50	Broward	On-site Lake(s)	260
06-01575-W	34707	PORT 95 COMMERCE PARK	Production	20	42	50	Broward	On-site Lake(s)	325
06-01575-W	34708	PORT 95 COMMERCE PARK	Production	20	42	50	Broward	On-site Lake(s)	325
06-01575-W	34709	PORT 95 COMMERCE PARK	Production	20	42	50	Broward	On-site Lake(s)	130
06-03258-W	108527	SHERIDAN LAKES CONDOMINIUM INC	Primary	8	42	51	Broward	On-site Lake(s)	250
06-03258-W	108525	SHERIDAN LAKES CONDOMINIUM INC	Primary	8	42	51	Broward	On-site Lake(s)	250
06-03290-W	109984	PARCEL C AT PORT 95 COMMERCE PARK	Primary	29	42	50	Broward	On-site Lake(s)	250
06-03906-W	139011	GRIFFIN LAKES AKA VILLAS AT HARBOR ISLES	Primary	32	42	50	Broward	On-site Lake(s)	110
06-04551-W	190206	TASK 1 WESTSIDE DEVELOPMENT	Primary	27,28	42	50	Broward	On-site Lake(s)	150
06-01225-W	194172	RUNWAY GROWERS, INC. NURSERY	Primary	20	42	50	Broward	On-site Lake(s)	145
06-05525-W	224201	NEW RIVER COVE	Primary	19	42	50	Broward	On-site Lake(s)	150
06-05056-W	213492	ARDEN PARK	Primary	31	42	50	Broward	On-site Lake(s)	100
06-05056-W	213493	ARDEN PARK	Primary	31	42	50	Broward	On-site Lake(s)	200
06-04332-W	186355	SHERIDAN OCEAN CLUB	Primary	2	42	51	Broward	On-site Lake(s)	200
06-00431-W	127934	FORT LAUDERDALE-HOLLYWOOD INTERNATIONAL AIRPORT	Primary	22,27,34	42	50	Broward	On-site Lake(s)	200
06-00431-W	127935	FORT LAUDERDALE-HOLLYWOOD INTERNATIONAL AIRPORT	Primary	22,27,34	42	50	Broward	On-site Lake(s)	200
06-01567-W	35839	OAKWOOD PLAZA	Secondary	4	42	51	Broward	On-site Lake(s)	175
06-01567-W	35839	OAKWOOD PLAZA	Secondary	4	42	51	Broward	On-site Lake(s)	175
06-01567-W	35840	OAKWOOD PLAZA	Primary	4	42	51	Broward	On-site Lake(s)	175
06-02676-W	41585	SPORTSMANS PARK	Primary	33	42	50	Broward	On-site Lake(s)/Pond(s)	150
06-02639-W	41442	PORT 95 PARCEL E	Primary	29,30	42	50	Broward	On-site Lake(s)/Pond(s)	110
06-02958-W	42863	FT LAUDERDALE AIRPORT STATION	Primary	33	42	50	Broward	On-site Lake(s)/Pond(s)	140
06-02756-W	41862	ANGLERS OFFICE PARK	Primary	32	42	50	Broward	On-site Lake(s)/Pond(s)	90
06-02931-W	42675	PORT 95 COMMERCE PARK PARCEL H 4140 BUILDING	Primary	29	42	50	Broward	On-site Lake(s)/Pond(s)	200
06-02333-W	39937	OAKBRIDGE	Primary	31	42	50	Broward	On-site Lake(s)/Pond(s)	150
06-02333-W	39938	OAKBRIDGE	Primary	31	42	50	Broward	On-site Lake(s)/Pond(s)	150
06-02888-W	42425	DCOTA PHASE I,II,III,IV	Primary	33	42	50	Broward	On-site Lake(s)/Pond(s)	200
06-02888-W	42426	DCOTA PHASE I,II,III,IV	Primary	33	42	50	Broward	On-site Lake(s)/Pond(s)	200
06-03013-W	43198	PARCEL F NORTH AT PORT 95 COMMERCE PARK - OFFICE	Production	29	42	50	Broward	On-site Lake(s)/Pond(s)	250
06-03013-W	110029	PARCEL F NORTH AT PORT 95 COMMERCE PARK - OFFICE	Primary	29	42	50	Broward	On-site Lake(s)/Pond(s)	250
06-04036-W	146409	THUNDERBIRD DEVELOPMENT AKA VILLAS AT HARBOR ISLES WEST	Primary	32	42	50	Broward	On-site Lake(s)/Pond(s)	100
06-04197-W	158590	BLACK OLIVE EAST NURSERY	Primary	30	42	50	Broward	On-site Lake(s)/Pond(s)	200
06-04197-W	158591	BLACK OLIVE EAST NURSERY	Primary	30	42	50	Broward	On-site Lake(s)/Pond(s)	200
06-00130-W	37993	TOPEEKEEGEE YUGNEE PARK	Production	5,8	42	51	Broward	On-site Lake(s)/Pond(s)	200
06-00130-W	37994	TOPEEKEEGEE YUGNEE PARK	Production	5,8	42	51	Broward	On-site Lake(s)/Pond(s)	200
06-05426-W	220977	RIVERBEND CORPORATE PARK	Primary	5	42	50	Broward	On-site Lake(s)/Pond(s)	70
06-04693-W	192829	U S 1/F L L	Primary	22,26,27	42	50	Broward	On-site Lake(s)/Pond(s)	350
06-04693-W	192830	U S 1/F L L	Primary	22,26,27	42	50	Broward	On-site Lake(s)/Pond(s)	350
06-04693-W	192831	U S 1/F L L	Primary	22,26,27	42	50	Broward	On-site Lake(s)/Pond(s)	80
06-01567-W	259271	OAKWOOD PLAZA	Primary	4	42	51	Broward	SFWMD C-10 (Hollywood) Canal	200
06-01567-W	259271	OAKWOOD PLAZA	Primary	4	42	51	Broward	SFWMD C-10 (Hollywood) Canal	200
06-01567-W	259276	OAKWOOD PLAZA	Secondary	4	42	51	Broward	SFWMD C-10 (Hollywood) Canal	200

TABLE 3.3.3-1
WATER USE PERMITS WITHIN 5 MILES OF PEEC

Permit Number	Facility ID	Project Name	Status	Section	Range	Township	County	Source	Pump Capacity (Gallons per Minute)
06-01567-W	259277	OAKWOOD PLAZA	Primary	4	42	51	Broward	SFWMD C-10 (Hollywood) Canal	200
06-01617-W	9490	HOLLYWOOD CENTRAL GARAGE CITY OF	Standby	10	42	51	Broward	Surficial Aquifer System	14
06-01617-W	9491	HOLLYWOOD CENTRAL GARAGE CITY OF	Standby	10	42	51	Broward	Surficial Aquifer System	14
06-01617-W	9492	HOLLYWOOD CENTRAL GARAGE CITY OF	Standby	10	42	51	Broward	Surficial Aquifer System	14
06-01148-W	3375	AMOCO FACILITY #958 DEP FACILITY 68501538	Primary	9	42	50	Broward	Surficial Aquifer System	16
06-01509-W	9171	CHEVRON STATION NO. 367227	Standby	20	42	50	Broward	Surficial Aquifer System	10
06-01509-W	9172	CHEVRON STATION NO. 367227	Primary	20	42	50	Broward	Surficial Aquifer System	15
06-01148-W	3376	AMOCO FACILITY #958 DEP FACILITY 68501538	Standby	9	42	50	Broward	Surficial Aquifer System	16
06-01588-W	9406	EXXON SERVICE STATION #4-4457	Standby	14	42	50	Broward	Surficial Aquifer System	14
06-01588-W	9453	EXXON SERVICE STATION #4-4457	Standby	14	42	50	Broward	Surficial Aquifer System	14
06-02164-W	19728	FT LAUDERDALE AIRPORT PARKING FACILITY	Primary	29	42	50	Broward	Surficial Aquifer System	170
06-01891-W	2992	JACKS AUTO SALES	Primary	8	42	50	Broward	Surficial Aquifer System	20
06-02765-W	110359	FPL BROWARD COUNTY SUBSTATIONS	Primary	4,36	40	51	Broward	Surficial Aquifer System	30
06-02765-W	110352	FPL BROWARD COUNTY SUBSTATIONS	Primary	4,36	40	51	Broward	Surficial Aquifer System	30
06-02765-W	110354	FPL BROWARD COUNTY SUBSTATIONS	Primary	4,36	40	51	Broward	Surficial Aquifer System	30
06-02663-W	28498	OAKRIDGE PLAZA	Primary	31	42	50	Broward	Surficial Aquifer System	55
06-02663-W	28503	OAKRIDGE PLAZA	Primary	31	42	50	Broward	Surficial Aquifer System	65
06-02754-W	29458	GORE NURSERY	Primary	16	42	50	Broward	Surficial Aquifer System	100
06-02754-W	29459	GORE NURSERY	Primary	16	42	50	Broward	Surficial Aquifer System	100
06-02754-W	29473	GORE NURSERY	Primary	16	42	50	Broward	Surficial Aquifer System	20
06-03692-W	126550	KODNER PROPERTY	Primary	34	42	50	Broward	Surficial Aquifer System	50
06-03692-W	126551	KODNER PROPERTY	Primary	34	42	50	Broward	Surficial Aquifer System	50
06-04741-W	193557	ST THOMAS AQUINAS HIGH SCHOOL	Primary	8	42	50	Broward	Surficial Aquifer System	50
06-04741-W	193558	ST THOMAS AQUINAS HIGH SCHOOL	Primary	8	42	50	Broward	Surficial Aquifer System	40
06-04741-W	193559	ST THOMAS AQUINAS HIGH SCHOOL	Primary	8	42	50	Broward	Surficial Aquifer System	35
06-04741-W	193560	ST THOMAS AQUINAS HIGH SCHOOL	Primary	8	42	50	Broward	Surficial Aquifer System	40
06-04741-W	193563	ST THOMAS AQUINAS HIGH SCHOOL	Primary	8	42	50	Broward	Surficial Aquifer System	40
06-04741-W	193564	ST THOMAS AQUINAS HIGH SCHOOL	Primary	8	42	50	Broward	Surficial Aquifer System	40
06-04803-W	194345	DUSKY MARINE	Primary	33	42	50	Broward	Surficial Aquifer System	30
06-05893-W	252808	NORTHWEST GARDENS PHASES 1-4	Primary	4	42	50	Broward	Surficial Aquifer System	45
06-05893-W	252809	NORTHWEST GARDENS PHASES 1-4	Primary	4	42	50	Broward	Surficial Aquifer System	45
06-05893-W	252810	NORTHWEST GARDENS PHASES 1-4	Primary	4	42	50	Broward	Surficial Aquifer System	45
06-05893-W	252811	NORTHWEST GARDENS PHASES 1-4	Primary	4	42	50	Broward	Surficial Aquifer System	45
06-04332-W	186354	SHERIDAN OCEAN CLUB	Recharge	2	42	51	Broward	Surficial Aquifer System	75
06-06027-W	255154	DR KENNEDY HOMES	Primary	4	42	50	Broward	Surficial Aquifer System	70
06-06027-W	255203	DR KENNEDY HOMES	e Plugged and Abanc	4	42	50	Broward	Surficial Aquifer System	0
06-06038-W	255360	SHORE CLUB CONDO	Primary	30	43	49	Broward	Surficial Aquifer System	60
06-06038-W	255363	SHORE CLUB CONDO	Primary	30	43	49	Broward	Surficial Aquifer System	0
06-05550-W	224721	CITY OF DANIA BEACH PUBLIC SAFETY FACILITY	Primary	29	42	50	Broward	Surficial Aquifer System	50
06-05364-W	219981	ZUGAR GROWERS	Primary	20	42	50	Broward	Surficial Aquifer System	250
06-05364-W	219982	ZUGAR GROWERS	Secondary	20	42	50	Broward	Surficial Aquifer System	200
06-05364-W	219983	ZUGAR GROWERS	Primary	20	42	50	Broward	Surficial Aquifer System	150
06-05364-W	219984	ZUGAR GROWERS	Secondary	20	42	50	Broward	Surficial Aquifer System	60
06-05364-W	219985	ZUGAR GROWERS	Primary	20	42	50	Broward	Surficial Aquifer System	60
06-05296-W	218382	HAZMAT/TRT FIRE RESCUE STATION	Primary	22	42	50	Broward	Surficial Aquifer System	70
06-05426-W	257843	RIVERBEND CORPORATE PARK	Primary	5	42	50	Broward	Surficial Aquifer System	200
06-01561-W	9311	TEXACO STATION 24-021-911	Standby	33	42	50	Broward	Unspecified	32
06-01561-W	9312	TEXACO STATION 24-021-911	Standby	33	42	50	Broward	Unspecified	32
06-01561-W	9313	TEXACO STATION 24-021-911	Standby	33	42	50	Broward	Unspecified	32
06-02012-W	41398	BRANDSMART (PORT 95 COMMERCE PARK)	Primary	30	42	50	Broward	Unspecified	105
06-02012-W	41399	BRANDSMART (PORT 95 COMMERCE PARK)	Primary	30	42	50	Broward	Unspecified	95
06-00038-W	138208	HOLLYWOOD WATER TREATMENT PLANT	Monitor	25,36	41	50	Broward	Unspecified	0
06-00038-W	138210	HOLLYWOOD WATER TREATMENT PLANT	Monitor	25,36	41	50	Broward	Unspecified	0

TABLE 3.3.3-1
WATER USE PERMITS WITHIN 5 MILES OF PEEC

Permit Number	Facility ID	Project Name	Status	Section	Range	Township	County	Source	Pump Capacity (Gallons per Minute)
06-02943-W	42713	FT LAUDERDALE HOLLYWOOD INT'L AIRPORT TASK 1 WEST SIDE	Primary	28	42	50	Broward	Water Table Aquifer	400
06-02943-W	42713	FT LAUDERDALE HOLLYWOOD INT'L AIRPORT TASK 1 WEST SIDE	Primary	28	42	50	Broward	Water Table Aquifer	400
06-02943-W	42714	FT LAUDERDALE HOLLYWOOD INT'L AIRPORT TASK 1 WEST SIDE	Primary	28	42	50	Broward	Water Table Aquifer	820
06-02943-W	42714	FT LAUDERDALE HOLLYWOOD INT'L AIRPORT TASK 1 WEST SIDE	Primary	28	42	50	Broward	Water Table Aquifer	820
06-02943-W	42715	FT LAUDERDALE HOLLYWOOD INT'L AIRPORT TASK 1 WEST SIDE	Primary	28	42	50	Broward	Water Table Aquifer	1160
06-02943-W	42715	FT LAUDERDALE HOLLYWOOD INT'L AIRPORT TASK 1 WEST SIDE	Primary	28	42	50	Broward	Water Table Aquifer	1160
06-02943-W	42716	FT LAUDERDALE HOLLYWOOD INT'L AIRPORT TASK 1 WEST SIDE	Primary	28	42	50	Broward	Water Table Aquifer	400
06-02943-W	42716	FT LAUDERDALE HOLLYWOOD INT'L AIRPORT TASK 1 WEST SIDE	Primary	28	42	50	Broward	Water Table Aquifer	400
06-02943-W	42717	FT LAUDERDALE HOLLYWOOD INT'L AIRPORT TASK 1 WEST SIDE	Primary	28	42	50	Broward	Water Table Aquifer	400
06-02943-W	42717	FT LAUDERDALE HOLLYWOOD INT'L AIRPORT TASK 1 WEST SIDE	Primary	28	42	50	Broward	Water Table Aquifer	400
06-02943-W	42718	FT LAUDERDALE HOLLYWOOD INT'L AIRPORT TASK 1 WEST SIDE	Primary	28	42	50	Broward	Water Table Aquifer	820
06-02943-W	42718	FT LAUDERDALE HOLLYWOOD INT'L AIRPORT TASK 1 WEST SIDE	Primary	28	42	50	Broward	Water Table Aquifer	820
06-05888-W	252502	NORTH WEST GARDENS I NORTH	Primary	4	42	50	Broward	Water Table Aquifer	275
06-05889-W	252505	NORTH WEST GARDENS I SOUTH	Primary	4	42	50	Broward	Water Table Aquifer	275
06-05879-W	252325	B P BROWARD #572	Primary	9	42	50	Broward	Water Table Aquifer	1500
06-05885-W	252464	PORT EVERGLADES BERTH 7	Primary	14	42	50	Broward	Water Table Aquifer	400
06-05732-W	230645	ATLANTIC VILLAGE HOTEL AND MARINA	Primary	28	42	50	Broward	Water Table Aquifer	1200
06-05732-W	230646	ATLANTIC VILLAGE HOTEL AND MARINA	Standby	28	42	50	Broward	Water Table Aquifer	1200
06-05503-W	223959	SEA GATE PLAZA	Primary	10	42	50	Broward	Water Table Aquifer	7000
06-06052-W	255640	AIRFIELD MODIFICATIONS TAXIWAY C EXTENSION - TASK 3	Primary	27,28	42	50	Broward	Water Table Aquifer	3500
06-06052-W	255641	AIRFIELD MODIFICATIONS TAXIWAY C EXTENSION - TASK 3	Primary	27,28	42	50	Broward	Water Table Aquifer	3500
06-06052-W	255642	AIRFIELD MODIFICATIONS TAXIWAY C EXTENSION - TASK 3	Primary	27,28	42	50	Broward	Water Table Aquifer	420
06-06052-W	255643	AIRFIELD MODIFICATIONS TAXIWAY C EXTENSION - TASK 3	Primary	27,28	42	50	Broward	Water Table Aquifer	3500
06-06052-W	255644	AIRFIELD MODIFICATIONS TAXIWAY C EXTENSION - TASK 3	Primary	27,28	42	50	Broward	Water Table Aquifer	3500
06-06052-W	255645	AIRFIELD MODIFICATIONS TAXIWAY C EXTENSION - TASK 3	Primary	27,28	42	50	Broward	Water Table Aquifer	820
06-06052-W	255646	AIRFIELD MODIFICATIONS TAXIWAY C EXTENSION - TASK 3	Primary	27,28	42	50	Broward	Water Table Aquifer	420
06-06052-W	255647	AIRFIELD MODIFICATIONS TAXIWAY C EXTENSION - TASK 3	Primary	27,28	42	50	Broward	Water Table Aquifer	1160
06-06052-W	255648	AIRFIELD MODIFICATIONS TAXIWAY C EXTENSION - TASK 3	Primary	27,28	42	50	Broward	Water Table Aquifer	1160
06-06052-W	255649	AIRFIELD MODIFICATIONS TAXIWAY C EXTENSION - TASK 3	Primary	27,28	42	50	Broward	Water Table Aquifer	3500
06-06052-W	255650	AIRFIELD MODIFICATIONS TAXIWAY C EXTENSION - TASK 3	Primary	27,28	42	50	Broward	Water Table Aquifer	3500
06-06052-W	255651	AIRFIELD MODIFICATIONS TAXIWAY C EXTENSION - TASK 3	Primary	27,28	42	50	Broward	Water Table Aquifer	1160
06-06052-W	255652	AIRFIELD MODIFICATIONS TAXIWAY C EXTENSION - TASK 3	Primary	27,28	42	50	Broward	Water Table Aquifer	1160
06-06052-W	255653	AIRFIELD MODIFICATIONS TAXIWAY C EXTENSION - TASK 3	Primary	27,28	42	50	Broward	Water Table Aquifer	420
06-06052-W	255654	AIRFIELD MODIFICATIONS TAXIWAY C EXTENSION - TASK 3	Primary	27,28	42	50	Broward	Water Table Aquifer	1160
06-06052-W	255655	AIRFIELD MODIFICATIONS TAXIWAY C EXTENSION - TASK 3	Primary	27,28	42	50	Broward	Water Table Aquifer	420
06-06106-W	256758	GALLERIA CORPORATE CENTRE	Primary	36	42	49	Broward	Water Table Aquifer	1650
06-05746-W	228048	HARBORAGE CLUB	Primary	14	42	50	Broward	Water Table Aquifer	2260
06-06179-W	258091	FORT LAUDERDALE HIGH SCHOOL POOL FACILITY	Primary	34	42	49	Broward	Water Table Aquifer	1800
06-06297-W	259327	SRWWTP CITY OF HOLLYWOOD - REUSE SYSTEM EXPANSION	Primary	11	42	51	Broward	Water Table Aquifer	1000
06-03617-W	122705	FORMER PHILLIPS 66 BOB'S	Primary	18	42	50	Broward	Water Table Aquifer	75
06-03617-W	122706	FORMER PHILLIPS 66 BOB'S	Primary	18	42	50	Broward	Water Table Aquifer	75
06-03617-W	163692	FORMER PHILLIPS 66 BOB'S	Primary	18	42	50	Broward	Water Table Aquifer	10
06-03617-W	163706	FORMER PHILLIPS 66 BOB'S	Primary	18	42	50	Broward	Water Table Aquifer	10
06-05746-W	228067	HARBORAGE CLUB	Recharge	14	42	50	Broward	Water Table Aquifer	450
06-05746-W	228068	HARBORAGE CLUB	Recharge	14	42	50	Broward	Water Table Aquifer	450
06-05746-W	228154	HARBORAGE CLUB	Recharge	14	42	50	Broward	Water Table Aquifer	450

Source: SFWMD Water Use Regulation Facility Sites, November 2011.

TABLE 3.3.4-1
WATER QUALITY OF INTRACOASTAL WATERWAY NORTH AND SOUTH OF PORT EVERGLADES

		Station 38 (North of Port)					Station 39 (South of Port)				
Parameter	**Units**	**N**	**# Below MDL**	**Maximum**	**Mean**	**Minimum**	**N**	**# Below MDL**	**Maximum**	**Mean**	**Minimum**
Temperature	°C	72	0	31.6	26.2	19	70	0	31.6	26.4	19.0
Temperature	°F	72	0	88.9	79.2	66.2	70	0	88.9	79.5	66.2
pH	Std. Unit	73	0	8.4	7.9	6.7	71	0	8.4	7.9	7.6
Conductivity	micromhos	36	0	52800	43033	21000	34	0	54400	47500	31000
Salinity	ppt	70	0	34.9	27.7	3.9	68	0	36.2	31.0	19.1
Total Organic Carbon	mg/l	61	0	13.5	6.4	0.4	59	0	44.7	5.58	0.95
Turbidity	NTU	73	0	7.6	2.2	0.5	71	0	230	6.6	0.25
Dissolved Oxygen	mg/l	72	0	8.3	5.9	3.2	70	0	13.6	5.7	3.7
BOD	mg/l	48	0	5.2	1.2	0.2	46	1	4.0	1.0	0.1
Total Phosphorus	mg/l	67	14	0.239	0.054	0.01	65	24	0.809	0.056	0.010
Nitrite + Nitrate (NO_2+NO_3)	mg/l	77	3	0.098	0.341	0.005	65	4	0.208	0.065	0.005
Ammonia (NH_3)	mg/l	62	23	0.221	0.047	0.005	60	40	0.178	0.037	0.005
Total Kjeldahl Nitrogen (TKN)	mg/l	66	0	1.57	0.611	0.082	64	2	1.52	0.58	0.04
Total Nitrogen	mg/l	66	calc	1.635	0.709	0.147	64	calc	1.546	0.646	0.086

Notes:
When value was below the MDL, MDL/2 was used in calculation.
Period of Record: 1972-1997
Station 38: Approximately 0.6 miles north of Port Everglades Tidal Inlet at 17th Street Bridge over ICW
Station 39: Approximately 1.8 miles south of Port Everglades Tidal Inlet, By Dania Cut-off canal
calc = calculated.

Source: Broward County, Florida Historical Water Quality Atlas: 1972-1997, Broward County Department of Planning and Environmental Protection, TR 01-03, February 28, 2001

TABLE 3.3.6-1

THREATENED, ENDANGERED, AND SPECIES OF SPECIAL CONCERN KNOWN TO OCCUR WITHIN BROWARD COUNTY, FLORIDA

Scientific Name	Common Name	Federal Status	State Status
Plants			
Acrostichum aureum	Golden Leather Fern	N	T
Aeschynomene pratensis	Meadow Jointvetch	N	E
Argusia gnaphalodes	Sea Lavender	N	E
Asplenium dentatum	American Toothed Spleenwort	N	E
Asplenium serratum	American Bird's Nest Fern	N	E
Asimina tetramera	Four-petal Pawpaw	E	E
Calopogon multiflorus	Many-flowered Grass-pink	N	E
Chamaesyce cumulicola	Sand-dune Spurge	N	E
Cladonia perforata	Perforate Reindeer Lichen	E	E
Coccothrinax argentata	Silver Palm	N	T
Conradina grandiflora	Large-flowered Rosemary	N	T
Ctenitis sloanei	Florida Tree Fern	N	E
Cucurbita okeechobeensis	Okeechobee Gourd	E	E
Epidedrum nocturnum	Night-scented Orchid	N	E
Glandularia maritima	Coastal Vervain	N	E
Halophila johnsonii	Johnson's Seagrass	T	N
Jacquemontia reclinata	Beach Jacquemontia	E	E
Lantana depressa var. floridana	Atlantic Coast Florida Lantana	N	E
Lechea cernua	Nodding Pinweed	N	T
Lechea divaricata	Pine Pinweed	N	E
Linum carteri var. smallii	Small's flax	N	E
Nemastylis floridana	Celestial Lily	N	E
Okenia hypogaea	Burrowing Four-o'clock	N	E
Ophioglossum palmatum	Hand Fern	N	E
Panicum abscissum	Cutthroat Grass	N	E
Polygala smallii	Tiny Polygala	E	E
Pteris bahamensis	Bahama Brake	N	T
Pteroglossaspis ecristata	Giant Orchid	N	T
Roystonea elata	Florida Royal Palm	N	E
Sacoila lanceolata var. paludicola	Fahkahatchee Ladies' -tresses	N	T
Schizaea pennula	Ray Fern	N	E
Swietenia mahogani	West Indies Mahogany	N	T
Tephrosia angustissima var. curtissii	Coastal Hoary-pea	N	E
Thelypteris serrata	Toothed Maiden Fern	N	E
Tillandsia flexuosa	Banded Wild-pine	N	T
Tolumnia bahamensis	Dancing-lady Orchid	N	E
Trichostigma octandrum	Hoop Vine	N	E
Zanthoxylum coriaceum	Biscayne Prickly Ash	N	E
Gastropods			
Orthalicus reses reses	Stock Island Tree Snail	T	E
Amphibians			
Rana capito	Gopher Frog	N	SSC

TABLE 3.3.6-1

THREATENED, ENDANGERED, AND SPECIES OF SPECIAL CONCERN KNOWN TO OCCUR WITHIN BROWARD COUNTY, FLORIDA

Scientific Name	Common Name	Federal Status	State Status
Reptiles			
Alligator mississippiensis	American Alligator	T (SA)	SSC
Caretta caretta	Loggerhead	T	T
Chelonia mydas	Green Turtle	E	E
Crocodylus acutus	American Crocodile	T	E
Dermochelys coriacea	Leatherback	E	E
Drymarchon couperi	Eastern Indigo Snake	T	T
Eretmochelys imbricata	Hawksbill	E	E
Gopherus polyphemus	Gopher Tortoise	N	T
Lepidochelys kempii	Kemp's Ridley	E	E
Pituophis melanoleucus mugitus	Florida Pine Snake	N	SSC
Tantilla oolitica	Rim Rock Crowned Snake	N	T
Birds			
Aphelocoma coerulescens	Florida Scrub-jay	T	T
Aramus guarauna	Limpkin	N	SSC
Athene cunicularia floridana	Florida Burrowing Owl	N	SSC
Caracara cheriway	Crested Caracara	T	T
Charadrius melodus	Piping Plover	T	T
Egretta caerulea	Little Blue Heron	N	SSC
Egretta thula	Snowy Egret	N	SSC
Egretta tricolor	Tricolored Heron	N	SSC
Eudocimus albus	White Ibis	N	SSC
Falco peregrinus	Peregrine Falcon	N	E
Falco sparverius paulus	Southeastern American Kestrel	N	T
Grus canadensis pratensis	Florida Sandhill Crane	N	T
Haematopus palliatus	American Oystercatcher	N	SSC
Mycteria americana	Wood Stork	E	E
Pelecanus occidentalis	Brown Pelican	N	SSC
Picoides borealis	Red-cockaded Woodpecker	E	SSC
Platalea ajaja	Roseate Spoonbill	N	SSC
Rostrhamus sociabilis plumbeus	Snail Kite	E	E
Rynchops niger	Black Skimmer	N	SSC
Sterna antillarum	Least Tern	N	T
Mammals			
Podomys floridanus	Florida Mouse	N	SSC
Puma concolor coryi	Florida Panther	E	E
Sciurus niger shermani	Sherman's Fox Squirrel	N	SSC
Trichechus manatus	Manatee	E	E
Ursus americanus floridanus	Florida Black Bear	N	T

Notes:

E = Endangered

N = Not currently listed, nor currently being considered for listing

SSC = Species of Special Concern

T = Threatened

T (SA) = Threatened due to similarity of appearance to the American crocodile (*Crocodylus acutus*)

Source: Florida Natural Areas Inventory, 2008.

TABLE 3.3.7-1
AMBIENT SOUND PRESSURE LEVELS OBSERVED AT FPL PORT EVERGLADES PLANT PROPERTY BOUNDARY LOCATIONS IN AUGUST 2011

Monitoring Location	Coordinates	Date	Time	Sound Pressure Levels (dBA)				Observations
				Min	Max	L_{90}	Leq	
1: Southeast corner fenceline near tankyard	26°04'59.6" N 80°07'20.9" W	1-Aug-11	Afternoon	49.4	89.6	52.2	69.0	Aircraft noise, some thunder, moderate traffic
		1-Aug-11	Night	44.9	77.2	45.7	58.6	Heavy insect noise, light traffic, aircraft noise
		2-Aug-11	Morning	48.9	66.1	50.7	55.7	Moderate road traffic, light insect noise, light air traffic
2. Northern gate of eastern tankyard off of Eisenhower Blvd	26°05'8.6" N 80°07'17.3" W	1-Aug-11	Afternoon	50.0	89.6	52.0	68.7	Moderate traffic, gas turbines
		1-Aug-11	Night	47.9	76.4	48.7	60.0	Port sound, moderate traffic inc. truck toward end, insect
		2-Aug-11	Morning	48.6	87.7	50.3	68.1	Moderate traffic, some truck, slight aircraft traffic
3: Southwest of discarge canal	26°04'58.3" N 80°07'28.1" W	1-Aug-11	Afternoon	55.7	81.8	58.1	68.1	Heavy traffic, some aircraft, wind noise
		1-Aug-11	Night	43.3	52.1	44.0	44.9	Distant traffic, light port traffic, insect
		2-Aug-11	Morning	54.0	75.8	54.4	63.0	Truck traffic, airport, insects, light noise from plant or north
4: Southwestern corner near gate	26°04'57.4" N 80°07'40.2" W	1-Aug-11	Afternoon	54.9	87.1	56.7	67.6	Aircraft noise, heavy traffic, wind and insect noise, some truck/heavy vehicle
		1-Aug-11	Night	47.0	66.8	47.9	54.1	Insect noise, light traffic, some trucks
		2-Aug-11	Morning	50.8	78.4	54.6	63.6	Light air traffic, moderate road traffic inc. truck, insect noise
5: Western fenceline just north of paved parking lot	26°05'08.4" N 80°07'40.3" W	1-Aug-11	Afternoon	65.4	81.9	67.9	72.3	6B, 5A, 7A, 4B, 7B, 4A, 8A, 8B Gas turbines running, moderate truck
		1-Aug-11	Night	48.9	72.9	50.3	56.2	Some truck traffic, gate opening/closing, insect noise
		2-Aug-11	Morning	51.8	76.2	53.2	61.4	Moderate traffic, some insect, overhead electric line, light air traffic
6: Northwest fenceline corner	26°05'14.8" N 80°07'40.6" W	1-Aug-11	Afternoon	71.0	86.6	73.2	78.7	6B, 5A, 7A, 4B, 7B, 4A, 8A, 8B Gas turbines running, light truck/air
		1-Aug-11	Night	60.9	67.4	62.4	63.4	Transformer noise, light traffic, insect
		2-Aug-11	Morning	61.5	79.0	62.8	64.7	Transformer fan constant, light truck traffic, airport noise, off-site ops
7:Northern fenceline, south of tankyard access gate	26°05'14.2" N 80°07'29.3" W	1-Aug-11	Afternoon	54.7	78.9	56.8	63.4	Light road traffic, some truck, light airplane noise
		1-Aug-11	Night	50.5	69.7	51.5	55.8	Plant noise, light draft, air traffic, insect
		2-Aug-11	Morning	57.1	69.4	58.9	60.8	Constant offsite equipment ops (CEMEX), Plant PA, light truck/air traffic
8: Inside fenceline, west of main gate and guard shack	26°05'09.2" N 80°07'28.3" W	1-Aug-11	Afternoon	54.9	79.1	56.8	64.0	Moderate truck traffic, some air traffic, power plant maintenance
		1-Aug-11	Night	53.1	73.8	54.0	58.5	Insect, light traffic, some plant background operations
		2-Aug-11	Morning	52.1	72.0	53.9	59.8	Light traffic, plant background operations, offsite plant activity

Source: Golder, 2011.

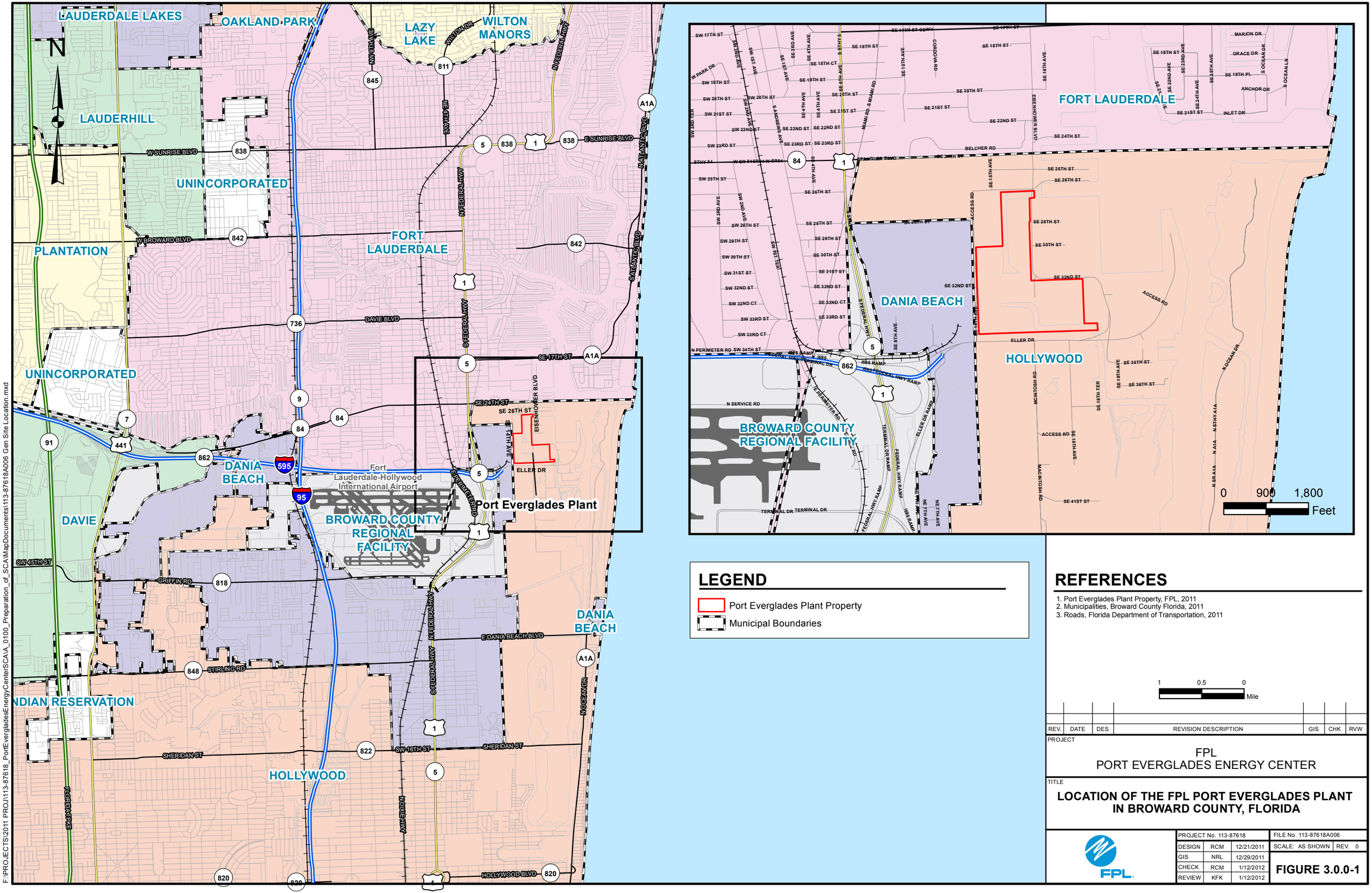
TABLE 3.3.8-1
EXAMPLES OF TYPICAL ILLUMINANCE

		Illuminance (lux)
Outdoor	Bright Sun	100,000 - 130,000
	Hazy Day	32,000
	Partly Cloudy	25,000
	Cloudy	10,000
	Overcast	1,000
	Sunrise/Sunset on Clear Day	400
	Full Moon	0.1
	Moonless Clear Night Sky	0.001
	Moonless Overcast Night Sky	0.0001
	Starlight	0.00005
Indoor	Typical TV Studio	1,000
	Bright Office with Large Contrast	400
	Hall Way	80
	Living Room	50
	Good Street Lighting	20
	Poor Street Lighting	1

Source: Electro-Optics Handbook,1979; Williams, 1999.

TABLE 3.3.8-2
BASELINE ILLUMINANCE IN THE VICINITY OF THE FPL PORT EVERGLADES POWER PLANT
AUGUST 2011

Monitoring Location	Coordinates	Date	Weather	Direction	Night (Klux)	Observations
1: Southeast corner fence line near tankard	26°04'59.6" N 80°07'20.9" W	1-Aug-11	Clear/New Moon	Up Facing On-site Facing Off-site	0.5 0.2 0.6	Security lighting from eastern tank yard and distant plant lighting
2: Northern gate of eastern tank yard off of Eisenhower Blvd	26°05'8.6" N 80°07'17.3" W	1-Aug-11	Clear/New Moon	Up Facing On-site Facing Off-site	1.5 1.3 2.3	Security lighting from eastern tank yard, parking lot lighting north of Eisenhower Blvd, and street lighting
3: Southwest of discharge canal	26°04'58.3" N 80°07'28.1" W	1-Aug-11	Clear/New Moon	Up Facing On-site Facing Off-site	0.4 0.7 0.4	Distant plant lighting and distant Port Everglades lighting
4: Southwestern corner near gate	26°04'57.4" N 80°07'40.2" W	1-Aug-11	Clear/New Moon	Up Facing On-site Facing Off-site	0.3 0.5 0.0	Distant plant lighting and distant street lighting
5: Western fence line just north of paved parking lot	26°05'08.4" N 80°07'40.3" W	1-Aug-11	Clear/New Moon	Up Facing On-site Facing Off-site	0.4 NA NA	Plant lighting to the east and street and off-site building security lighting to the west
6: Northwest fence line corner	26°05'14.8" N 80°07'40.6" W	1-Aug-11	Clear/New Moon	Up Facing On-site Facing Off-site	0.4 0.6 0.2	Lighting from the simple cycle peaker units and distant street lighting
7:Northern fence line, south of tank yard access gate	26°05'14.2" N 80°07'29.3" W	1-Aug-11	Clear/New Moon	Up Facing On-site Facing Off-site	1.5 1.4 1.8	Lighting from tank yard to the north, Eisenhower Blvd street lighting, and plant lighting to the south
8: Inside fence line, west of main gate and guard shack	26°05'09.2" N 80°07'28.3" W	1-Aug-11	Clear/New Moon	Up Facing On-site Facing Off-site	2.2 1.4 2.3	Plant lighting, security lighting at access gate, and Eisenhower Blvd street lighting



LEGEND

- Port Everglades Plant Property
- Municipal Boundaries

REFERENCES

1. Port Everglades Plant Property, FPL, 2011
2. Municipalities, Broward County Florida, 2011
3. Roads, Florida Department of Transportation, 2011

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

LOCATION OF THE FPL PORT EVERGLADES PLANT IN BROWARD COUNTY, FLORIDA

PROJECT No. 113-87618			FILE No. 113-87618A006	
DESIGN	RCM	12/21/2011	SCALE: AS SHOWN	REV. 0
GIS	NRL	12/29/2011		
CHECK	RCM	1/12/2012	**FIGURE 3.0.0-1**	
REVIEW	KFK	1/12/2012		

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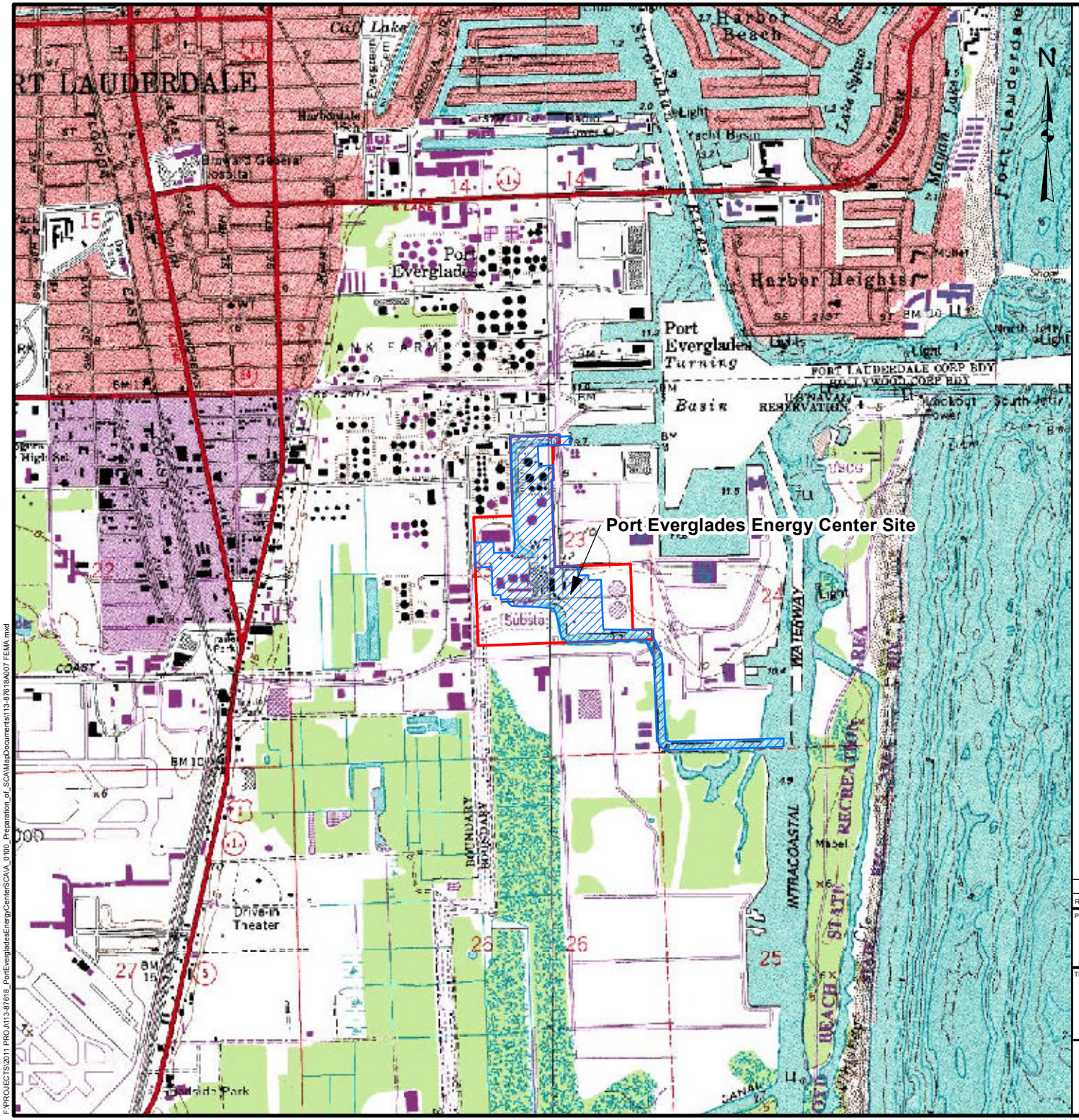
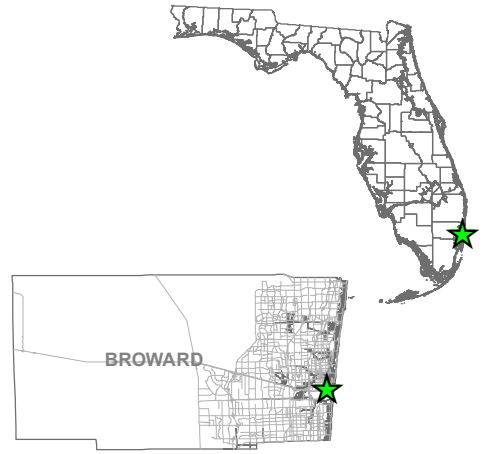


AREA MAP



LEGEND

- Port Everglades Energy Center Site
- Port Everglades Plant Property

REFERENCES

1. Port Everglades Plant Property, Port Everglades Energy Center Site FPL. 2011
2. USGS Topographic Image courtesy of the U.S. Geological Survey Microsoft TerraService OpenGIS Map Server, Accessed October, 2011.

2,000 1,000 0
Feet

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

EXISTING PLANT AND PROJECT LOCATIONS

PROJECT No. 113-87618			FILE No. 113-87618A026		
DESIGN	RCM	12/21/2011	SCALE: AS SHOWN	REV.	0
GIS	NRL	1/13/2012	FIGURE 3.0.0-2		
CHECK	RCM	1/13/2012			
REVIEW	KFK	1/13/2012			

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LEGEND

Port Everglades Plant Property

REFERENCES

1. Port Everglades Plant Property, FPL. 2011
2. Aerial Imagery, USDA/FSA Aerial Photography Field Office, 2010

500 250 0
Feet

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

AERIAL OF THE PORT EVERGLADES PLANT PROPERTY

PROJECT No. 113-87618			FILE No. 113-87618A021		
DESIGN	RCM	12/21/2011	SCALE: AS SHOWN	REV.	0
GIS	NRL	1/13/2012	FIGURE 3.1.1-1		
CHECK	RCM	1/13/2012			
REVIEW	KFK	1/13/2012			

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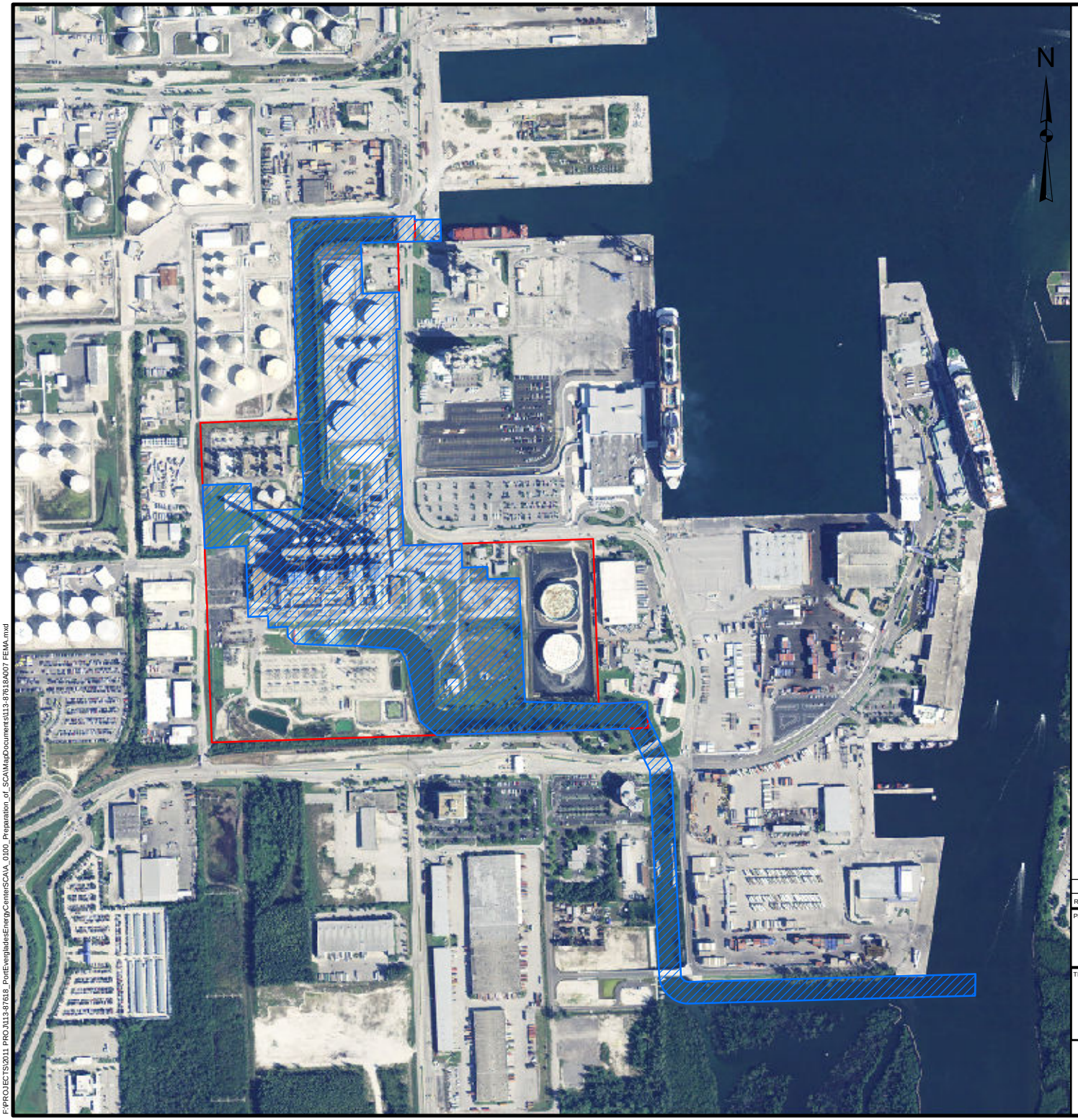

LEGEND

- Port Everglades Energy Center Site
- Port Everglades Plant Property

REFERENCES

1. Port Everglades Energy Center Site, Port Everglades Plant Property FPL. 2011
2. Aerial Imagery, USDA/FSA Aerial Photography Field Office, 2010

500 250 0
Feet

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

AERIAL OF THE PORT EVERGLADES ENERGY CENTER SITE

PROJECT No. 113-87618			FILE No. 113-87618A003		
DESIGN	RCM	12/21/2011	SCALE: AS SHOWN	REV.	0
GIS	NRL	12/29/2011			
CHECK	RCM	1/12/2012	FIGURE 3.1.1-2		
REVIEW	KFK	1/12/2012			

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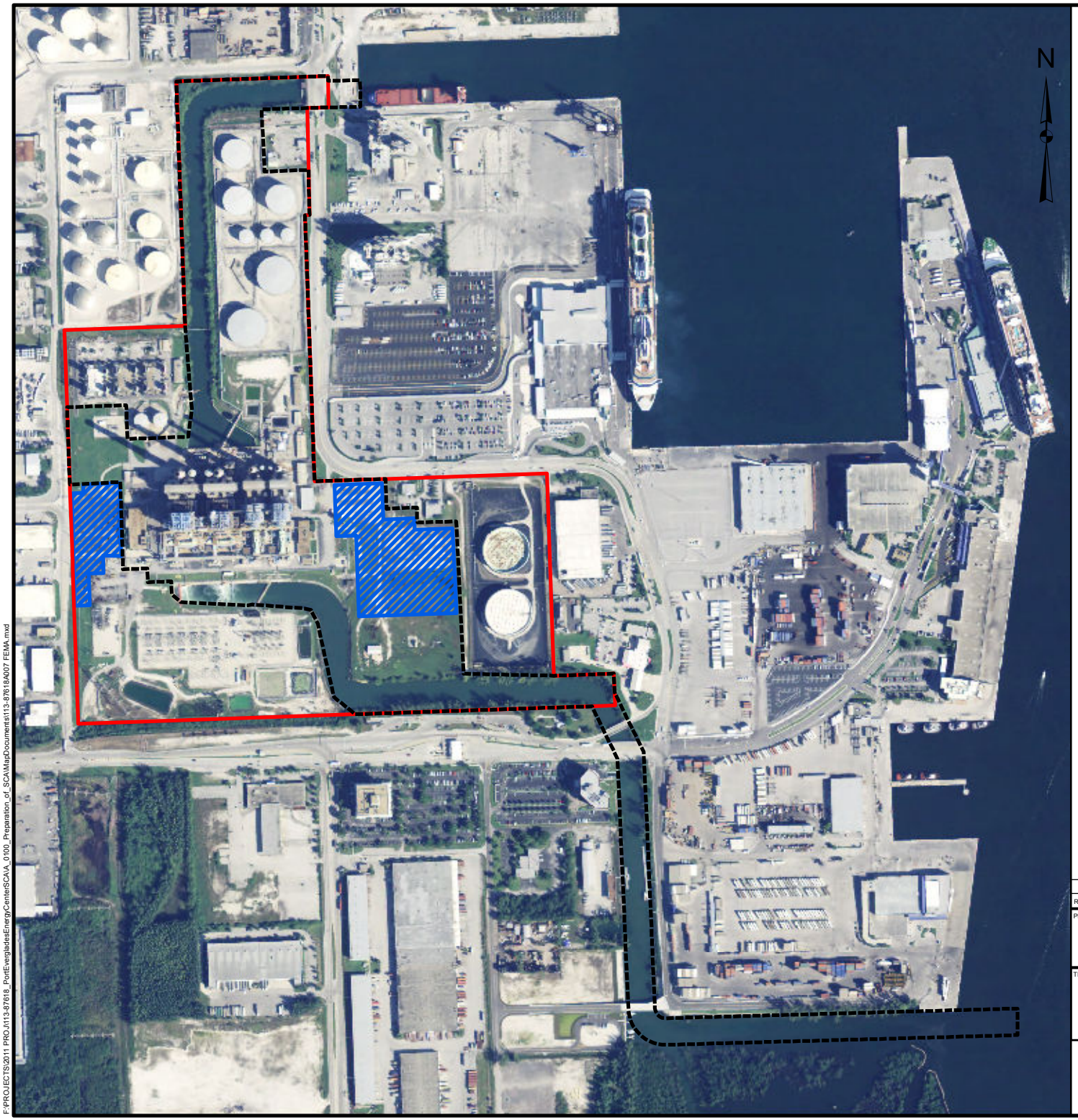

LEGEND

- Port Everglades Plant Property
- Port Everglades Energy Center Site
- Construction Parking & Laydown Area

REFERENCES

1. Port Everglades Energy Center Site, Port Everglades Plant Property, Construction Parking & Laydown Area, FPL. 2011
2. Aerial Imagery, USDA/FSA Aerial Photography Field Office, 2010

650 325 0
Feet

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

AERIAL OF THE PARKING AND LAYDOWN AREAS DURING PROJECT CONSTRUCTION

PROJECT No. 113-87618			FILE No. 113-87618A031		
DESIGN	RCM	12/21/2011	SCALE: AS SHOWN	REV.	0
GIS	NRL	1/13/2012	FIGURE 3.1.1-3		
CHECK	RCM	1/13/2012			
REVIEW	KFK	1/13/2012			

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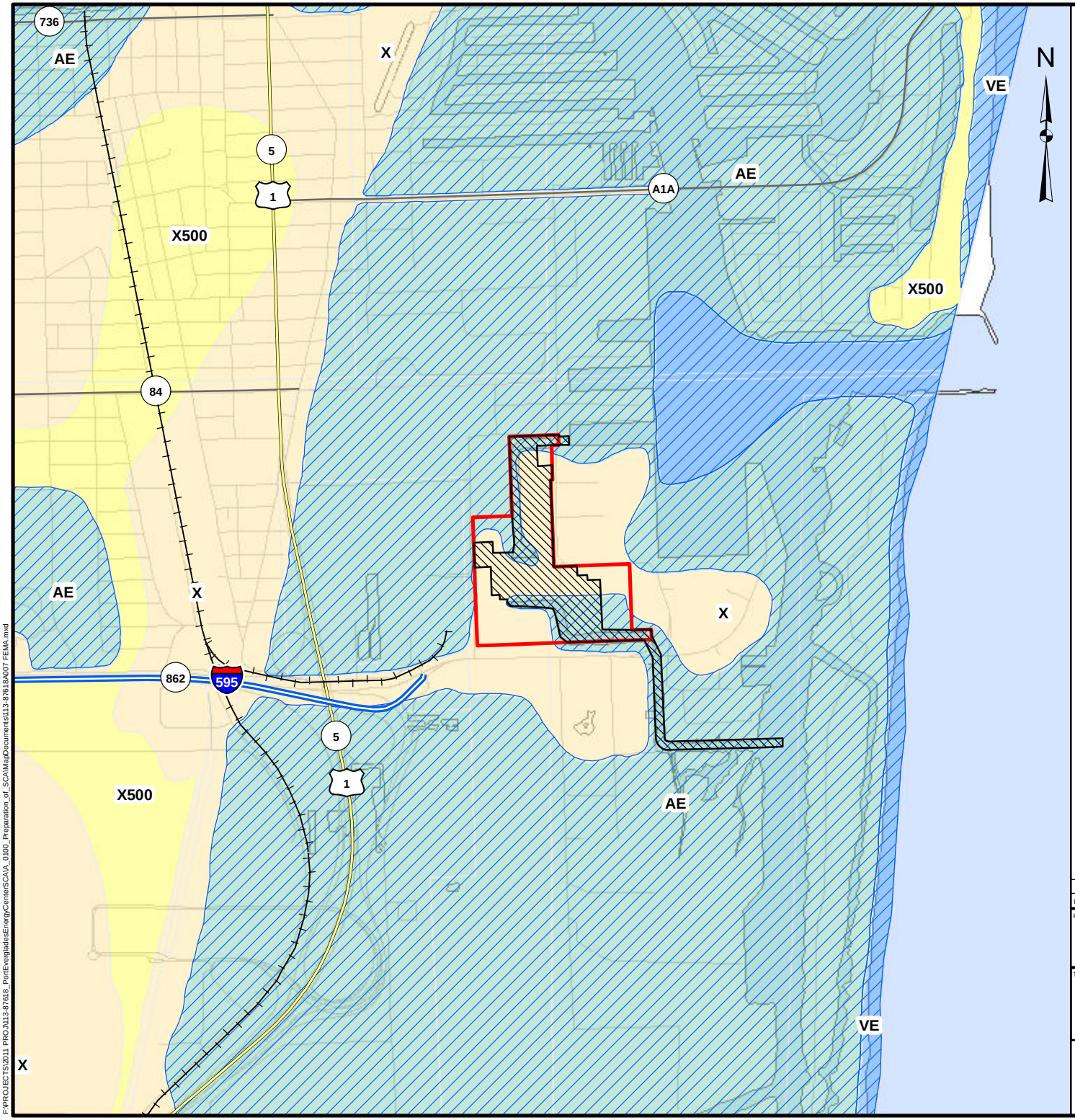

LEGEND

- Port Everglades Plant Property
- Port Everglades Energy Center Site
- AREAS WITHIN 100-YEAR FLOODPLAIN

FLOOD ZONES

- AE — AE - AN AREA INUNDATED BY 100-YEAR FLOODING FOR WHICH BASE FLOOD ELEVATIONS HAVE BEEN DETERMINED.
- VE — VE - AN AREA INUNDATED BY 100-YEAR FLOODING WITH VELOCITY HAZARD (WAVE ACTION); BASE FLOOD ELEVATIONS HAVE BEEN DETERMINED.
- X — X - AN AREA THAT IS DETERMINED TO BE OUTSIDE THE 100-YEAR AND 500-YEAR FLOODPLAINS.
- X500 — X500 - AN AREA INUNDATED BY 500-YEAR FLOODING; AN AREA INUNDATED BY 100-YEAR FLOODING WITH AVERAGE DEPTHS OF LESS THAN 1 FT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; OR AND AREA PROTECTED BY LEVEES FROM 100-YEAR FLOODING.

REFERENCES

1. Port Everglades Plant Property, Port Everglades Energy Center Site, FPL, 2011
2. Flood Zones, FEMA, 1996

2,000 1,000 0 Feet

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

FEMA FLOOD ZONES

PROJECT No. 113-87618			FILE No. 113-87618A007		
DESIGN	RCM	12/21/2011	SCALE: AS SHOWN	REV.	0
GIS	NRL	1/13/2012			
CHECK	RCM	1/13/2012	FIGURE 3.1.3-1		
REVIEW	KFK	1/13/2012			

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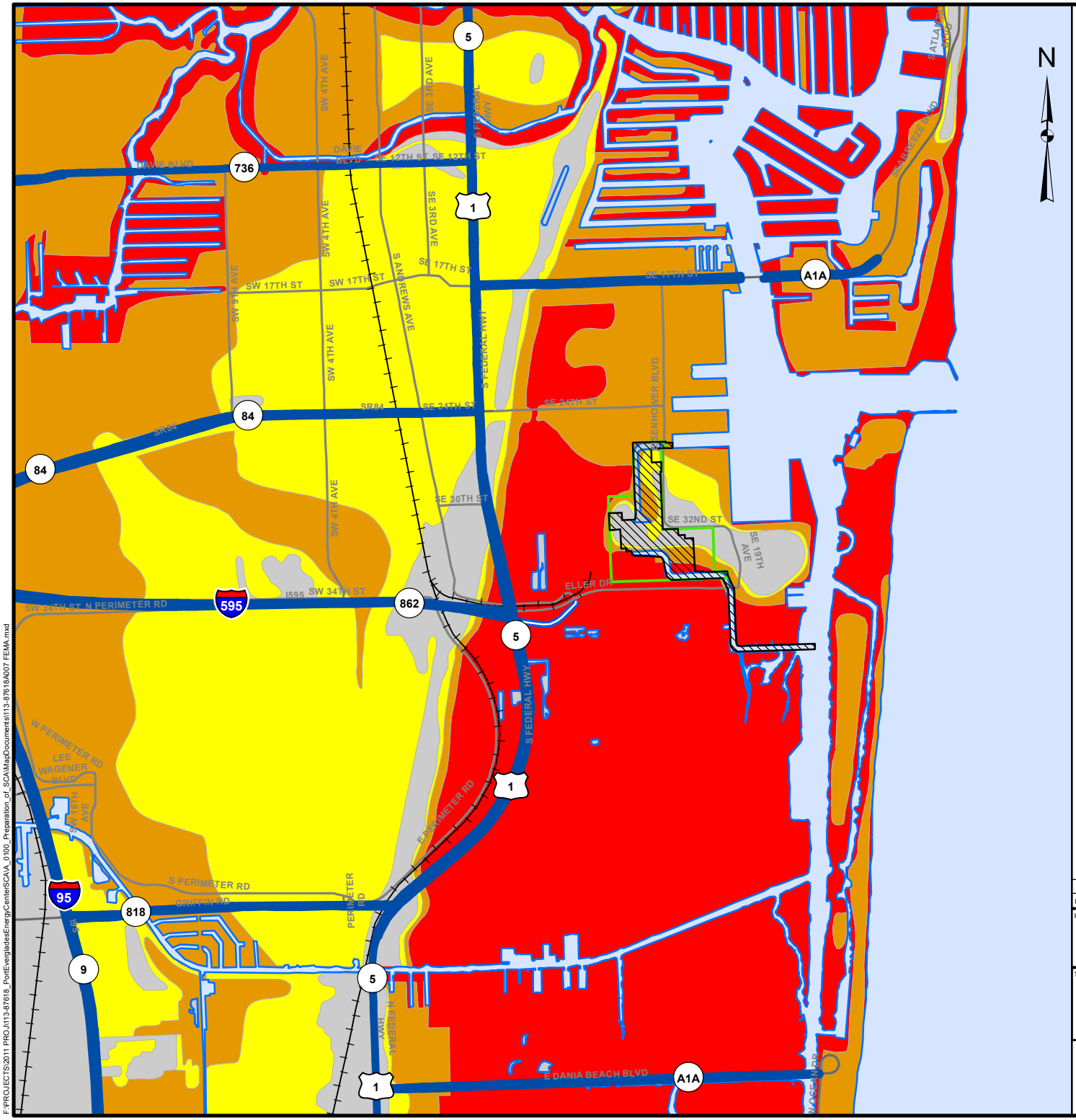

LEGEND

- Evacuation Routes
- Port Everglades Plant Property
- Port Everglades Energy Center Site

Storm Category

- 1
- 3
- 5

NOTE

Storm categories shown as outlined in the City of Hollywood Comprehensive Plan Storm Surge and Evacuation Routes Map CM-15 Dated July 19, 2007.

REFERENCES

1. Port Everglades Plant Property, Port Everglades Energy Center Site, FPL, 2011
2. Storm Category, National Hurricane Center/NOAA and South Florida Water Management District (storm surge data) 1999.
3. Evacuation Routes, Florida Department of Emergency Management, 2009.

2,000 1,000 0 Feet

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

HURRICANE EVACUATION ROUTES AND STORM SURGE MAP

PROJECT No. 113-87618			FILE No. 113-87618A032		
DESIGN	RCM	12/21/2011	SCALE: AS SHOWN	REV.	0
GIS	NRL	1/13/2012	FIGURE 3.1.3-2		
CHECK	RCM	1/13/2012			
REVIEW	KFK	1/13/2012			

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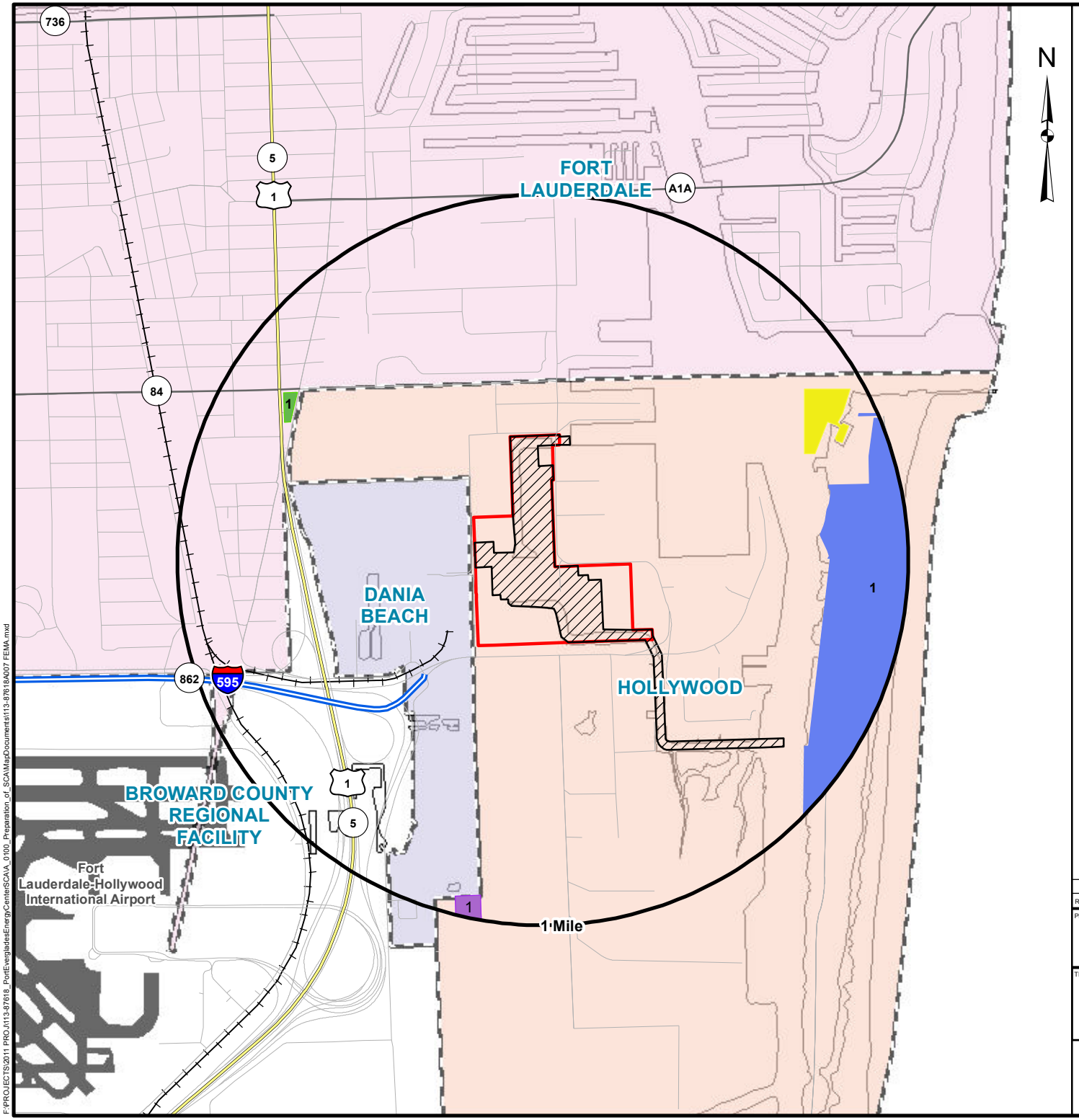

LEGEND

- Port Everglades Plant Property
- Port Everglades Energy Center Site
- Seagrass
- City Parks
  - 1 - Welcome Park
- County Parks
  - 1 - West Lake Park/Anne Kolb Nature Center
- State Parks
  - 1, John U Lloyd State Park

REFERENCES

1. Port Everglades Plant Property, Port Everglades Energy Center Site, FPL, 2011
2. City, County, and State Parks, Broward County Florida, 2011
3. Seagrass, Florida FIsha and Wildlife Conservation Commission - Fish and Wildlife Reasearch Institute, 2009
4. Municipal Boundaries, Broward County Florida, 2011

2,000 1,000 0 Feet

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

GOVERNMENTAL JURISDICTIONS WITHIN 1-MILE RADIUS

PROJECT No. 113-87618			FILE No. 113-87618A001	
DESIGN	RCM	12/21/2011	SCALE: AS SHOWN	REV. 0
GIS	NRL	12/29/2011		
CHECK	RCM	1/12/2012		
REVIEW	KFK	1/12/2012		

FIGURE 3.2.1-1

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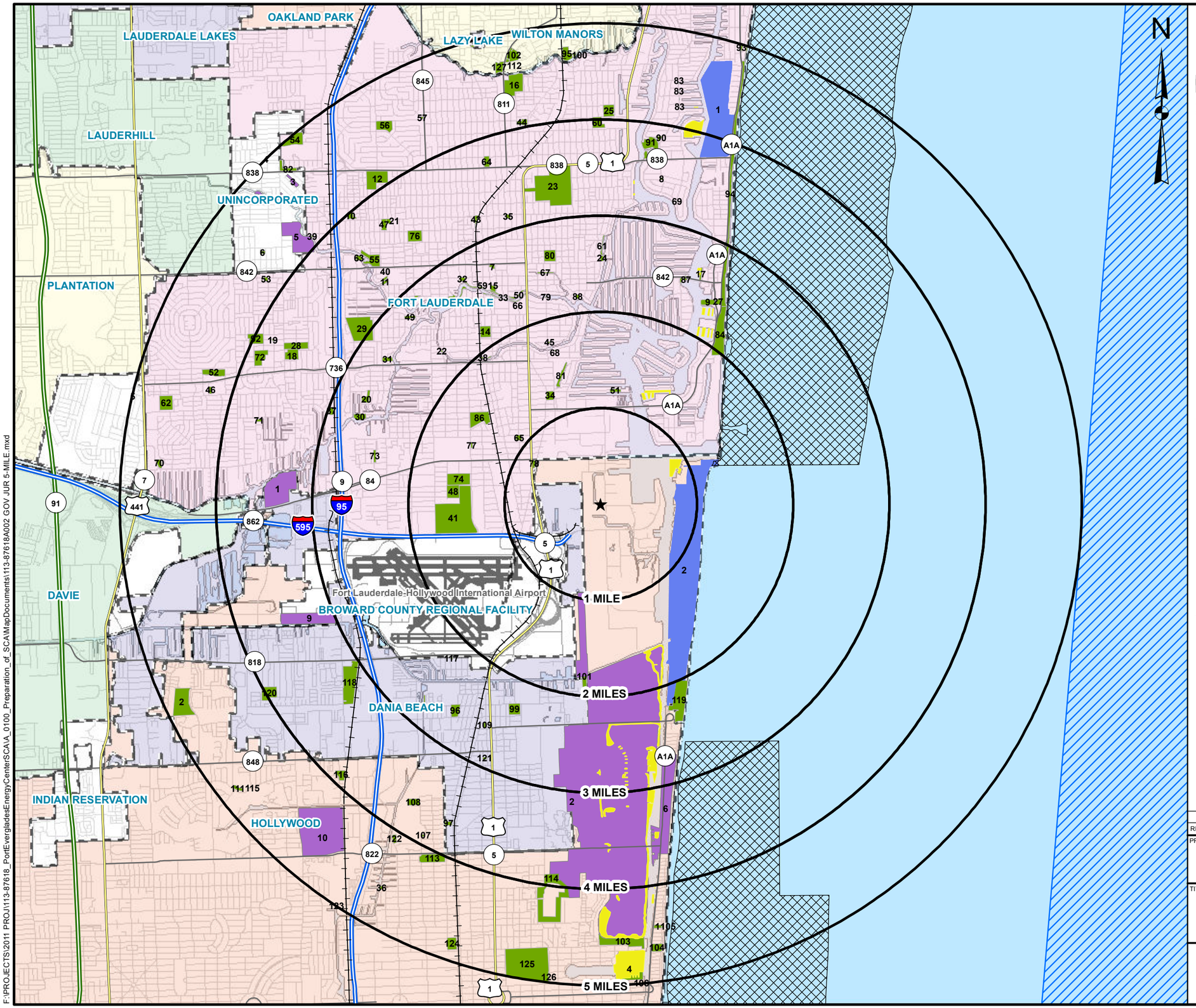

LEGEND

- ★ Port Everglades Plant and Port Everglades Energy Center Site
- Municipal Boundaries
- Coral Critical Habitat
- Seagrass
- Marine Protected Areas
- State Parks
- County Parks
- City Parks

NOTE

See Table 3.2.1-1 for list of Governmental Jurisdictions

REFERENCES

1. Port Everglades Energy Center Site, FPL 2011
2. Municipalities, City Parks, County Parks, State Parks, Broward County Florida, 2011
3. Seagrass, Florida Fish and Wildlife Conservation Commission-Fish and Wildlife Research Institute, 2009
4. Coral Critical Habitat, NOAA, National Marine Fisheries Service, Accessed October 2011
5. Marine Protected Areas, NOAA Marine Protected Areas Center / US Dept. of the Interior, 2010

1 0.5 0 Mile

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

GOVERNMENTAL JURISDICTIONS WITHIN 1,2,3,4, AND 5-MILE RADII

PROJECT No. 113-87618			FILE No. 113-87618A002	
DESIGN	RCM	12/21/2011	SCALE: AS SHOWN	REV. 0
GIS	NRL	12/29/2011		
CHECK	RCM	1/12/2012	**FIGURE 3.2.1-2**	
REVIEW	KFK	1/12/2012		

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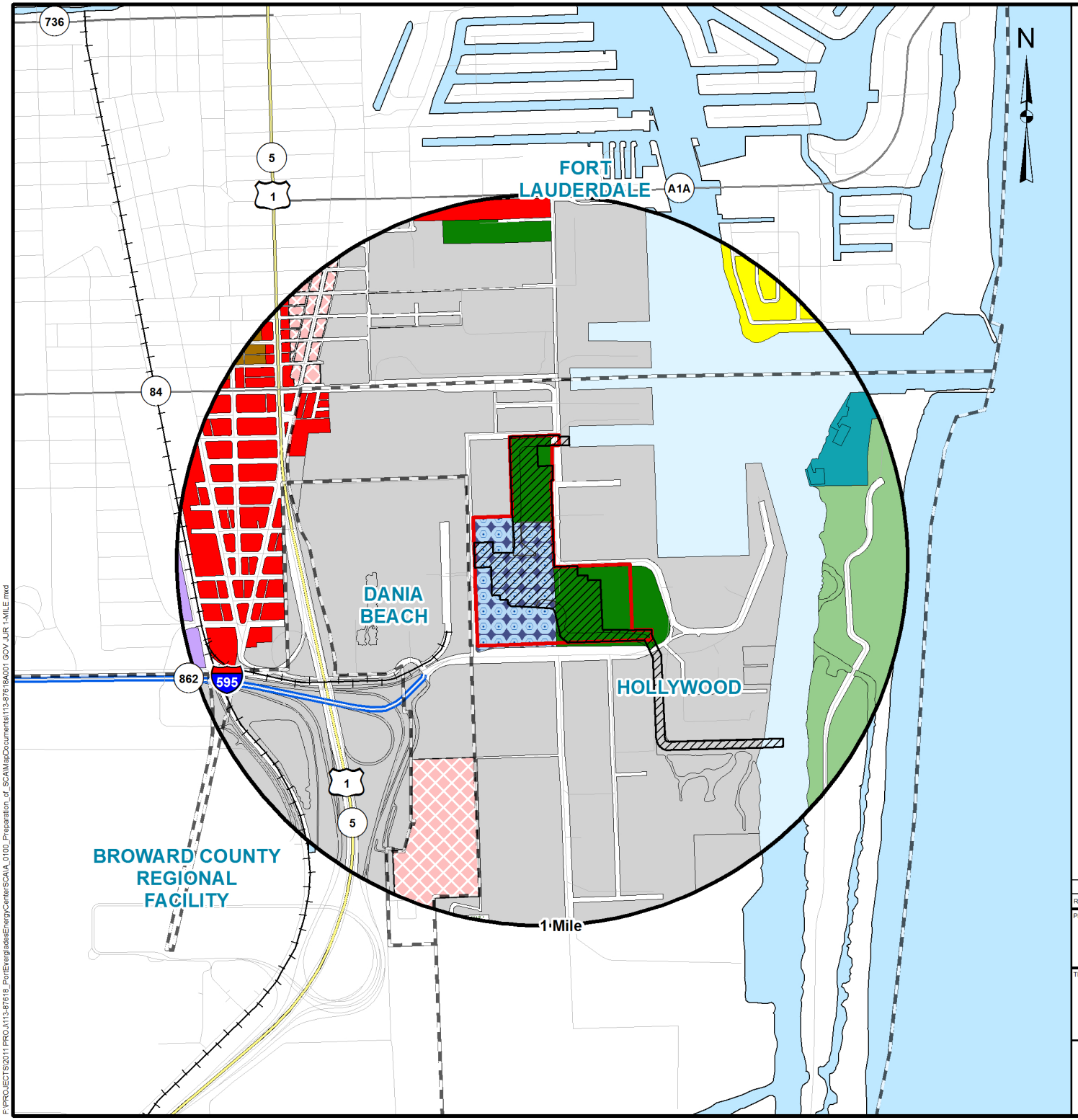

LEGEND

- Port Everglades Energy Center Site
- Port Everglades Plant Property
- Municipal Boundaries

Broward County Land Use

- Low (5) Residential
- Medium-High (25) Residential
- Commercial
- Employment Center - High
- Industrial
- Conservation - Natural Reservations
- Recreation & Open Space
- Community Facilities
- Utilities
- Electrical Generation Facilities
- Transportation
- Right of Way
- Water

REFERENCES

1. Port Everglades Plant Property, Port Everglades Energy Center Site FPL, 2011
2. Municipal Boundaries, Land Use, Broward County Florida, 2011

2,000 1,000 0 Feet

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

BROWARD COUNTY PLANNING COUNCIL LAND USE PLAN MAP

PROJECT No. 113-87618			FILE No. 113-87618A008		
DESIGN	JDG	08/11/2011	SCALE: AS SHOWN	REV.	0
GIS	NRL	1/13/2012			
CHECK	RCM	1/13/2012			
REVIEW	KFK	1/13/2012			

FPL

FIGURE 3.2.2-1

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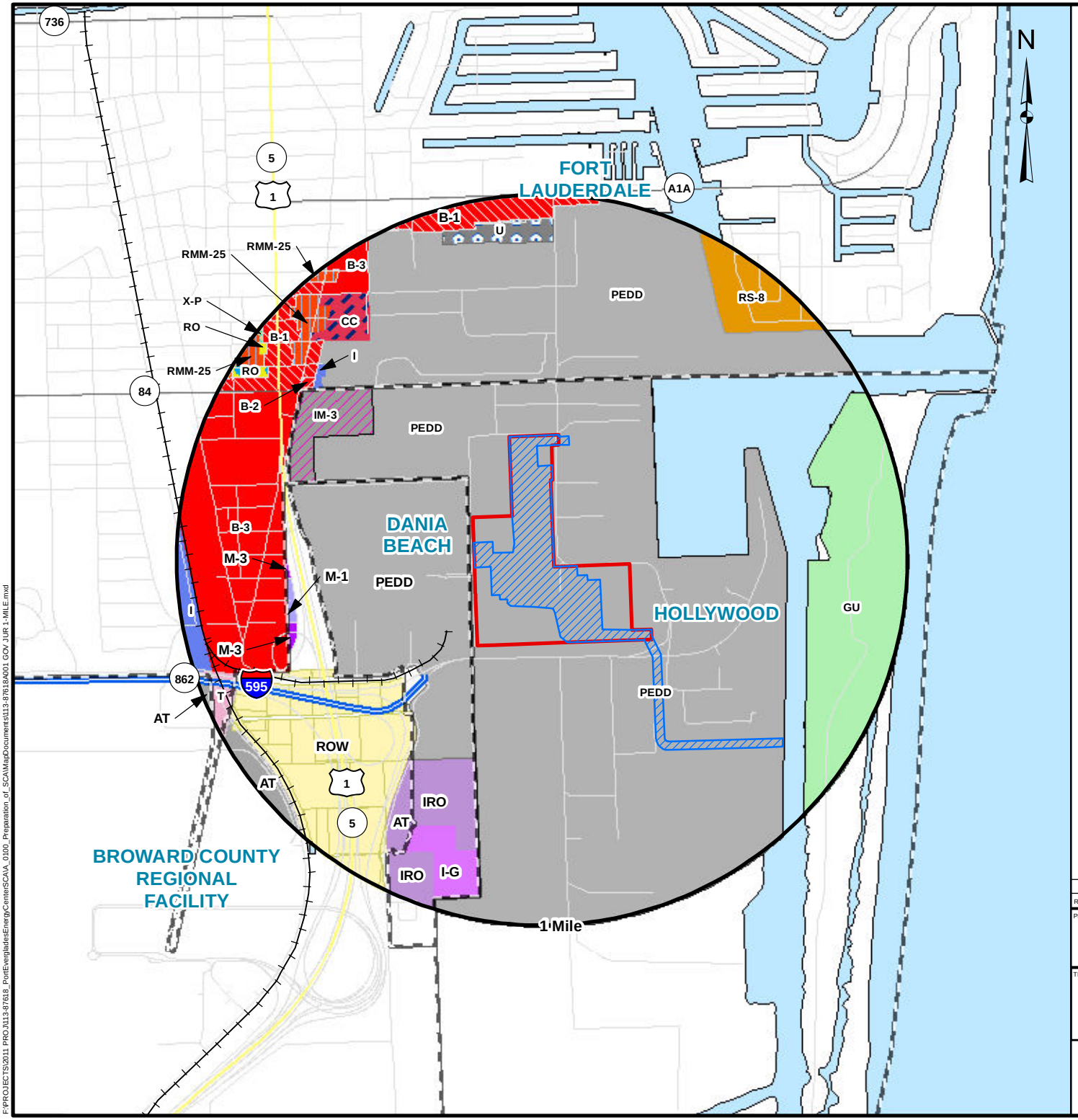

LEGEND

- Port Everglades Energy Center Site
- Port Everglades Plant Property
- Municipal Boundaries

City of Hollywood

- GU - Government Use District
- IM-3 - Medium Intensity Industrial and Manufacturing District
- PEDD - Port Everglades Development District

City of Fort Lauderdale

- B-1 - Boulevard Business
- B-2 - General Business
- B-3 - Heavy Commercial / Light Industrial Business
- CC - Commerce Center District
- I - General Industrial
- PEDD - Port Everglades Development District
- RMM-25 - Residential Multi-Family / Mid Rise / Medium High Density
- RO - Residential Office
- RS-8 - Residential Single Family / Low-Medium Density
- T - Transportation
- U - Utility
- X-P - Exclusive Use / Parking

City of Dania Beach

- I-G - Industrial
- IRO - Industrial
- PEDD - Port Everglades Development District

Unincorporated Broward County

- AT - Airport
- M-1 - Limited Manufacturing and Industrial
- M-3 - Intense Manufacturing and Industrial
- ROW - No Zoning, ROW-related

REFERENCES

1. Port Everglades Energy Site, Port Everglades Plant Property, FPL, 2011
2. Municipal Boundaries, Broward County Florida, 2011
3. Zoning, City of Hollywood, City of Fort Lauderdale, City of Dania Beach, Broward County, 2011.

2,000 1,000 0 Feet

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

ZONING

PROJECT No. 113-87618			FILE No. 113-87618A009		
DESIGN	KK	1/11/2012	SCALE: AS SHOWN	REV.	0
GIS	NRL	1/13/2012			
CHECK	RCM	1/13/2012	FIGURE 3.2.2-2		
REVIEW	KFK	1/13/2012			

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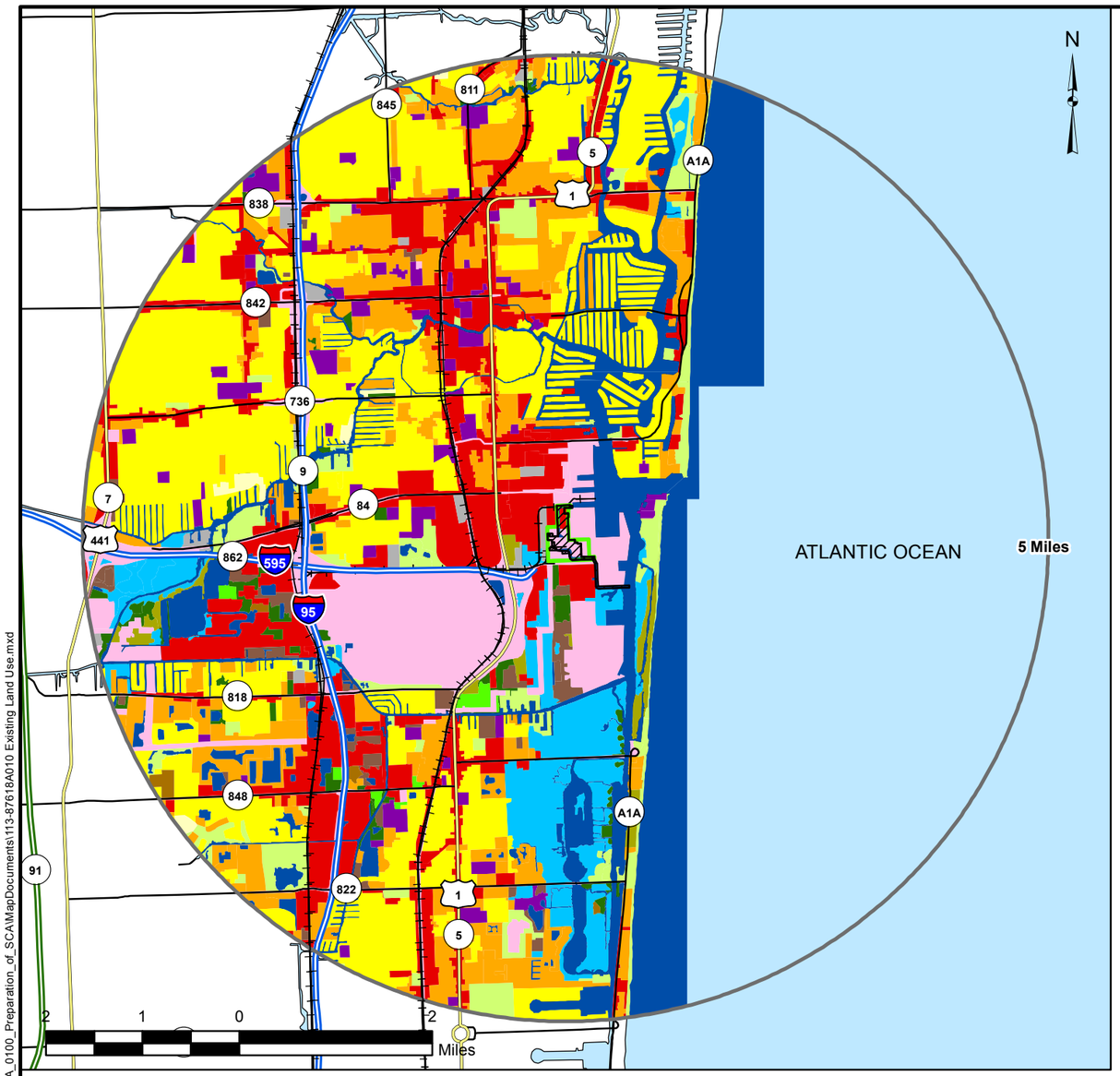

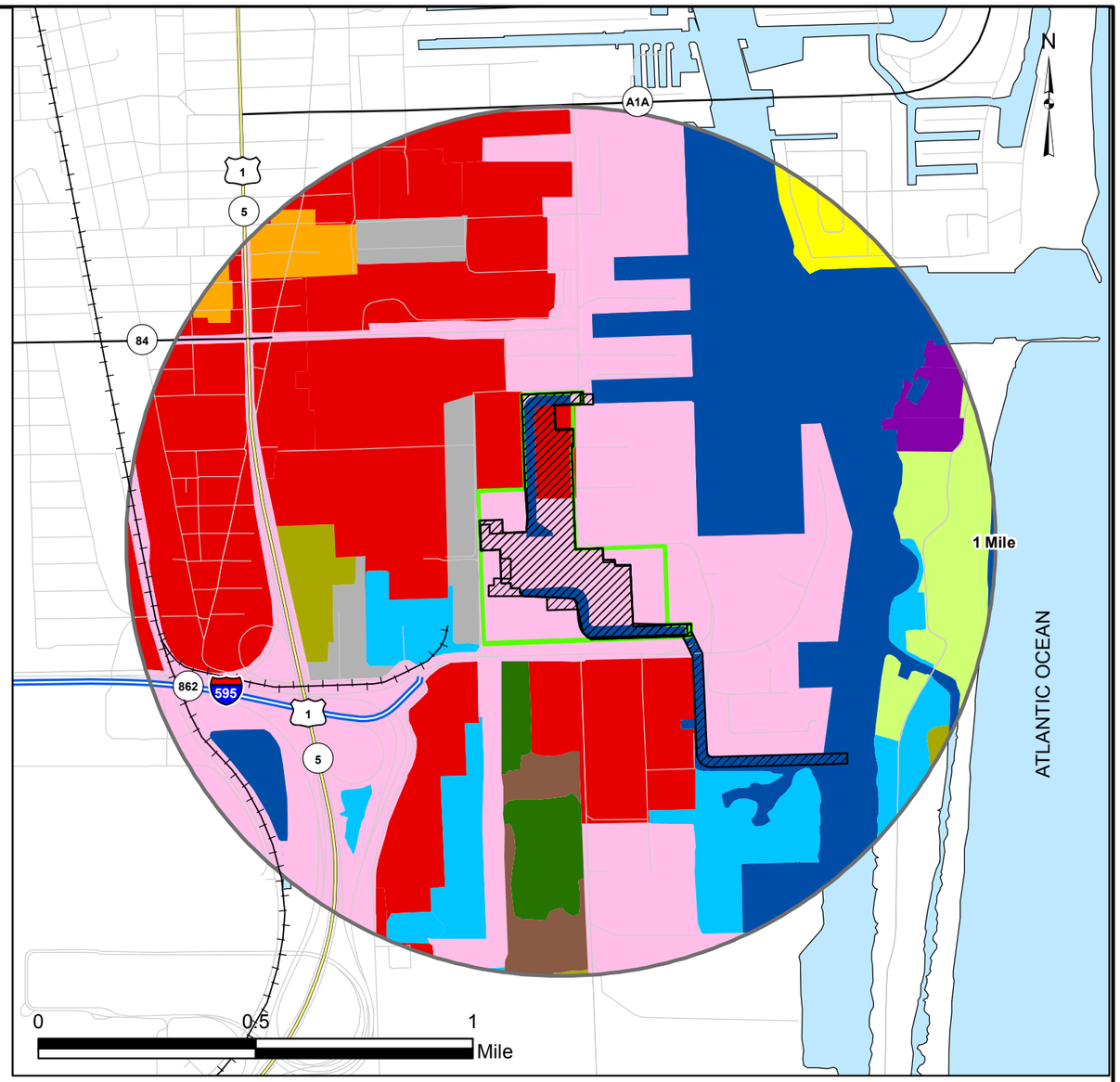

LEGEND

- Port Everglades Plant Property
- Port Everglades Energy Center Site

Existing Land Use (SFWMD based on FLUCCS Level II)

- Low Density Urban
- Medium Density Urban
- High Density Urban
- Commercial
- Industrial
- Mining
- Institutional
- Recreational
- Open Land
- Agriculture
- Rangeland
- Upland Forests
- Water
- Wetlands
- Barren Land
- Transportation, Communication, Utilities

REFERENCES

1. Port Everglades Plant Property, Port Everglades Energy Center Site, FPL, 2011
2. Existing Land Use, South Florida Water Managemet District Florida Land Use, Cover and Forms Classification System Level II, 2008

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

EXISTING LAND USE

PROJECT No. 113-87618			FILE No. 113-87618A010		
DESIGN	RCM	12/21/2011	SCALE: AS SHOWN	REV.	0
GIS	NRL	1/13/2012	**FIGURE 3.2.3-1**		
CHECK	RCM	1/13/2012			
REVIEW	KFK	1/13/2012			

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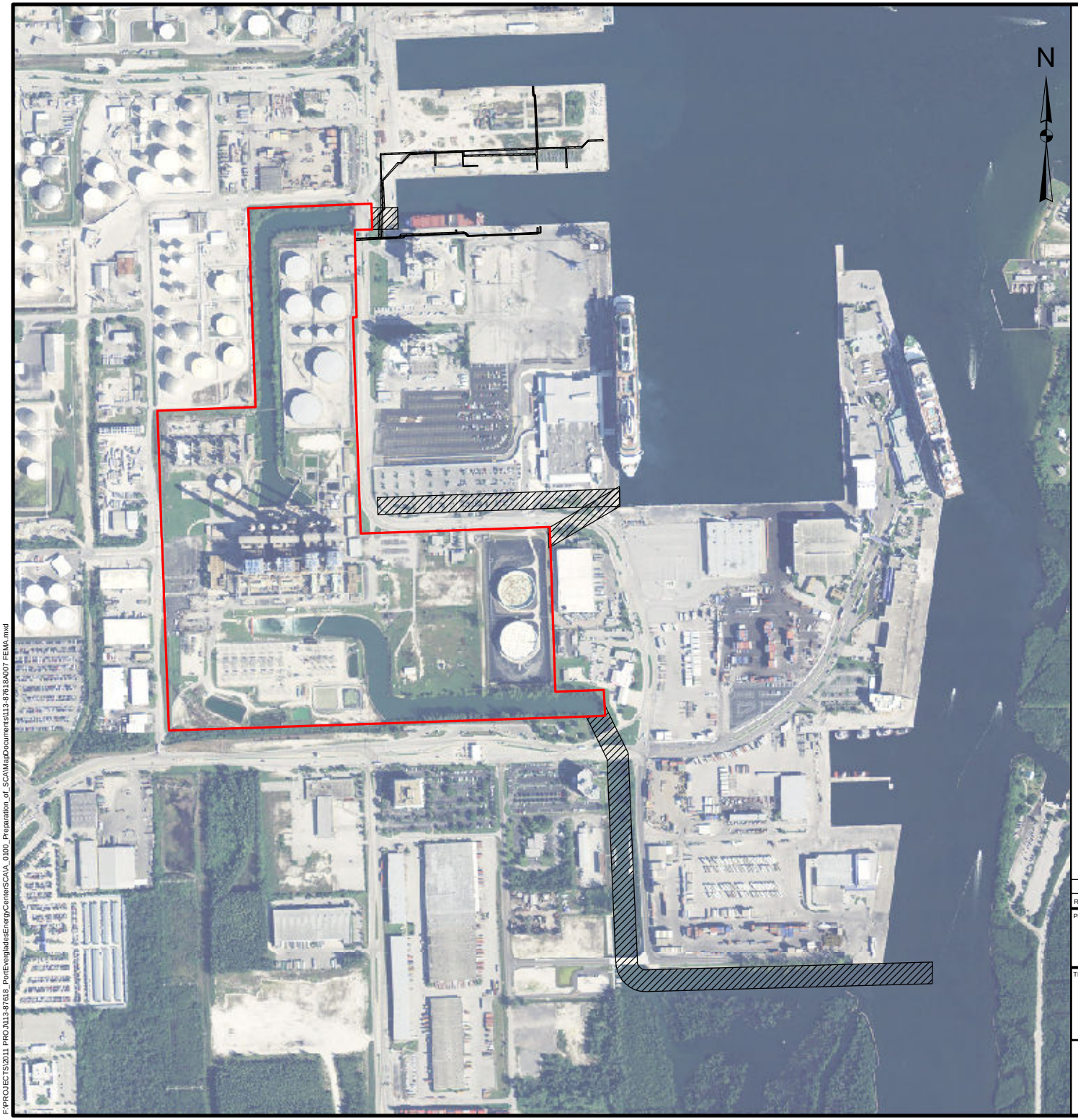

LEGEND

- Port Everglades Plant Property
- Existing Easements

REFERENCES

1. Port Everglades Plant Property, Existing Easements, FPL. 2011
2. Aerial Imagery, USDA/FSA Aerial Photography Field Office, 2010

800 400 0
Feet

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

AERIAL OF THE PORT EVERGLADES PLANT PROPERTY AND EXISTING EASEMENTS

PROJECT No. 113-87618			FILE No. 113-87618A033	
DESIGN	RCM	1/5/2012	SCALE: AS SHOWN	REV. 0
GIS	NRL	1/11/2012		
CHECK	RCM	1/13/2012	FIGURE 3.2.4-1	
REVIEW	KFK	1/13/2012		

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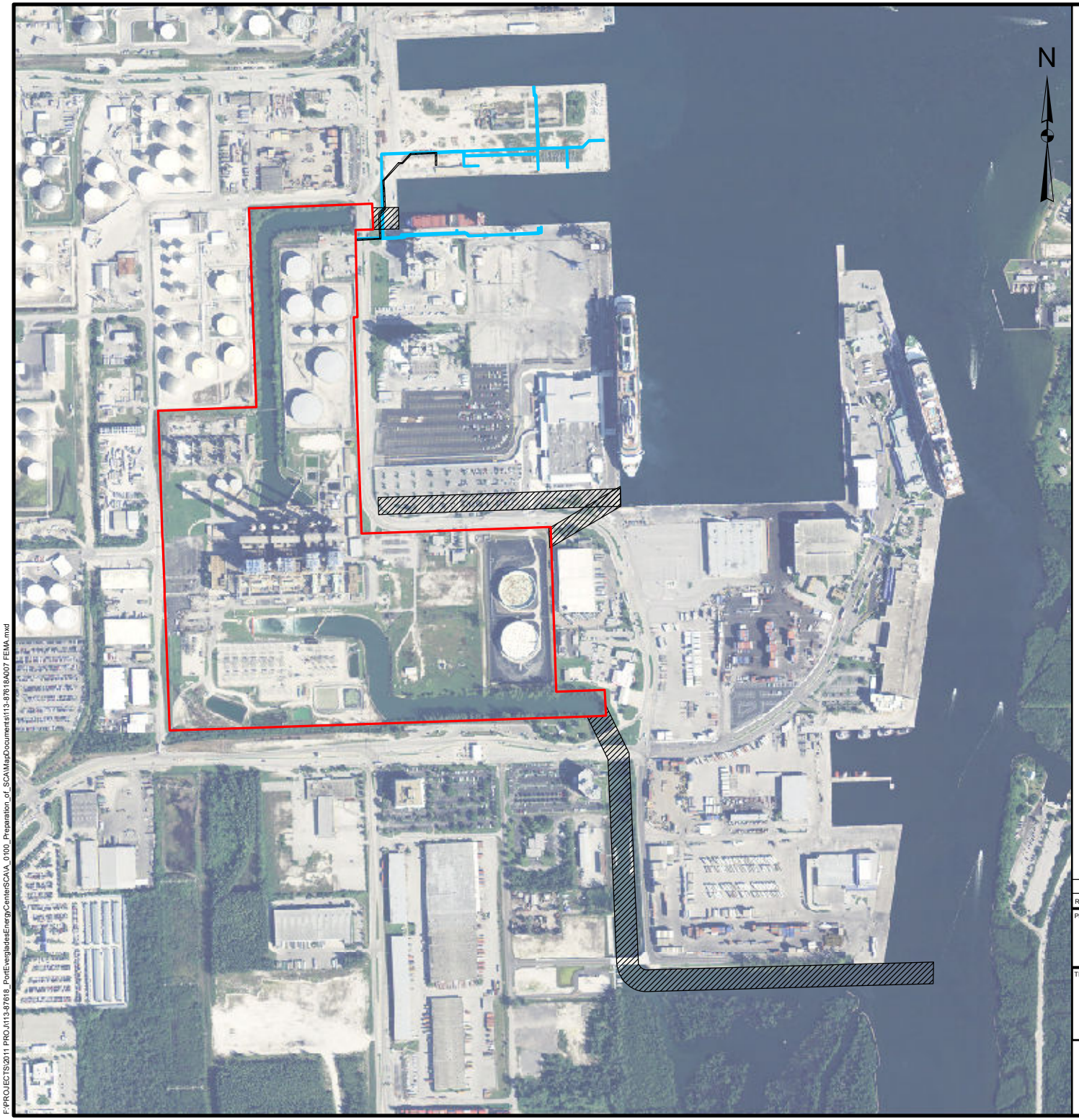

LEGEND

Port Everglades Plant Property

Easements

To Remain

To be Released

REFERENCES

1. Port Everglades Plant Property, Easements, FPL. 2011
2. Aerial Imagery, USDA/FSA Aerial Photography Field Office, 2010

800 400 0

Feet

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

AERIAL OF THE PORT EVERGLADES PLANT PROPERTY AND EXISTING EASEMENT CHANGES

PROJECT No. 113-87618			FILE No. 113-87618A035		
DESIGN	RCM	1/5/2012	SCALE: AS SHOWN	REV.	0
GIS	NRL	1/13/2012	FIGURE 3.2.4-2		
CHECK	RCM	1/13/2012			
REVIEW	KFK	1/13/2012			

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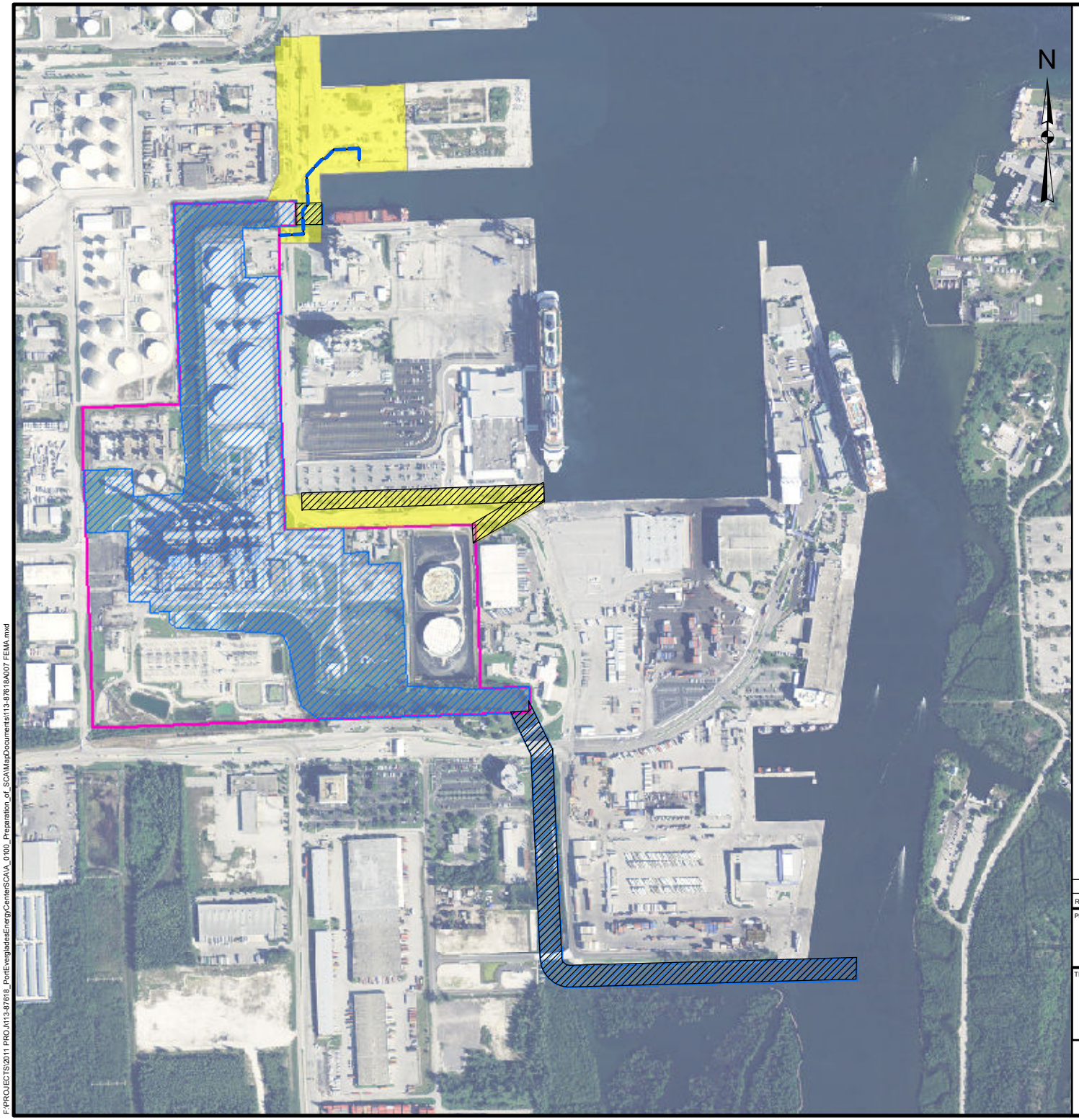


LEGEND

- Proposed Associated Linear Facilities (ULSD Pipeline)
- Port Everglades Plant Property
- Port Everglades Energy Center Site
- Associated Linear Facility Corridors
- Existing Easements

REFERENCES

1. Port Everglades Plant Property, Existing Easements, Proposed Associated Linear Facilities Easements, Port Everglades Energy Site, Associated Linear Facility Corridors, FPL. 2011
2. Aerial Imagery, USDA/FSA Aerial Photography Field Office, 2010

800 400 0
Feet

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

AERIAL OF THE PORT EVERGLADES PLANT PROPERTY AND FUTURE EASEMENTS

PROJECT No. 113-87618			FILE No. 113-87618A034		
DESIGN	RCM	1/5/2012	SCALE: AS SHOWN	REV.	0
GIS	NRL	1/13/2012			
CHECK	RCM	1/13/2012	FIGURE 3.2.4-3		
REVIEW	KFK	1/13/2012			

F:\PROJECTS\2011 PRO J\113-87618_PortEvergladesEnergyCenter\SCAVA_0100_Preparation_of_SCA\MapDocuments\113-87618A007 FEMA.mxd

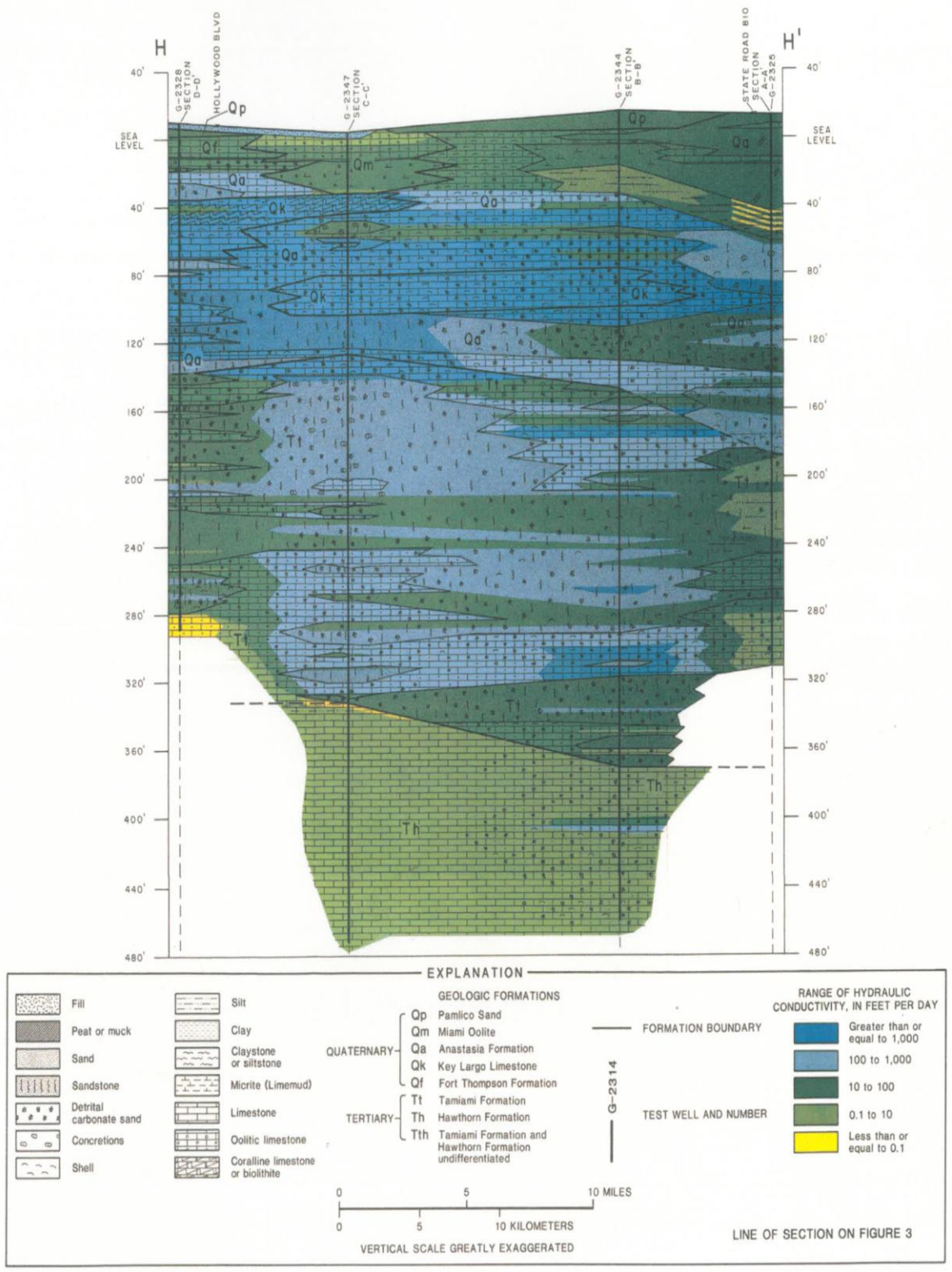
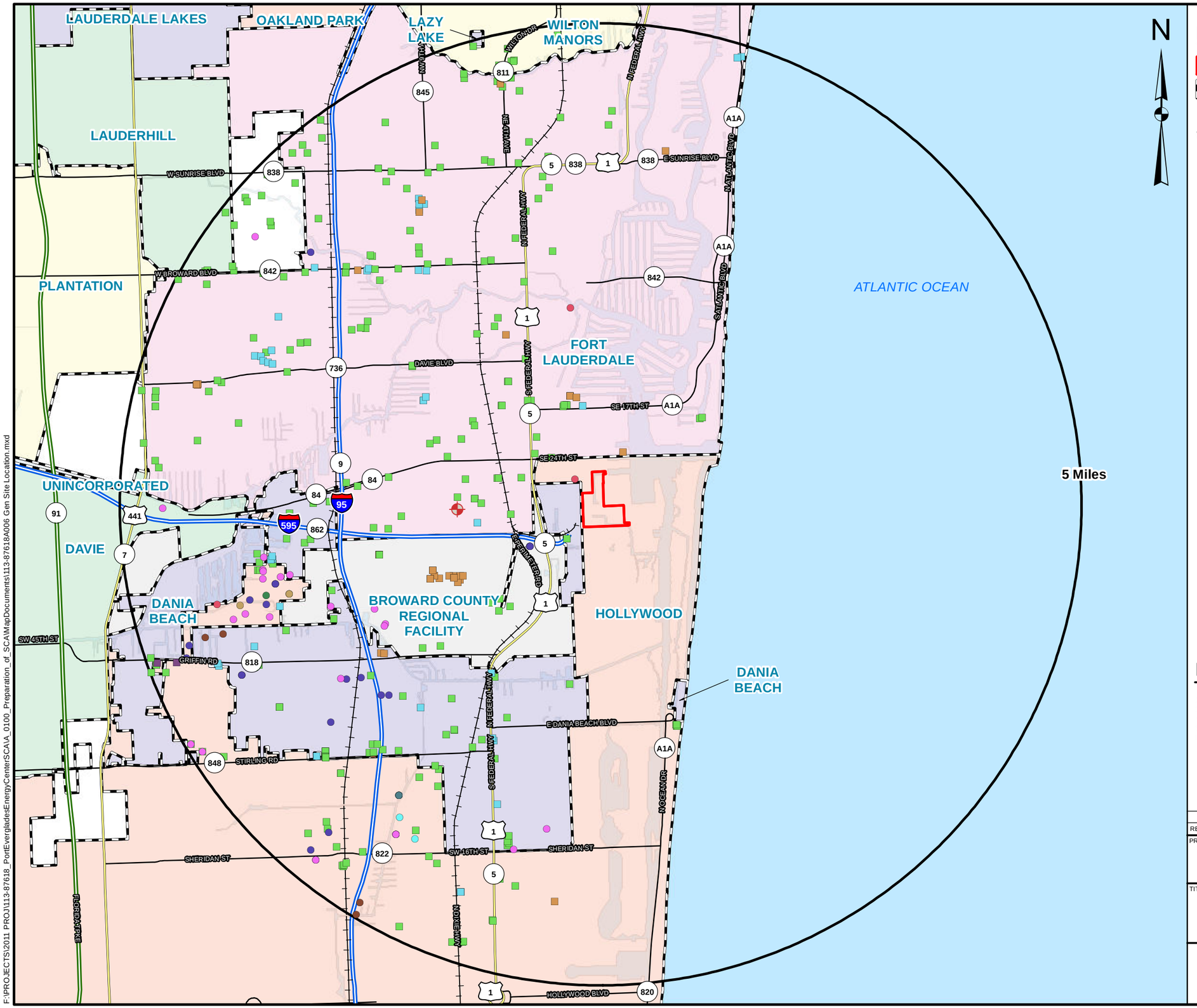


Figure 22.--Hydrogeologic section H-H' showing ranges of hydraulic conductivity.

Figure 3.3.1-1
Hydrogeology, Aquifer Characteristics, and Groundwater Flow of the Surficial Aquifer System, Broward County, Florida

Y:\Projects\2011\113-87618 FPL PEEC SCA\Chapters\Chapter 3\Figures\Figure 3.3.1-1 Hydrology.docx

Source: USGS, 1988.



N

LEGEND

- Port Everglades Plant Property
- Municipal Boundaries
- USGS Test Site

Water Use Sources

- Aquifer Unspecified
- Biscayne Aquifer
- Lake
- Off-site Lake(s)
- On-site Borrow Pit(s)
- On-site Canal(s)
- On-site Lake(s)
- On-site Lake(s)/Pond(s)
- SFWMD C-10 (Hollywood) Canal
- Surficial Aquifer System
- Unspecified
- Water Table Aquifer

REFERENCES

1. Port Everglades Plant Property, FPL, 2011
2. Municipalities, Broward County Florida, 2011
3. Water Use Sources, South Florida Water Management District, 2011
4. USGS Test Site, Hydrogeology, Aquifer Characteristics, and Ground-Water Flow of the Surficial Aquifer System Broward County, Florida, USGS Survey Water Resources Investigations Report 87-4034 Table 1, 1988

1 0.5 0 Mile

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

WATER USE PERMITS WITHIN A 5-MILE RADIUS

PROJECT No. 113-87618			FILE No. 113-87618A012		
DESIGN	RCM	12/21/2011	SCALE: AS SHOWN	REV.	0
GIS	NRL	1/13/2012	**FIGURE 3.3.3-1**		
CHECK	RCM	1/13/2012			
REVIEW	KFK	1/13/2012			

F:\PROJECTS\2011 PROJ\113-87618_PortEvergladesEnergyCenter\SCA\A_0100_Preparation_of_SCA\MapDocuments\113-87618A006 Gen Site Location.mxd

N
TERRITORIAL SEA (see note X)
INSET 1
SIDE A
PORT EVERGLADES
RWG 135ft (see note)
Cable Area
Whiskey Creek
Private aids PA
Fl R 2.5s 16ft 5M "6"
Fl G 2.5s 16ft 5M "7"
Fl G 4s 16ft 5M "5"
Fl R 2.5s
Fl G 2.5s
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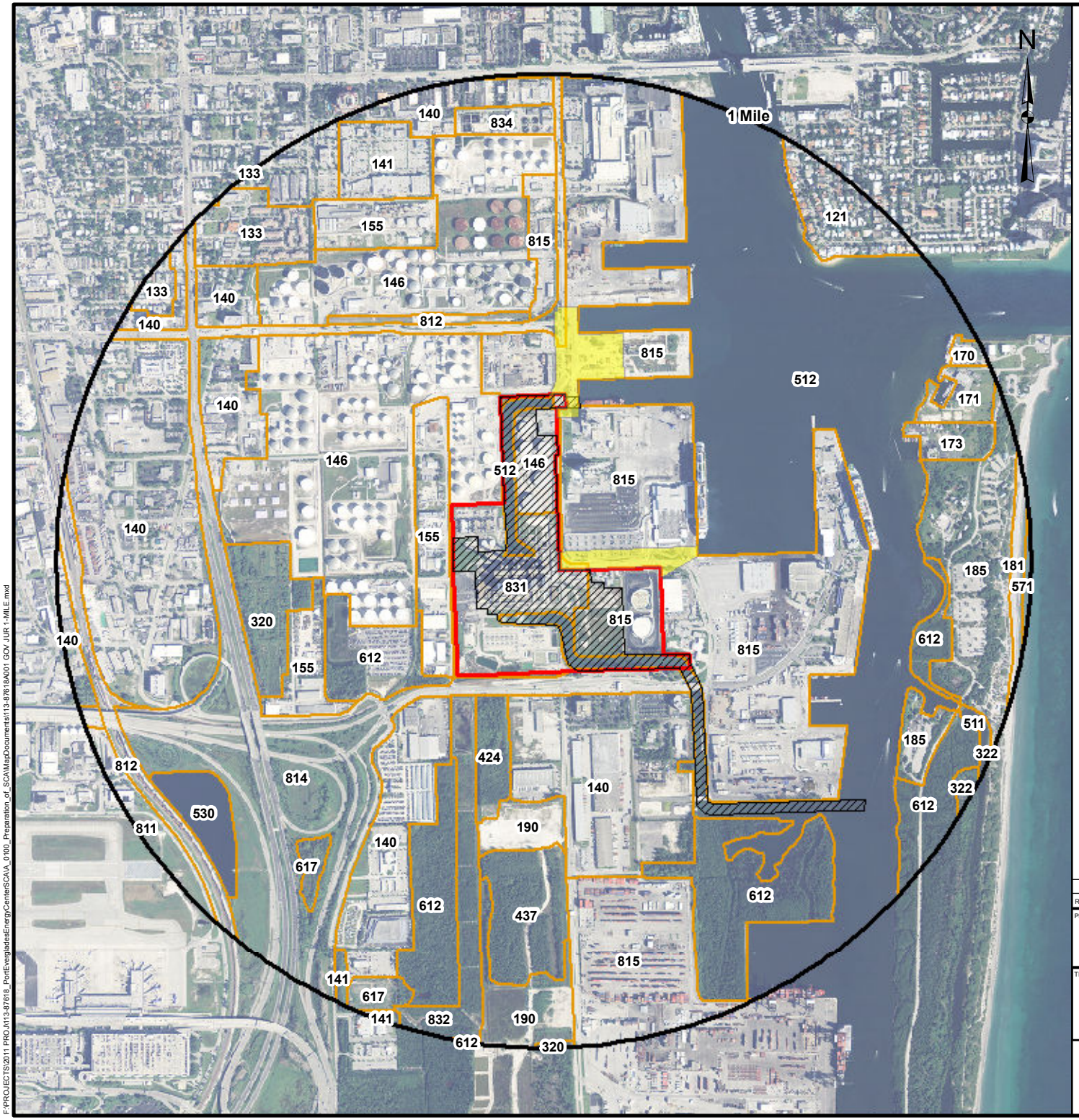

LEGEND

- Associated Linear Facility Corridors
- Port Everglades Energy Center Site
- Port Everglades Plant Property
- SFWMD Land Use / Land Cover
  - 121 - Fixed Single Family
  - 133 - Multiple Dwelling, Low Rise
  - 140 - Commercial and Services
  - 141 - Shopping Centers
  - 146 - Oil and Gas Storage
  - 155 - Other Light Industrial
  - 170 - Institutional
  - 171 - Educational Facility
  - 173 - Military
  - 181 - Swimming Beach
  - 185 - Parks and Zoos
  - 190 - Open Land
  - 320 - Shrub and Brushland
  - 322 - Coastal Shrub
  - 424 - Melaleuca
  - 437 - Australian Pine
  - 511 - Natural River, Stream
  - 512 - Channelized Waterway
  - 530 - Reservoirs
  - 571 - Altantic Ocean
  - 612 - Mangrove Swamp
  - 617 - Mixed Shrubs
  - 811 - Airports
  - 812 - Railroads and Railyards
  - 814 - Roads and Highways
  - 815 - Port Facilities
  - 831 - Electrical Power Facilities
  - 832 - Electrical Power Transmission Lines
  - 834 - Sewage Treatment

REFERENCES

1. Port Everglades Plant Property, Port Everglades Energy Center Site Associated Linear Facility Corridors FPL, 2011
2. Land Use, South Florida Water Management District, 2008
3. Aerial Imagery Courtesy of ESRI OpenGIS Map Server, Accessed January, 2012

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REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

VEGETATION / LAND USE

PROJECT No. 113-87618			FILE No. 113-87618A016		
DESIGN	KK	1/11/2012	SCALE: AS SHOWN	REV.	0
GIS	NRL	1/16/2012			
CHECK	RCM	1/16/2012	FIGURE 3.3.5-1		
REVIEW	KFK	1/16/2012			

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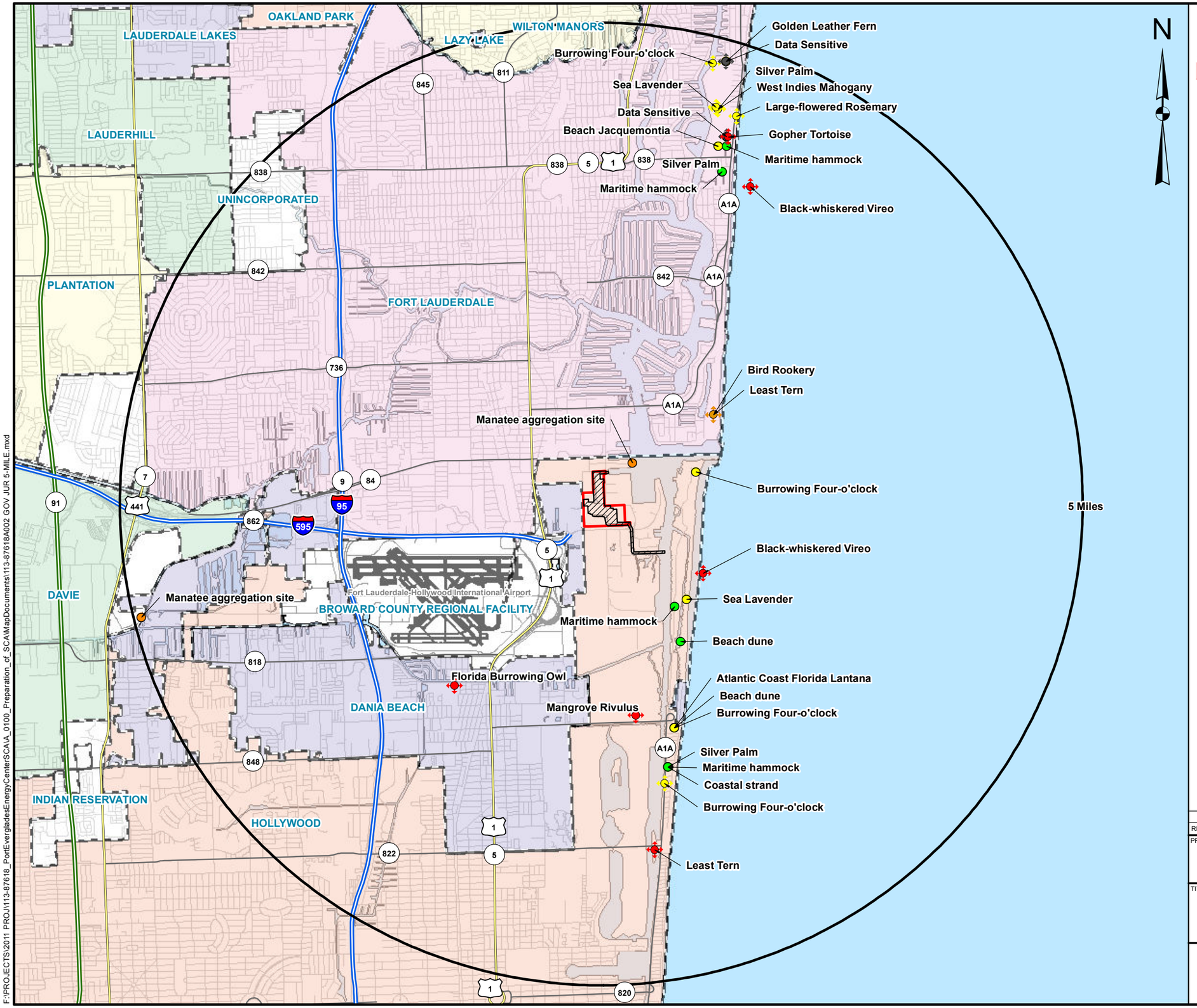

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LEGEND

- Port Everglades Energy Center Site
- Port Everglades Plant Property

Element Occurrences

- Animals
- Plants
- Communities
- Other
- Data Sensitive
- Point Indicates General Vicinity of Element

REFERENCES

1. Port Everglades Plant Property, Port Everglades Energy Center Site, FPL 2011
2. Municipalites, Broward County, 2011
3. Element Occurrences, FNAI, 2007

1 0.5 0 Mile

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

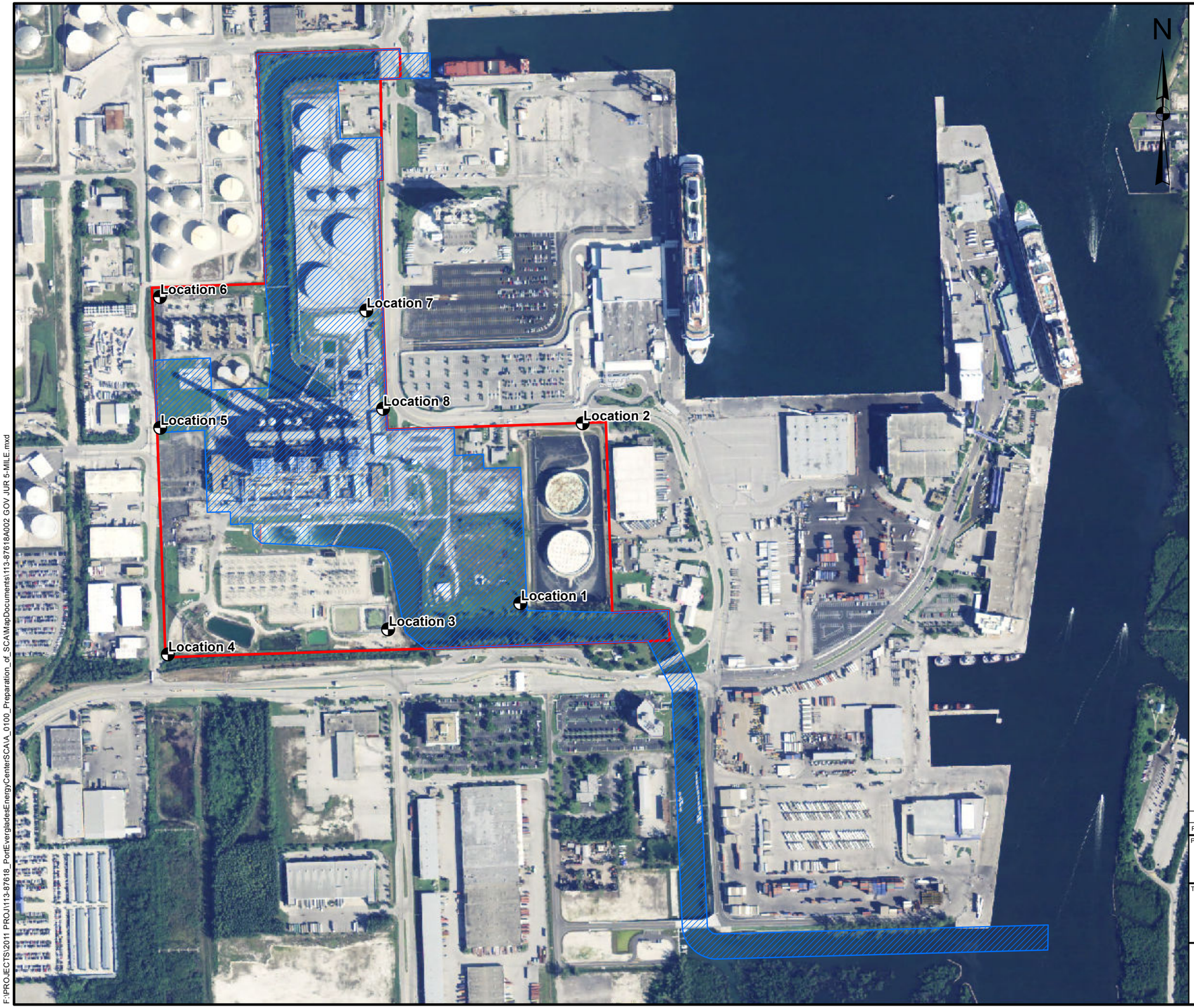
PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

LISTED AND OBSERVED SPECIES OCCURRENCES WITHIN 5 MILES

PROJECT No. 113-87618			FILE No. 113-87618A017	
DESIGN	RCM	12/21/2011	SCALE: AS SHOWN	REV. 0
GIS	NRL	1/16/2012	**FIGURE 3.3.6-1**	
CHECK	RCM	1/16/2012		
REVIEW	KFK	1/16/2012		



LEGEND

- Monitoring Locations
- Port Everglades Plant Property
- Port Everglades Energy Center Site

REFERENCES

1. Port Everglades Plant Property, Port Everglades Energy Center Site, FPL 2011
2. Monitoring Locations, Golder Associates Inc., 2011
3. Aerial Image Courtesy of Microsoft Bing Service Open GIS Map Server, Accessed November 2011

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Feet

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

NOISE AND LIGHT MONITORING LOCATIONS

PROJECT No. 113-87618			FILE No. 113-87618A022	
DESIGN	RCM	12/21/2011	SCALE: AS SHOWN	REV. 0
GIS	NRL	1/16/2012		
CHECK	RCM	1/16/2012	**FIGURE 3.3.7-1**	
REVIEW	KFK	1/16/2012		

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4.0 THE PLANT AND DIRECTLY ASSOCIATED FACILITIES

4.1 Background

This chapter provides a description of the Project, a layout, key components and their operation, and proposed controls for air emissions and water discharges. Fuel specifications are provided for natural gas and ULSD oil. Estimates of the expected character, quality, and quantity of discharges and emissions from the PEEC are provided.

The existing Port Everglades Plant consists of two nominal 200 MW and two nominal 400 MW fossil fuel fired steam generating units and 12 simple cycle natural gas turbines. Units 1 and 2 began operation in 1960 and 1961, respectively. The commercial in service dates for Units 3 and 4 were 1964 and 1965, respectively. All four units have remained in service since these dates. Units 1 through 4 are authorized pursuant to FDEP Final Title V Permit 0110036-009-AV to operate on natural gas, No. 6 fuel oil, No. 2 fuel oil, propane, and on specification used oil from FPL operations. Units 1 and 2 have a permitted maximum heat input of 2,300 million British thermal units per hour (MMBtu/hr) on oil and 2,400 MMBtu/hr on natural gas. Units 3 and 4 have a permitted maximum heat input of 4,000 MMBtu/hr on oil and 4,180 MMBtu/hr on natural gas. The air emissions from each unit are exhausted through four separate approximately 343 ft stacks. The 12 simple cycle natural gas turbines (GT1-GT12) have a combined nominal capacity of 500 MW with a heat input of 8,424 MMBtu/hr and are capable of firing natural gas and/or No. 2 fuel oil.

Condenser cooling for PEEC will be accomplished using the existing infrastructure of the Unit 3 and 4 once-through cooling system intake and discharge structures, which withdraw from Port Slip No. 3 and discharge through a canal connected to the ICW, currently authorized to operate under FDEP IWW Permit No. FL0001538 and Broward County Permit IW-2010-0150. Utilizing existing infrastructure (including a previously developed site, existing access roads, existing access to the FPL transmission system, and existing cooling-water intake and discharge structures) and combined cycle technology, PEEC will maximize the redevelopment of the Site while minimizing environmental, land use, and cost impacts.

The PEEC Project consists of modernization of the existing Units 1 through 4, the 1960s vintage heavy oil and natural gas-fired fossil steam boilers, steam turbine/electric generators, and selected appurtenances. After dismantlement of these existing units, FPL will construct a nominal 1,250 MW

(net) "3-on-1" combined cycle unit. The "3-on-1" unit will consist of three nominal 250 MW advanced CTs and three HRSGs, which will utilize the waste heat from the CTs to produce steam to be utilized in a single nominal 500 MW steam turbine generator.

The Mitsubishi Power Systems (MPS) "J" CTs or equivalent, and the Siemens Power Generation, Inc. "H" CTs or equivalents were used to evaluate the environmental impacts of the Project. The MPS "J" CT has a gross capacity of approximately 290 MW at an inlet temperature of 75°F and the Siemens "H" CT has a gross capacity of approximately 260 MW at an inlet temperature of 75°F. The HRSGs associated with either the MPS "J" CT or Siemens "H" CT for the Project will not have duct firing.

The MPS "J" CTs and the Siemens "H" CTs were used to evaluate the air emissions and impacts of the Project. The CT vendor has not yet been selected but will be based on competitive bidding. However, FPL desires to obtain guarantees of CT performance that will achieve the gross generation of the MPS J CT while achieving emissions within the range of the emissions provided for the MPS J and Siemens H CTs. FPL has requested in the air permit application permitted capacity and emission limits that encompass the CTs being considered.

Each CT will utilize inlet air cooling that may consist of evaporative cooling or an alternate system. Evaporative cooling systems achieve adiabatic cooling using water evaporated from a treated media. The evaporated water extracts the latent heat of vaporization from the inlet air stream when the water droplet is converted to water vapor. The result is a cooler, denser air stream. This allows additional power to be produced.

The CTs will use natural gas as the primary fuel with ULSD oil used as the backup fuel. Natural gas for PEEC will be transported to the Site via a natural gas pipeline. New onsite natural gas compressors may be installed by FPL if required to raise the pressure to the appropriate level for the CTs. The Project may also involve installation of a new onsite natural gas yard and onsite natural gas pipeline. ULSD oil will be delivered to the Site by truck or via waterborne deliveries to PEEC, and will be stored in a new fuel oil tank. When firing natural gas, emissions of nitrogen oxides (NO_x) will be controlled using dry low NO_x (DLN) combustion technology and selective catalytic reduction (SCR). When firing ULSD oil, emissions of NO_x will be controlled using water injection and SCR.

Primary water uses at PEEC will be for cooling water and process water. Cooling water is required for condenser cooling and auxiliary equipment cooling. Condenser cooling for the steam cycle portion of the 3-on-1 unit will be accomplished using the existing once-through cooling water system intake and discharge infrastructure, but with approximately half the heat rejection rate and water flow rate of the existing Units 1 through 4 once-through system. Process water is required for CT inlet air evaporative cooling, NO_x injection water, steam cycle makeup, service water, and fire protection. Other minor uses will include intake screen wash water, potable water for employee use, and water for landscape irrigation.

The Site stormwater management system design will handle a 25-year 72-hour storm event. Contact stormwater runoff from the Power Block and equipment areas will be treated through an oil/water separator and routed to the onsite stormwater detention ponds. Non-contact stormwater from outside the Power Block will also be collected and routed to the stormwater ponds. The Site stormwater management system is designed to meet all federal, state, regional, and local requirements (see Subsection 4.8.3). The construction support area and construction parking and laydown areas will meet stormwater management requirements through Best Management Practices (BMPs) (see Subsection 4.8.2). Stormwater runoff that is collected in the detention ponds will be managed by a combination of detention, percolation, and evaporation.

PEEC will connect to the FPL transmission network through the existing 138 kilovolt (kV) and 230 kV switchyards. No new transmission lines are required to connect PEEC to the existing transmission network.

4.2 Site Layout

The Power Block will be located in the central portion of the Site (Figure 4.2.0-1). Typical profiles of a CT/HRSG train are shown in Figures 4.2.0-2 (north-south) and 4.2.0-3 (east-west). New onsite natural gas compressors may be installed by FPL to raise the natural gas pressure to the appropriate level for the CTs.

4.3 Fuel

The primary fuel used by the CTs will be natural gas, delivered to the Site via a natural gas pipeline. Typical properties of natural gas are shown in Table 4.3.0-1. The heat content is typically

approximately 20,940 British thermal units per pound (Btu/lb) [low heating value (LHV); approximately 23,300 Btu/lb higher heating value (HHV)] with a maximum sulfur content of 2 grains per 100 standard cubic feet (gr/100 scf) of natural gas.

ULSD oil will be used as a backup fuel for an equivalent of 1,000 hours per year (hr/yr) per CT at baseload conditions. Typical properties of ULSD oil are shown in Table 4.3.0-2. The heat content is typically approximately 18,400 Btu/lb [(LHV); approximately 19,500 Btu/lb (HHV)] with a maximum sulfur content of 0.0015 percent by weight.

No onsite storage will be provided for natural gas. ULSD oil will be delivered to the Site by truck or by pipeline from Port Everglades and will be stored in a new approximately 7 million gallon (MG) fuel oil storage tank (165,000 barrels) with integral secondary containment. All fuel oil tanks within the Certified Site will be permanently decommissioned and removed/dismantled according to applicable regulations.

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 the nominal 1,250 MW (net) combined cycle unit, the following specific operating conditions for the CTs were used (see SCA Appendix 10.2.5, Air Construction Permit):

- 35°F dry bulb turbine inlet temperature;
- 60 percent relative humidity;
- Approximately 20,940 Btu/lb and 920 British thermal units per standard cubic foot (Btu/scf), LHV, of natural gas (approximately 23,300 Btu/lb and 1,020 Btu/scf, HHV); and
- Approximately 18,400 Btu/lb and 129,900 Btu/ gallon, LHV, for ULSD oil (approximately 19,500 Btu/lb and 137,700 Btu/gallon, HHV).

The maximum heat input for each of the CTs being considered for PEEC ranges from 2,733 MMBtu/hr (LHV) (3,034 MMBtu/hr, HHV) to 2,503 MMBtu/hr (LHV) (2,774 MMBtu/hr, HHV) when firing natural gas (100 percent capacity, 35°F). The corresponding maximum fuel usage ranges from approximately 3.0 million cubic feet per hour (MMcf/hr) to 2.7 MMcf/hr of natural gas for each CT. Maximum potential fuel usage at 75°F turbine inlet temperature ranges from approximately 6.6 $\times 10^{10}$ cubic feet per year (cf/yr) to 7.3 $\times 10^{10}$ cf/yr of natural gas for PEEC.

ULSD oil use will be based on the equivalent of 1,000 hr/yr per CT at full load. The maximum fuel use is approximately 19,400 gallons per hour per CT at 35°F turbine inlet with a maximum annual usage rate of 58 MG for 3 CTs each operating for 1,000 hours.

4.4 Air Emissions and Controls

4.4.1 Air Emissions Units

Air pollutants will be emitted from the CT/HRSGs when firing natural gas and ULSD oil. Air emissions result from either the combustion process or impurities in the fuel. Tables 4.4.1-1A through 4.4.1-2B present the performance and maximum estimated emission rates of regulated pollutants for each CT/HRSG being evaluated for PEEC. Information for the MPS "J" CTs or equivalent is presented in Tables 4.4.1-1A and 4.4.1-2A, and information for the Siemens "H" CTs or equivalent is presented in Tables 4.4.1-1B and 4.4.1-2B.

The maximum estimated emission rates when firing natural gas and ULSD oil were determined using the manufacturer's information for the equipment proposed for PEEC. The design parameters are provided in Tables 4.4.1-1A through 4.4.1-2B for the range of operating loads and turbine inlet temperatures. Appendix 10.2.5, the Air Construction Permit Application, presents the basis for the emission rates and maximum annual emissions of regulated and non-regulated pollutants.

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 DLN control). The proposed NO_x stack emissions rates for PEEC (concentrations) are 2 parts per million by volume dry (ppmvd), corrected to 15 percent oxygen (O_2) or less when firing natural gas, and 8 ppmvd corrected to 15 percent O_2 or less when firing ULSD oil.

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.

The expected CO stack emission rates for the MPS "J" CTs or equivalent when firing natural gas are 9 ppmvd corrected to 15 percent O_2 at baseload operation and 35 ppmvd corrected to 15 percent O_2 with ULSD oil firing. For the Siemens "H" CTs or equivalent, the expected CO emission rates when firing natural gas are 5 ppmvd corrected to 15 percent O_2 at baseload operation, and 10 ppmvd corrected to 15 percent O_2 with ULSD oil firing.

Similarly, volatile organic compound (VOC) emissions are formed by incomplete combustion of fuel. High combustion temperatures, adequate excess air, and good fuel/air mixing during combustion will minimize VOC formation. VOC formation is limited by ensuring complete efficient combustion of the fuel in the CTs. Recent improvements in CT combustor technology allow for both reduced NO_x emissions and low VOC emissions.

The expected VOC stack emission rates for the MPS "J" CTs or equivalent at baseload operation when firing natural gas are 1 ppmvd corrected to 15 percent O_2 at baseload operation and 10 ppmvd corrected to 15 percent O_2 for ULSD oil firing. For the Siemens "H" CTs or equivalent at baseload operation, the expected CO emission rates when firing natural gas are 1 ppmvd corrected to 15 percent O_2 at baseload operation and 10 ppmvd corrected to 15 percent O_2 for ULSD oil firing.

Maximum sulfur dioxide (SO_2) emission rates are controlled and minimized by the very low sulfur content in the fuels, which will be no greater than 2 gr/100 scf of sulfur for natural gas and no greater than 0.0015 percent sulfur by weight for ULSD oil.

PEEC will be equipped with two, 2,250 kilowatt (kW) emergency generators. These emergency generators will be used when electric power is not available. This would primarily occur during catastrophic events such as hurricanes. In addition to the larger emergency generators, there are small 25 kW propane fired emergency generators associated with the PEEC hurricane shelter. SCA Appendix 10.2.5, Air Construction Permit Application, contains emissions and manufacturer's information for the emergency generators proposed for PEEC. Normally, these emergency generators would be operated 1 to 2 hours per month for maintenance and reliability testing.

The 3-on-1 unit may also include one natural gas-fired fuel heater and a spare. These heaters will have a heat input of 10 MMBtu/hr (HHV) or less and will be used as necessary to heat natural gas above the dew point. Only one fuel heater may be necessary for the operation of PEEC. SCA Appendix 10.2.5 contains performance and emissions information for the fuel heater.

The auxiliary boiler will be used as necessary for startup. The limited use auxiliary boiler will have a maximum heat input of 99.8 MMBtu/hr (HHV) firing natural gas. SCA Appendix 10.2.5 contains performance and emissions information for the auxiliary boiler. For construction, temporary boilers will be required for steam blows and cleaning. These boilers are described in Appendix 10.2.5.

PEEC may include a new natural gas compressor station to increase natural gas pressure from the existing FGT pipeline to the CTs. The natural gas compressor station, if installed onsite, may consist of three Solar Centaur 50 compressor set natural gas compressors or equivalent. These natural gas compressors typically consist of a natural gas turbine and natural gas compressor. During normal operation only two of the three compressor sets would be operating. SCA Appendix 10.2.5 contains performance and emissions information for the natural gas compressors.

A new approximately 7 MG fuel oil storage tank will be used to store the ULSD oil at the Site. Appendix 10.2.5 contains VOC emissions information for the fuel oil tank.

Finally, PEEC will be equipped with a 300 horsepower (hp) fire pump engine. This engine will be used when necessary during catastrophic events such as fires. SCA Appendix 10.2.5 contains emissions and manufacturer's information for the engine proposed for PEEC. Normally, this fire pump engine would be operated only 1 to 2 hours per month for maintenance and reliability testing.

The total annual emissions from PEEC include air emissions from the CTs, fuel heater, emergency generators, auxiliary boiler, fire pump engine, compressor station, and fuel oil tank. Tables 4.4.1-3A and 4.4.1-3B present the annual potential emissions for PEEC for the MPS "J" or equivalent, and Siemens "H" CTs, respectively. Annual emissions were based on maximum emissions for baseload operation and ambient temperatures of 75°F. The maximum CT emissions are based on 7,760 hr/yr firing natural gas and 1,000 hr/yr firing oil. The potential emissions are based on the 75°F turbine inlet temperature at 100 percent load condition. This turbine inlet temperature is conservative, since the annual average temperatures are slightly higher than 75°F.

Tables 4.4.1-3A and 4.4.1-3B present the net emission changes resulting from the modernization of the existing Port Everglades Plant to the PEEC, reflecting the maximum projected PEEC emissions and the resulting changes compared to the existing Plant, and the Prevention of Significant Deterioration (PSD) significant emission rates, which are thresholds for PSD review for modifications to major sources. PSD review is required for emissions of a pollutant greater than the listed PSD

significant emission rate. Figure 4.4.1-1 presents the net emissions reductions for sulfur dioxide (SO_2), NO_x, and particulate matter (PM) greater than or equal to 10 micrometers (PM_{10}) resulting from the modernization of the existing Plant to the PEEC. As shown in these tables and this figure, the net emission changes for PEEC are less than the PSD significant emission rates for these regulated air pollutants.

On June 3, 2010, the U.S. Environmental Protection Agency (EPA) promulgated regulations related to PSD and Title V Greenhouse Gas (GHG) Tailoring Rule (75 Federal Register 31514-31608). In EPA's promulgation, GHGs are defined to include an aggregate group of six classes of compounds that have been determined to have GHG properties: CO_2, methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Each of these GHGs has a specific Global Warming Potential (GWP) that is calculated as "CO_2 equivalent emissions" or CO_2e that is equivalent to the GHG properties of one ton of CO_2.

For the PEEC, the GHGs emitted are CO_2, CH_4, and N_2O, with one ton of CH_4 equivalent to 21 tons of CO_2e and one ton of N_2O equivalent to 310 tons of CO_2e. Tables 4.4.1-3A and 4.4.1-3B present the net emission changes resulting from the modernization of the existing Units 1 through4 to the PEEC, reflecting the maximum projected PEEC emissions and the resulting changes compared to the existing Units 1 through 4, and the PSD significant emission rates, which are thresholds for PSD review for modifications to major sources.

The CO_2 emission rates shown in the tables for Units 1 through 4 were obtained from EPA's Acid Rain database. Since emissions of N_2O and CH_4 were not reported before 2010, these GHGs were calculated based on the actual annual heat input and emission factors from Title 40, Part 98 of the Code of Federal Regulations (40 CFR 98), Subpart C. These GHG emissions show the CO_2e rates for these pollutants. PSD review is required for GHG emissions greater than the listed PSD significant emission rate of 75,000 tons per year (TPY) CO_2e. As shown in Tables 4.4.1-3A and 4.4.1-3B, the maximum potential annual CO_2e emissions of the Project will exceed the historical emissions of Units 1 through 4, primarily due to greater operation.

EPA regulations require a comparison of the maximum CO_2e potential emissions of PEEC to the baseline actual CO_2e emissions of the existing Port Everglades Units 1 through 4. If the maximum potential emissions exceed the baseline actual emissions by more than the PSD threshold, than PSD review is required. EPA rules require the maximum potential CO_2e emissions for PEEC be based on

its operation at 100 percent capacity for every hour of the year (8,760) including the maximum use of ULSD oil (1,000 hours of the 8,760 hours per year). EPA rules define baseline actual emissions as the actual annual emissions during the last 5 years using the highest average over 24 consecutive months. The baseline actual CO_2e emissions for the existing Port Everglades Units 1 through 4 were about 2.6 million tons/year of CO_2e with a capacity factor of less than 30 percent. However, as shown in Figure 4.4.2-1, the PEEC CO_2e emission rate is less than one-half that of the existing Plant. Indeed, the maximum potential CO_2e emissions currently authorized of Port Everglades Units 1 through 4 is about 9.6 million tons tons/year of CO_2e. As a result, the EPA PSD threshold is exceeded due to the low capacity factor of the existing units over the last 5 years.

The PSD/Air Construction Permit Application (see SCA Appendix 10.2.5) is being filed for the purpose of establishing federally enforceable emission limitations that ensure the Project will not result in a significant net increase in emissions of any regulated air pollutant for non-GHG, in accordance with the FDEP's federally approved minor source air construction permit program under Florida's federally required State Implementation Plan. For GHG, a BACT analysis has been performed and is included in the PSD/Air Permit Application. As discussed in Subsection 4.4.3, the air emission controls are representative of BACT emission limits under PSD regulations for non-GHG pollutant and BACT analysis has been proposed for GHGs.

4.4.2 Air Emission Controls

The use of clean fuels (natural gas and ULSD), combustion controls, and air pollution control equipment will minimize air emissions and ensure compliance with applicable emission limiting standards. Using clean fuels will minimize emissions of SO_2, PM/PM_{10}, 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 has been determined to represent BACT on previous combined cycle projects based on an evaluation of economic, energy, and environmental impacts. The following subsection presents a summary of the air pollution control technology proposed for PEEC, which is presented in detail in the PSD/Air Construction Permit Application (Appendix 10.2.5).

PEEC, among other measures, will continue FPL's major efforts to reduce CO_2 emissions in FPL's system. The maximum CO_2 emission rate after the modernization of the Port Everglades Units 1 through 4 will be approximately one half the maximum CO_2 emission rate for the existing Units 1 through 4. This reduction in CO_2 emission rate is a result of the efficiency of advanced combined

cycle technology and the primary use of natural gas. PEEC will be among the most efficient natural gas-fired generating units in FPL's system and will displace generation that would otherwise be produced by less efficient units in FPL's system, thereby reducing system CO_2 emissions. The increased efficiency can be shown by the CO_2 emission rate in pounds of CO_2 emitted per megawatt of energy produced per hour (lb/MW-hr). Figure 4.4.2-1 shows the lb/MW-hr emission rates before and after the modernization of the Port Everglades Units 1 through 4 to combined cycle technology. As shown in this figure, the CO_2 emission rate for PEEC will be 795 lb/MW-hr, while the CO_2 emission rate for the existing Port Everglades Plant is 1,738 lb CO_2/MW-hr as reported by EPA (EPA, 2010). Moreover, PEEC will reduce FPL's system emissions of CO_2 by 22 million tons from 2016 through 2047, which will be a significant reduction in CO_2 emissions in FPL's system as a direct result of the Project (see SCA Appendix 10.8).

4.4.3 Control Technology Description

FDEP has adopted PSD rules in FDEP Rule 62-212.400, F.A.C. BACT review is part of the evaluation of control technology under the Florida PSD rules, and is required only for those pollutants that trigger PSD review. BACT is applicable to all pollutants for which PSD review is required and is pollutant specific. BACT 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 the energy, environmental, and economic impacts and other costs. The emission limits proposed for PEEC are reflective of BACT, even though PSD review is not required for FDEP-regulated pollutants.

The EPA updated the New Source Performance Standards (NSPS) for stationary CTs that will commence construction after February 18, 2005. Subpart KKKK applies to units with a gross capacity greater than 1 MW. The Subpart KKKK requirements applicable to CTs greater than 30 MW apply to the CT/HRSG trains associated with PEEC. The NO_x emissions are limited to 15 parts per million (ppm) corrected to 15 percent O_2 or 0.43 lb/MW-hr for natural gas firing and 42 ppm corrected to 15 percent O_2 or 1.3 lb/MW-hr for ULSD firing. For SO_2 emissions, Subpart KKKK requirements limit emissions to 0.9 lb/MW-hr or a potential total sulfur content equivalent to 0.06 lb/MMBtu (HHV) if multiple fuels are fired.

NSPS are also applicable to the auxiliary boiler, fuel heaters, natural gas compressors, fire pump engine, and emergency generators. Subpart KKKK is also applicable to the turbines associated with the natural gas compressors. These turbines will fire only natural gas with heat input greater than 50

MMBtu/hr but less than 850 MMBtu/hr and the Subpart KKKK NO_x emissions limit is 25 ppmvd corrected to 15 percent O_2. For PEEC, the proposed NO_x emissions rate of 15 ppmvd corrected to 15 percent O_2 is well below the Subpart KKKK limit. The EPA NSPS Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, applies to the auxiliary boilers and fuel heaters. For the emergency generators, natural gas compressors, and fire pump engine, NSPS Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, is applicable.

EPA has promulgated maximum achievable control technology (MACT) standards under the National Emissions Standards for Hazardous Air Pollutants (NESHAP) regulations. As presented in SCA Appendix 10.2.5, the Port Everglades Plant will continue to be a major source of hazardous air pollutant (HAP) emissions due to the combined potential emissions from PEEC and the 12 gas turbines units associated with the Gas Turbine Power Park–Port Everglades. Therefore, MACT standards under the NESHAP regulations would apply. The NESHAP Subpart YYYY applies to PEEC if the aggregate use of oil by existing and new turbines exceeds 1,000 hours during any calendar year. However, information available from the equipment vendors indicate that PEEC will meet the proposed MACT of 91 parts per billion by volume dry (ppbvd) corrected to 15 percent O_2 for formaldehyde. The NESHAP Subpart ZZZZ addressing reciprocating internal combustion engines (RICE) applies to the diesel engines associated with the Project. Under this rule, if the facility is not a major source of HAPs, it would still be categorized as an area source and be subject to the rule. However, the method of compliance under this provision would be to demonstrate compliance with 40 CFR 60, Subpart IIII.

Appendix 10.2.5 of the SCA contains the PSD/Air Construction Permit Application for PEEC. The application describes the air pollution control technology proposed for PEEC and addresses air quality impacts for compliance with Ambient Air Quality Standards (AAQS). The remainder of this section briefly describes those control technologies that are proposed for PEEC.

4.4.3.1 Nitrogen Oxides

The Project will result in a net emissions decrease of approximately 3,900 TPY for NO_x emissions (i.e., more than 85 percent reduction from historical emissions). PSD review, including a BACT determination, is not applicable. However, the NO_x control technology and emission limits proposed for PEEC are consistent with emission limits established as BACT in Florida and EPA Region IV for similarly designed projects. The use of DLN combustors and SCR for PEEC with NO_x emission

levels of 2 ppmvd corrected to 15 percent O_2 when firing natural gas and 8 ppmvd corrected to 15 percent O_2 when firing ULSD is consistent with recently established BACT emission limits for other combined cycle units. Similarly, the NO_x emission rates proposed for the auxiliary boiler, natural gas heaters, emergency generators, and natural gas compressors have been established as BACT in previous PSD permits.

When firing natural gas, NO_x emissions will be controlled using DLN combustors. 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.

NO_x emissions will be further controlled by SCR systems when firing either natural gas or ULSD oil. SCR is a post-combustion process where NO_x in the gas stream has reacted with ammonia in the presence of a catalyst to form nitrogen and water vapor. The reaction occurs typically between approximately 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. Aqueous ammonia will be stored onsite in one or more tanks. Flue gas NO_x emissions when firing natural gas will be reduced to 2 ppmvd, corrected to 15 percent O_2. When firing ULSD, SCR can reduce NO_x emissions by 80 percent or more to 8 ppmvd corrected to 15 percent O_2 or less.

The NO_x emissions from the auxiliary boiler, fuel heater, emergency generators, pump-fire engine, and natural gas compressors will be limited using combustion techniques. The auxiliary boiler will be equipped with low NO_x burners to reduce NO_x emissions to 0.05 lb/MMBtu (HHV). The fuel heater will use combustion controls to reduce NO_x emissions to 0.095 lb/MMBtu (HHV). The emergency generators will meet the NSPS Subpart IIII NO_x emission requirements of 6.5 grams per brake horsepower-hour (g/bhp-hr). The natural gas compressors evaluation is based on natural gas turbines using Solar Turbines dry low emissions (DLE) technology with a maximum NO_x emission rate of 15 ppmvd corrected to 15 percent O_2.

4.4.3.2 Carbon Monoxide

The Project will result in net annual CO emissions less than the PSD significant emission rate of 100 TPY. Therefore, PSD review, including a BACT determination, is not applicable. However, the use of combustion controls to reduce CO emissions in the range proposed for natural gas and ULSD firing has been the technology used to achieve low CO emission rates in CTs.

The emission rates are based upon the CTs being considered for PEEC. The CTs will utilize advanced combustion technology. The expected CO emission rates for the MPS "J" CTs or equivalent when firing natural gas are 9 ppmvd corrected to 15 percent O_2 at baseload operation. When firing ULSD oil, the CO emissions from the MPS "J" CTs or equivalent are based on 35 ppmvd corrected to 15 percent O_2. The Siemens "H" CTs or equivalent CO emissions are based on 5 ppmvd corrected to 15 percent O_2 when firing natural gas at baseload operation. For the Siemens "H" CTs when firing ULSD oil, the CO emissions are based on 10 ppmvd corrected to 15 percent O_2.

Combustion techniques will be used to reduce the CO emissions from the auxiliary boiler, fuel heaters, fire pump engine, and emergency generators. The auxiliary boiler will be equipped with low NO_x burners designed to reduce CO emissions to 0.08 lb/MMBtu (HHV). The fuel heaters will use combustion controls to reduce CO emissions to 0.08 lb/MMBtu (HHV). The emergency generators will meet the NSPS Subpart IIII CO emission requirements of 8.5 g/bhp-hr. Each natural gas compressor will be equipped with combustion technology to reduce CO emissions to 25 ppmvd corrected to 15 percent O_2.

The CO emission rates proposed for the auxiliary boiler, fuel heater, emergency generators, and natural gas compressors have also been established as BACT in previous PSD permits.

4.4.3.3 Sulfur Oxides (SO_2 and H_2SO_4 Mist)

The Project will result in net emissions decreases of more than 9,000 TPY for SO_2 emissions and approximately 380 TPY for sulfuric acid (H_2SO_4) mist (i.e., reductions of more than 95 percent for SO_2 and 90 percent for H_2SO_4 from historical emissions). PSD review, including a BACT determination, is not applicable. The only feasible control for the combined cycle unit, auxiliary boilers, fuel heaters, emergency generators, fire pump engine, and natural gas compressors is combustion of clean fuels. Natural gas and ULSD oil are the cleanest fuels available with maximum sulfur contents of 2 gr/100 scf for natural gas and 0.0015 percent sulfur for ULSD oil proposed for PEEC. H_2SO_4 emissions will also be minimized by the use of low sulfur fuels. SO_2 and H_2SO_4 mist

emission limits based on use of natural gas and ULSD oil have been established as BACT in previous PSD permits.

4.4.3.4 Particulate Matter and Other Regulated Pollutants

The Project will result in a net emissions decrease of more than 350 TPY for PM/PM_{10} (i.e., more than 50 percent reduction from historical emissions). PSD review, including a BACT determination, is not applicable. The use of clean fuels, characterized by low PM and trace contaminant contents, and advanced combustion techniques, result in negligible PM and PM_{10} emissions from the combined cycle unit, auxiliary boiler, fuel heaters, emergency generators, fire pump engine, and natural gas compressors. Emission limits based on the use of clean fuels (i.e., natural gas and ULSD oil) have been established as BACT for PM/PM_{10} emissions in previous PSD permits.

4.4.3.5 Volatile Organic Compounds

The Project will result in a net emissions increase of less than 40 TPY for VOC. Therefore, PSD review, including a BACT determination, is not applicable. Combustion techniques will be used to reduce the VOC emissions from the combined cycle unit, auxiliary boiler, fuel heater, emergency generators, fire pump engine, and natural gas compressors.

The CTs will utilize advanced combustion technology, and the proposed emission rates are consistent with those established as BACT for these turbines. The expected VOC emission rate for the MPS "J" CTs or equivalent when firing natural gas is 1 ppmvd corrected to 15 percent O_2 at baseload operation. When firing USLD oil, the VOC emissions from the MPS "J" CTs or equivalent are based on 10 ppmvd corrected to 15 percent O_2. VOC emissions for the Siemens "H" CTs are based on 1 ppmvd (corrected to 15 percent O_2) when firing natural gas at baseload operation. For the Siemens "H" CTs when firing ULSD oil, the VOC emissions will be are based on to 10 ppmvd corrected to 15 percent O_2.

The auxiliary boiler is designed with proper combustion techniques to reduce VOC emissions to 0.005 lb/MMBtu (HHV). The fuel heater will use combustion controls to reduce VOC emissions to 0.005 lb/MMBtu (HHV). The emergency generators will meet the NSPS Subpart IIII VOC emission requirements of 1 g/bhp-hr as total hydrocarbons. Each natural gas compressor will be equipped with combustion technology to reduce VOC emissions to 12.5 ppmvd corrected to 15 percent O_2.

4.4.3.6 Greenhouse Gases

FPL is committed to reducing GHG emissions that is discussed in more detail in Appendix 10.8 NextEra Energy, Inc.'s and Florida Power & Light Company's Greenhouse Gas Strategy – Port Everglades Next Generation Clean Energy Center. FPL operates one of the cleanest generating fleets in the nation. Consistent with FPL's trend of leading the industry in clean energy investments for customers, this modernization would cut the current plant's CO_2 emissions rate in half and slash its air emissions rate by approximately 90 percent. Use of natural gas as the primary fuel at PEEC, along with the most efficient combined cycle technology, will result in one of the lowest CO_2 emission rates on a pound-per-megawatt-hour (lb/MW-hr) basis of any fossil fuel-fired units in the country. Moreover, PEEC will be among the most efficient natural gas-fired generating units in FPL's system. As a result, the electricity generated by PEEC will displace generation produced by less efficient units in FPL's system and concomitantly reduce the amount of CO_2 emissions by 22 million tons.

Although there will be an increase in GHG emissions at the location of the existing Port Everglades Plant as a result of the Project, there will be a decrease of GHGs in FPL's system. The Project's net emission increase of GHGs above the PSD threshold requires a BACT analysis. In November 2010, EPA issued guidance on the determination of BACT for GHGs ("*PSD and Title V Permitting Guidance for Greenhouse Gases*", November 2010). EPA believes that it is important in BACT reviews for permitting authorities to consider options that improve the overall energy efficiency of the source or modification – through technologies, processes, and practices at the emitting unit. In general, a more energy efficient technology burns less fuel than a less energy efficient technology on a per unit of output basis. Considering the most energy efficient technologies in the BACT analysis helps reduce the products of combustion, which includes not only GHGs but other regulated New Source Review (NSR) pollutants (e.g., NO_x, SO_2, $PM/PM_{10}/PM_{2.5}$, CO, etc.), EPA emphasizes that energy efficiency should be considered in BACT determinations for all regulated NSR pollutants (not just GHGs).

The efficiency of the generation technology in producing electricity and the type of fuel utilized are the most important aspects in GHG emissions from electric generation projects. Together, efficiency and fuel type dictate the amount of GHG emissions per unit of generation.

An important measure of the efficiency for an electrical generating facility is the units' heat rate. Heat rate is a measurement of how efficiently a unit uses heat energy. It is expressed as the number

of Btus of heat required to produce a kilowatt-hour of energy (Btu/kWh)[1]. A heat rate of 3,413 Btu/kWh reflects a conversion efficiency of 100 percent from thermal energy to electrical energy.

The proposed combined cycle units' heat rate and energy efficiency were compared to data obtained from the U.S. Energy Information Administration (EIA). Based on data provided in the Annual Energy Review 2010, the approximate heat rate for electricity for fossil fueled power plants in the U.S. in 2010 was 9,760 Btu/kWh (35.0 percent efficiency) (http://www.eia.gov/totalenergy/data/annual/index.cfm).

Based on US EIA's 2010 annual review of the electrical power industry, the reported average heat rate for natural gas firing was 8,185 Btu/kWh (41.7 percent efficiency) including all types of generation (http://www.eia.gov/electricity/annual/pdf/table5.3.pdf). Of the generation types, the average heat rates when firing natural gas are:

- Steam turbine generator – 10,249 Btu/kWh (33.3 percent efficiency),
- Natural gas turbine – 11,590 Btu/kWh (29.5 percent efficiency),
- Internal combustion – 9,917 Btu/kWh (34.4 percent efficiency), and
- Combined cycle – 7,619 Btu/kWh (44.8 percent efficiency).

(http://www.eia.gov/electricity/annual/pdf/table5.4.pdf)

Using heat balance predictive data to estimate the power output of the steam turbine generator and the heat rate and efficiency of PEEC when using natural gas and ULSD oil are as follows for new and clean conditions:

- Natural gas firing – 6,357 to 6,488 Btu/kWh (53.7 to 52.6 percent efficiency) (Baseload at 75°F)
- Oil firing – 6.745 to 7,171 Btu/kWh (50.6 to 47.6 percent efficiency) (Baseload at 75°F)

The overall new and clean heat rate of PEEC, using the heat rates for each fuel and an operating scenario of 1,000 hr/yr of CT on oil firing, and 7,760 hr/yr of CT on natural gas firing, is estimated to range from 6,449 to 6,518 Btu/kWh (52.9 to 52.4 percent efficiency) for PEEC. These estimated heat rates are well below the approximate heat rate for all fossil-fueled power plants in the U.S. in 2010, and the proposed unit is 33 percent more efficient than all U.S. fossil fueled power plants. When compared to all types of generation using natural gas, the proposed Power Block will be 20 percent more efficient than all generation using natural gas.

[1] All BTU/kWh are calculated on a HHV basis.

PEEC will be more efficient than other existing combined cycle plants. This is a result of utilizing the latest CT technology that results in greater efficiency in the CT generated power and increased exhaust energy through the HRSG to produce more steam electric generation. Together this significantly improves the efficiency over earlier generation combined cycle plants. PEEC will have a heat rate over 10 percent lower than average existing combined cycle plants as indicated from EIA 2009 data. The proposed Project will be designed to produce the maximum efficiency for the size of the Project (approximately 1,250 MW) including the use of inlet air cooling that improves efficiency. For example, at an inlet temperature of 95°F, the use of evaporative cooling will decrease the heat rate by 1 percent or more and translate to a proportional decrease in GHG emissions.

As part of EPA's clean energy initiatives, EPA developed the Emissions & Generation Resource Integrated Database (eGRID) as a resource tool in assessing GHG emissions. eGrid is a comprehensive source of data on the environmental characteristics of almost all electric power generated in the United States with data available based on a variety of geographic regions and locations. Data is also available on a plant-specific basis. Based on the latest available eGrid data, the following are the emissions of CO_2 on a generation basis for generation facilities located in the same subregion as the project:

- Florida Reliability Coordination Council – 1,225.7 lb CO_2/MWh for all generation (including nuclear); 1,417.3 lb CO_2/MWh for total combustion generation.
- FPL – 881.6 lb CO_2/MWh for all generation (including nuclear); 1,121.3 lb CO_2/MWh for total combustion generation.

For PEEC, the net CO_2 emission rate on a generation basis will range from approximately 740 to 760 lb CO_2/MWh over the range of operating temperatures when firing the primary fuel, natural gas. When compared to the existing generation facilities in the region and FPL's system, it can be seen that PEEC's GHG emission rates are lower. Therefore, the GHG on a generation basis are much lower than the existing generation and when operated displaces less efficient generation resulting in overall GHG reduction. FPL's analysis indicates that PEEC will reduce FPL's system emissions of CO_2 by 22 million tons from 2016 through 2047.

4.4.4 Design Data for Control Equipment

Design data for the air pollution control equipment are presented in SCA Appendix 10.2.5 (Air Construction Permit Application).

4.4.5 Design Philosophy

The PEEC Project will modernize existing 1960s vintage oil and natural gas-fired steam-electric units to an advanced, natural gas-fired combined cycle plant that minimizes air pollutant emissions by using the most fuel-efficient and pollution-preventing technology. This concept has been incorporated with the selection of a combined cycle process utilizing advanced CTs. Advanced combined cycle plants can be expected to achieve fuel conversion rates of less than 6,800 Btu/kWh (50 percent efficiency at 75°F, baseload). The PEEC emission rates will be reduced by approximately 90 percent compared with the existing Port Everglades Plant Units 1 through 4, resulting in significant annual emissions reductions and air quality benefits. By maximizing the megawatt output per unit of fuel consumed, the air pollutant emissions per MW output are minimized. In addition, the efficiency of PEEC and the use of natural gas minimizes the emissions of CO_2 (see Subsection 4.4.2 and Appendix 10.8).

Pollution prevention is incorporated in the design by the use of clean fuels and advanced combustion technology. Natural gas and ULSD 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 PEEC will incorporate features that will make PEEC one of the most efficient and lowest polluting fossil fuel-fired units in Florida.

4.5 Plant Water Use

Primary water uses for PEEC, like the existing Units 1 through 4, will include cooling water and process water. Cooling water is required for condenser cooling, auxiliary cooling, and cooling pump seal water. Process water is required for CT inlet air cooling, NO_x injection water when firing ULSD, steam cycle makeup, service water, and fire protection. Other uses will include intake screen wash water and aquatic organism return system water, potable water for employee use, and water for landscape irrigation. Condenser cooling for the steam cycle portion of PEEC and auxiliary cooling will be accomplished using the existing infrastructure of the once-through cooling system intake and discharge structures. Water for screen wash and the aquatic organism return system will come from downstream of the traveling screens from the cooling-water intake system as shown in Figure 4.5.0-1. Process and potable water for PEEC will continue to come from the existing potable water supply from the City of Fort Lauderdale.

The stormwater management system for PEEC will be designed to meet local, regional, state, and federal permit requirements, which include the rules of the SFWMD, Broward County, City of Hollywood, FDEP, and EPA. SCA Section 4.8 discusses the stormwater for construction and operation of PEEC and SCA Appendix 10.11 Stormwater Management Plan provides detailed stormwater calculations.

The Water Supply Alternatives and Water Conservation Plan in SCA Appendix 10.10 discusses water supply alternatives for PEEC and water conservation technology, methods, and procedures that will be used at PEEC. The use of reclaimed water in cooling towers at PEEC is not an economically feasible option when compared to once-through cooling. Furthermore, the energy penalty at PEEC for operating cooling towers instead of a once-through cooling system is estimated to be approximately 15.6 MW. This energy loss would increase air pollutant and greenhouse gas emissions per unit of electricity generated. Therefore, PEEC will continue to use the existing infrastructure of Port Everglades Plant Units 3 and 4 once-through cooling-water intake and discharge structures for condenser and auxiliary cooling, withdrawing seawater from the Port Slip No. 3, and discharging through the existing system. The salinity of surface and groundwater sources at the Site is too high to be used economically for potable or process and irrigation water supply. Reclaimed water is not currently available for PEEC from Broward County, the City of Hollywood, or other municipalities. If a reliable source of reclaimed water for process and irrigation can be delivered to the Site that meets the facility's quantity and quality requirements, FPL will evaluate the environmental, economic and technical feasibility of using the reclaimed source. Should FPL determine that use of a reclaimed water source is acceptable and feasible for process and irrigation in the future, FPL will provide a plan to the appropriate regulatory agencies for implementation.

Stormwater reuse also is not practicable at the Site. The size of the Site does not allow for efficient reuse of stormwater. First, only a small percentage of the process and irrigation water demand can be supplied by this source. Second, a significant onsite storage capacity would be required, approximately 0.5 MG. Third, this supply would require additional treatment. The limited benefit does not justify the additional cost. (See Subsection 3.2.2 in SCA Appendix 10.10, Water Alternatives Study and Water Conservation Plan.) Therefore, the only feasible source for process and potable water is the existing potable supply from the City of Fort Lauderdale. See SCA Appendix 10.10 for a letter from the City of Fort Lauderdale confirming water availability for PEEC.

The PEEC water balance is presented schematically in Figure 4.5.0-1. Process, potable, irrigation, and fire protection water will be obtained from the existing potable water connection. The existing marine surface water connections to Port Slip No. 3 will be used as the source of cooling water. Information on water quality has been derived from information described in Subsection 3.3.4. Subsections 4.5.1 through 4.5.4 provide detailed descriptions of PEEC water uses.

4.5.1 Heat Dissipation System

PEEC will continue to use the existing once-through cooling-water intake structure for condenser and auxiliary cooling, withdrawing marine water from Port Slip No. 3 and discharging through the existing canal. The point of withdrawal at Port Slip No. 3 is through four, 12 ft diameter, 244 ft long reinforced concrete pipes with the pipes' centerline 7 ft below mean low water. The intake pipes are connected to a 2,100 ft canal to the existing intake structures. The discharge is to a 4,850 ft canal that is connected to the ICW. (See also Subsection 3.3.4.) The PEEC cooling system, including auxiliary cooling flows, will have a total design intake flow capacity of approximately 635 MGD. Water from the intake canal that is used for the intake screen wash (estimated flow of 1,600 gpm) and aquatic organism return system will be released back to a water body connected to the ICW.

Operation of PEEC during periods of startup and shutdown, steam turbine shutdowns, or other atypical/emergency operating conditions where steam is being produced in the HRSGs and discharged directly into the condenser before passing through the steam turbine, is defined as steam turbine bypass or "Bypass Operation". During the majority of the operating scenarios while in Bypass Operation, the thermal energy discharged to the condenser falls within the design full load thermal discharge.

Because the design intake flow for PEEC will be approximately one-half the existing Plant's intake flow, the existing intake infrastructure can be used for PEEC with lower cooling water requirements. The average flow for PEEC will be 635 MGD while the flow for the existing units is authorized for 1,296 MGD. The existing Units 3 and 4 have a design intake flow of 817 MGD. Therefore, the point of intake velocity and the design through screen velocity will be lower at a 635 MGD flow rate.

4.5.2 Domestic/Sanitary Wastewater

Sanitary wastewater from the PEEC will continue to be routed to the sewer system. Restroom facilities will be constructed to accommodate the employees of PEEC using the same connection. Sanitary wastewater flows are expected to average approximately 1 gpm, approximately the same as

the existing Plant. See SCA Appendix 10.10 for a letter from the City of Fort Lauderdale confirming sanitary sewer service for PEEC.

4.5.3 Potable Water Systems

Potable water for human consumption at PEEC will continue to be obtained from the City of Fort Lauderdale that serves Port Everglades area. Potable water demand for human consumption is expected to average 1 gpm, approximately the same as for the existing Plant. See SCA Appendix 10.10 for a letter from the City of Fort Lauderdale confirming water availability for PEEC.

4.5.4 Process Water Systems

Potable water from the City of Fort Lauderdale will continue to be used as process water treatment system influent and may be used as service water for PEEC. Process and service water demand will be approximately 243,360 gallons per day (GPD), in contrast to the existing water use of approximately 420,000 GPD for the existing units. This is over a 40 percent reduction in potable water that is required as process water. See SCA Appendix 10.10 Water Alternatives Study and Water Conservation Plan for a letter from the City of Fort Lauderdale confirming water availability for PEEC.

4.5.4.1 Demineralized Water

PEEC will require the use of demineralized water [i.e., conductivity < 0.1 microsiemen per centimeter (µS/cm)]. Demineralized water is required for:

- Makeup water to replace HRSG and evaporative cooler water use to maintain water quality;
- Makeup water to replace miscellaneous steam losses in the steam cycle; and
- Water injection into the CTs for NO_x control when firing ULSD.

FPL will continue to use a reverse osmosis/mixed bed (RO/MB) demineralizer technology for PEEC process water treatment using potable water. The demineralized water will be pumped into a new onsite storage tank. RO reject water (average flow of approximately 54 gpm) will be mixed with the cooling water flow used for condenser cooling. The HRSG and evaporative cooler blowdown (average flow of approximately 48 gpm) will be reused to the greatest extent practicable for process water uses or mixed with the cooling water flow before discharge.

4.5.4.2 General Service Water

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

4.6 Chemical and Biocide Waste

The wastewaters generated by PEEC will include cooling water, HRSG and evaporative cooler blowdown, process water treatment system wastewater, wash water, and equipment area stormwater. HRSG and evaporative cooler blowdown will be reused to the greatest extent practicable or routed to the cooling water discharge. Contact stormwater will be treated in an oil/water separator and then routed to the stormwater ponds. Water treatment wastewaters and non-hazardous, low volume wastewaters (e.g., wash water and equipment drains) will be treated if necessary and routed to the cooling system outfalls.

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

Table 4.6.0-1 presents a list of the waste streams associated with PEEC, their characterization, and proposed method of disposal. The following sections provide further information on the characteristics of these waste streams (see also Section 4.7).

4.6.1 Cooling System Water Chemical Treatment

Intermittent chlorination, as authorized under FDEP IWW Permit No. FL0001538 will continue to be used for PEEC to prevent biofouling of the heat rejection system.

4.6.2 Steam Cycle Water Treatment

The steam/condensate feedwater will be chemically treated to prevent corrosion or scaling of the equipment. The steam cycle water will be treated with ammonia or an amine for pH control. Other chemicals such as oxygen scavengers will be utilized to maintain water quality. 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 non-adherent precipitate that will be permanently removed through HRSG boiler blowdown.

4.6.3 Sanitary Wastewater Treatment

The sanitary system for PEEC will utilize the existing sanitary system connection to a lift station in the City of Hollywood. No pretreatment will be provided for PEEC.

4.6.4 Makeup Water Demineralization

As discussed in Subsection 4.5.4.1, the makeup water to the steam cycle will be demineralized using portable RO/MB type demineralizer trains. The resulting RO reject will be routed to the condenser cooling system. Regeneration of the MB ion exchange units will be performed offsite.

4.6.5 Chemical Cleaning

The HRSG and feedwater piping will be chemically cleaned initially during commissioning and also periodically during the life of PEEC. 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 must be consistent with the HRSG manufacturer's recommendations. Chemicals typically used in HRSG and feedwater pipe cleaning may include the following:

- Inhibited citric acid;
- Aqueous ammonia;
- Organic chelates, such as ethylene diamine tetra-acetic acid (EDTA);
- Disodium phosphate;
- Trisodium phosphate;
- Nonfoaming wetting agents; and
- 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 PEEC.

Chemical cleaning wastes will be maintained onsite and tested and, if meeting the requirements authorized under FDEP IWW Permit No. FL0001538 will be routed to the condenser cooling system outfall. Chemical cleaning wastes not meeting the IWW permit requirements will be managed according to applicable local, state, and federal rules and regulations.

4.6.6 Miscellaneous Drains

Wastewater can result from draining a storage tank or from cleaning and maintenance operations such as washdown of storage areas. Wastewater from these processes that meets the requirements authorized under FDEP IWW Permit No. FL0001538 may be routed to the condenser cooling system outfall. Flows from the miscellaneous PEEC drains will be intermittent and will not normally contribute to the wastewater flows. Periodic offline washes of the CTs, using water or a detergent-water solution, will also produce wastewaters. CT offline wash wastewater will be managed by draining these wastewaters into a tank and transferring by a portable pump to tank trucks and managed according to applicable local, state, and federal rules and regulations.

4.7 Solid and Hazardous Wastes

All non-hazardous and hazardous wastes associated with the operation of PEEC will be managed according to federal, state, and local regulations and FPL's "Waste Guidelines" (see Table 4.7.0-1). PEEC may periodically generate hazardous waste [typically less than 100 kilograms (kg) per month], including spent solvents, boiler chemical cleaning wastes, and other wastes. Wastes generated during dismantlement are discussed in Subsection 5.1. Potentially hazardous wastes will be collected and managed as hazardous waste until tested to determine their characteristics.

Solvent rags will be separated and either laundered or disposed of appropriately. If aerosol cans are punctured prior to disposal, the residual will be collected and managed as hazardous waste. Paint waste, polyvinyl chloride (PVC) cleaner, and PVC cement wastes will be minimized.

4.7.1 Solid Wastes

Solid wastes will be generated by the operation of PEEC, but generally in small quantities. Such solid wastes will be limited to MSW, infrequent replacement of inlet air filters, operations and maintenance wastes, and solids from the water pretreatment process. An approved solid waste disposal contractor will dispose of all solid wastes. There will be no facilities requiring a permit under FDEP Rule 62-701.300(2), F.A.C. for PEEC. As a result, information required by this FDEP rule pertaining to waste containment design, leachate control, surface water control, geotechnical investigations, water quality monitoring plan, closure plan and long-term care, and financial assurance are not applicable to PEEC.

4.7.2 Hazardous Wastes

FPL will operate PEEC to minimize, if not eliminate, the generation of hazardous waste. Any hazardous waste associated with the PEEC will typically be less than 100 kg per month and may include spent solvents, HRSG chemical cleaning wastes, and other wastes. Hazardous wastes, if any, will be collected onsite and disposed of by a licensed hazardous waste contractor. Hazardous waste will be managed according to applicable rules and regulations.

4.8 Onsite Drainage System

4.8.1 Design Criteria and Applicable Regulations

The surface water management system for PEEC will be designed to meet the requirements of applicable local, regional, State, and federal requirements, which include the rules of the SFWMD, Broward County, the City of Hollywood, FDEP, and EPA. The required design rainfall event, based on a 25-year 72-hour storm, is approximately 14.3 inches. The basic design philosophy is that the required water quality treatment volume of runoff from PEEC will be treated by onsite dry detention.

The Project drainage system of catch basins, pipes, channels, swales, and culverts will convey runoff to stormwater detention ponds. Preliminary surface water and stormwater management calculations that include PEEC are presented in SCA Appendix 10.11 Stormwater Management Plan.

4.8.2 Construction Site Drainage

Prior to commencement of dismantlement of the existing plant, FPL will seek coverage for the construction of PEEC under FDEP's Generic Permit for Stormwater Discharge from Large and Small Construction Activities. Since May 1, 2003, construction sites in Florida that will result in a disturbance of 1 acre or more are required to seek coverage under the Generic Permit for Stormwater Discharge from Large and Small Construction Activities [FDEP Rule 62-621.300(4)(a), F.A.C.]. The Notice of Intent (NOI) will be submitted to FDEP at least 2 days prior to commencement of construction.

Prior to submitting the NOI for the construction permit, FPL will prepare a comprehensive Storm Water Pollution Prevention Plan (SWPPP), as required under the Generic Permit, addressing both the dismantlement of the existing plant and the construction of PEEC.

During the dismantlement, stormwater will be managed using either the existing stormwater management system infrastructure, implementing the construction stormwater management system before dismantlement begins, or some combination of the two. In all cases, stormwater discharges will be controlled to meet the requirements of the Generic Permit for Construction, and appropriate pollution prevention techniques will be implemented to minimize erosion and sedimentation and properly manage stormwater. Separate NOIs will be submitted and FPL will prepare a SWPPP for each phase.

The conceptual construction drainage plan for the Site is presented in Figures 4.8.2-1a and 4.8.2-1b.

Prior to dismantlement of Units 1 through 4 and construction activities associated with the combined cycle unit, silt fences or equivalent will be installed in accordance with the SWPPP along the perimeter of areas designated for dismantlement, those areas to be used for new construction support, and where offsite runoff may occur. Stormwater detention ponds will be installed and will serve as sedimentation ponds during dismantlement of Units 1 through 4 and the construction of PEEC. A phased approach may be used to accommodate activities associated with dismantlement of Units 1 through 4 and construction of the combined cycle unit.

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

Construction runoff ponds (Dry Detention Areas on Figures 4.8.2-1a and 4.8.2-1b) will be installed to intercept and store runoff from earth disturbing activities. Temporary erosion and sedimentation control measures will be designed to prevent sediment from being displaced. 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. Within the construction support areas, temporary swales, ditches, silt fences, and hay bales will be provided as necessary to divert runoff to detention areas and/or temporary sedimentation ponds. If necessary, driveways leading to public roads that may be impacted by construction activities will be swept periodically to remove excess sediment tracked from the Site. Sediment collected in the sedimentation ponds during construction will be removed as required, and properly disposed to maintain proper functioning of these measures. All temporary sediment and erosion

control measures will be removed at the end of construction or when areas have been stabilized or incorporated into the permanent facilities.

4.8.3 Operational Site Drainage

At the completion of construction, the disturbed areas of the Site not used for PEEC will be seeded and their runoff will be routed to non-contact stormwater detention ponds (see Figures 4.8.3-1a and 4.8.3-1b). A detailed description of the pre-construction and post-construction site drainage features and associated modeling of design stormwater runoff is presented in Appendix 10.11 Stormwater Management Plan.

Operational Site runoff that is unaffected by industrial activity will be handled by the new stormwater management system. This stormwater management system will provide the required water quality and quantity treatment in dry detention areas located on the Site (see Figures 4.8.3-1a and 4.8.3-1b). The treated stormwater will be released to either the intake or discharge canals.

Runoff from the PEEC Power Block and equipment and containment areas (containment areas for transformers, oil tanks, and other oil containing or handling equipment) will be routed through an oil/water separator and then routed to the stormwater management system.

4.9 Heavy Equipment and Materials

4.9.1 Construction Materials and Equipment

Construction materials and equipment will be delivered to the Site, including the construction parking and laydown areas, by existing roadways. I-595/Eller Drive, SE 14th Avenue, and SE 19th Avenue/Eisenhower Boulevard will be used during construction of the Project.

The construction activities for the Project will occur within the existing Site construction parking and laydown areas located on the eastern portion of the area to be certified, which is south of Eisenhower Boulevard and north of the discharge canal. Additional laydown and staging may occur in the area north of the existing westernmost administration building and parking area (see Figure 3.1.1-3.) As necessary, additional clean fill materials suitable for the construction of the Project will be placed within the appropriate areas. Limestone and aggregate will be used as necessary for stabilization of the construction parking and laydown areas associated with the Project.

Equipment and component parts of the combined cycle unit will be unloaded and moved around the Site using portable cranes and trucks. Some of the heaviest items, such as the new CTs, steam turbine, electric generators, HRSGs, and transformers, may require special transport. Pollution control measures for the laydown areas will include runoff collection as discussed above in Section 4.8. As necessary, additional temporary access required for the construction support areas and the construction parking and laydown areas may be surfaced with aggregate/limerock with reasonable precautions taken to control fugitive dust (see Subsection 5.5.2).

4.9.2 Roads

Trucks and equipment associated with the construction of the Project will travel to the Site, and the construction parking and laydown areas, by using I-595, Eller Drive and SE 14th Avenue as well as SE 19th Avenue and Eisenhower Boulevard. Existing Plant gates provide access from SE 14th Avenue and Eisenhower Boulevard and will be used as access to the Site. Analysis of construction traffic impacts is presented in greater detail in Subsection 5.7.2 and SCA Appendix 10.7.4, Traffic Information. Eller Drive and SE 14th Avenue will continue to be used for trucks and equipment necessary to support the operation of PEEC. Operational traffic is discussed in greater detail in Subsection 6.9.1.

4.9.3 Rail/Ship

Equipment that cannot be transported to the area by highway may be transported by rail or ship. Heavy components such as turbine sections, transformers, and generators may be delivered to the Site through the Port, or the rail spur located just south of the Site adjacent to Eller Drive.

4.10 Associated Linear Facilities

Associated linear facilities for the Project include ULSD fuel infrastructure and an aquatic organism return system as described in Subsection 3.2.4. Subsection 3.3.6.2 provides an ecological description of the associated linear facilities corridors. As described in this subsection, the corridors proposed for the USLD oil infrastructure and aquatic organism return system are occupied by existing industrial facilities. As a result, there will be no adverse environmental impacts due to the construction and operation of the PEEC associated linear facilities.

PEEC will not require any other new associated linear facilities. PEEC will connect to the FPL transmission network through the existing 230 kV and 138 kV system switchyard.

4.11 Emergency Disaster Preparedness Plans

FPL has comprehensive emergency disaster preparedness plans for both operational emergencies and natural disasters that can occur in Florida (e.g., hurricanes). FPL has been an industry leader in the preparation for hurricanes and in the recovery after a storm. FPL will continue with these efforts in the future, and enhance emergency preparedness plans for new projects like PEEC. The existing Port Everglades Plant currently has an Emergency Action Plan. This Emergency Action Plan will be updated based on the design and operation of PEEC.

For PEEC, a hurricane shelter and emergency generators will be located in the Power Block area. The PEEC Emergency Action Plan will include descriptions of the hurricane shelter and emergency generators.

TABLE 4.3.0-1
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_2H_6)	1.8 - 2.6
Propane (C_3H_8)	0.16 - 0.29
Butane (C_4H_{10})	0.011 - 0.017
Pentanes (C_5H_{12})	0.007 - 0.03
Hexanes (C_6H_{14})	0.03
Heptanes (C_7H_{16})	0.01
Octanes (C_8H_{18})	0.0
Argon, Oxygen (Ar, O_2)	0.0
Sulfur (S)	2 grains per 100 scf
Water Vapor (H_2O)	0.6 lb/MMscf

Low Heating Value (LHV) = 21,000 Btu/lb; 920 Btu/scf (approximate).
High Heating Value (HHV) = 23,300 Btu/lb; 1,020 Btu/scf (approximate).

Note: scf = standard cubic feet.
MM = million.

TABLE 4.3.0-2
TYPICAL 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) = 18,400 Btu/lb; 129,900 Btu/gallon (approximate).
High Heating Value (HHV) = 19,500 Btu/lb; 137,700 Btu/gallon (approximate).

Note: ppm = parts per million.

TABLE 4.4.1-1A
STACK, OPERATING, AND EMISSION DATA FOR
THE COMBUSTION TURBINES/HRSGS FOR PEEC OPERATION—
NATURAL GAS COMBUSTION, MPS 501J CT

		Operating and Emission Data[a] for Ambient Temperature			
		Combustion Turbine/ HRSG			
Parameter	**Units**	**35 °F**	**59 °F**	**75 °F**	**95 °F**
CT/HRSG Stack Data					
Height	ft	149	149	149	149
Diameter	ft	22.0	22.0	22.0	22.0
100 Percent Load					
Temperature	°F	196	195	195	195
Velocity	ft/sec	61.1	58.9	57.3	55.3
Maximum Hourly Emissions per Unit					
SO_2	lb/hr	17.0	16.3	15.8	15.2
$PM/PM_{10}/PM_{2.5}$	lb/hr	8.4	8.1	7.8	7.5
NO_x	lb/hr	21.4	20.5	19.8	19.0
CO	lb/hr	58.5	56.2	54.3	52.1
VOC (as methane)	lb/hr	3.7	3.6	3.5	3.3
Sulfuric Acid Mist	lb/hr	3.3	3.2	3.1	3.0
75 Percent Load					
Temperature	°F	184	185	186	187
Velocity	ft/sec	49.2	47.2	45.8	44.2
Maximum Hourly Emissions per Unit					
SO_2	lb/hr	13.7	13.0	12.6	12.0
$PM/PM_{10}/PM_{2.5}$	lb/hr	6.8	6.5	6.3	6.0
NO_x	lb/hr	17.0	16.1	15.5	14.8
CO	lb/hr	46.6	44.2	42.4	40.6
VOC (as methane)	lb/hr	3.0	2.8	2.7	2.6
Sulfuric Acid Mist	lb/hr	2.67	2.53	2.44	2.34
50 Percent Load					
Temperature	°F	184	185	186	187
Velocity	ft/sec	38.7	38.0	37.4	36.7
Maximum Hourly Emissions per Unit					
SO_2	lb/hr	10.4	9.9	9.6	9.2
$PM/PM_{10}/PM_{2.5}$	lb/hr	5.3	5.1	4.9	4.8
NO_x	lb/hr	13.0	12.3	11.8	11.4
CO	lb/hr	35.5	33.7	32.4	31.1
VOC (as methane)	lb/hr	2.3	2.1	2.1	2.0
Sulfuric Acid Mist	lb/hr	2.03	1.93	1.87	1.79

[a] Refer to Appendix 10.2.5, Subappendix A for detailed information on basis of pollutant emission rates and operating data

Source: MPS, 2011 - CT Performance Data; Golder Associates, 2011.

TABLE 4.4.1-1B
STACK, OPERATING, AND EMISSION DATA FOR
THE COMBUSTION TURBINES/HRSGS FOR PEEC OPERATION—
NATURAL GAS COMBUSTION, SIEMENS H CT

		Operating and Emission Data[a] for Ambient Temperature			
		Combustion Turbine/ HRSG			
Parameter	**Units**	**35 °F**	**59 °F**	**75 °F**	**95 °F**
CT/HRSG Stack Data					
Height	ft	149	149	149	149
Diameter	ft	22.0	22.0	22.0	22.0
100 Percent Load					
Temperature	°F	196	195	195	195
Velocity	ft/sec	63.1	60.4	58.2	55.9
Maximum Hourly Emissions per Unit					
SO_2	lb/hr	15.6	14.9	14.3	13.7
$PM/PM_{10}/PM_{2.5}$	lb/hr	15.1	13.9	13.7	12.6
NO_x	lb/hr	21.2	20.2	19.4	18.6
CO	lb/hr	32.2	31.0	30.0	28.0
VOC (as methane)	lb/hr	3.7	3.5	3.4	3.2
Sulfuric Acid Mist	lb/hr	3.0	2.9	2.8	2.7
80 Percent Load					
Temperature	°F	184	185	186	187
Velocity	ft/sec	51.1	48.6	47.8	46.2
Maximum Hourly Emissions per Unit					
SO_2	lb/hr	12.9	12.0	11.6	10.9
$PM/PM_{10}/PM_{2.5}$	lb/hr	12.4	11.2	11.0	10.9
NO_x	lb/hr	17.6	16.4	15.8	14.9
CO	lb/hr	54.0	50.0	48.0	45.0
VOC (as methane)	lb/hr	3.1	2.9	2.8	2.6
Sulfuric Acid Mist	lb/hr	2.5	2.34	2.26	2.13
60 Percent Load					
Temperature	°F	184	185	186	187
Velocity	ft/sec	43.2	41.6	41.1	40.0
Maximum Hourly Emissions per Unit					
SO_2	lb/hr	10.5	9.9	9.5	9.0
$PM/PM_{10}/PM_{2.5}$	lb/hr	10.7	10.6	10.5	10.4
NO_x	lb/hr	14.4	13.5	13.0	12.2
CO	lb/hr	44.0	41.1	40.0	37.2
VOC (as methane)	lb/hr	2.5	2.4	2.3	2.1
Sulfuric Acid Mist	lb/hr	2.03	1.92	1.85	1.75

[a] Refer to Appendix 10.2.5, Subappendix B for detailed information on basis of pollutant emission rates and operating data

Source: Siemens, 2011 - CT Performance Data; Golder Associates, 2011.

TABLE 4.4.1-2A
STACK, OPERATING, AND EMISSION DATA FOR
THE COMBUSTION TURBINES/HRSGS FOR FOR PEEC OPERATION—
ULTRA LOW SULFUR DISTILLATE OIL COMBUSTION, MPS 501J CT

		Operating and Emission Data[a] for Ambient Temperature			
		Combustion Turbine/ HRSG			
Parameter	**Units**	**35 °F**	**59 °F**	**75 °F**	**95 °F**
CT/HRSG Stack Data					
Height	ft	149	149	149	149
Diameter	ft	22	22	22	22
100 Percent Load					
Temperature	°F	359	357	355	354
Velocity	ft/sec	77.1	73.3	70.9	68.0
Maximum Hourly Emissions per Unit					
SO_2	lb/hr	4.0	3.7	3.6	3.4
$PM/PM_{10}/PM_{2.5}$	lb/hr	20.8	19.8	19.2	18.4
NO_x	lb/hr	78.2	73.3	70.6	66.8
CO	lb/hr	208.3	195.3	187.9	177.9
VOC (as methane)	lb/hr	34.0	31.9	30.7	29.0
Sulfuric Acid Mist	lb/hr	0.77	0.73	0.70	0.67
Lead	lb/hr	0.036	0.034	0.033	0.031
75 Percent Load					
Temperature	°F	359	357	355	354
Velocity	ft/sec	62.9	60.0	58.1	55.5
Maximum Hourly Emissions per Unit					
SO_2	lb/hr	3.2	3.1	2.9	2.8
$PM/PM_{10}/PM_{2.5}$	lb/hr	17.0	16.3	15.7	15.1
NO_x	lb/hr	63.4	60.0	57.7	54.8
CO	lb/hr	168.9	159.7	153.7	145.9
VOC (as methane)	lb/hr	27.6	26.1	25.1	23.8
Sulfuric Acid Mist	lb/hr	0.63	0.60	0.57	0.55
Lead	lb/hr	0.029	0.028	0.027	0.026
50 Percent Load					
Temperature	°F	359	357	355	354
Velocity	ft/sec	53.7	51.5	49.9	47.8
Maximum Hourly Emissions per Unit					
SO_2	lb/hr	2.8	2.7	2.6	2.5
$PM/PM_{10}/PM_{2.5}$	lb/hr	14.5	13.9	13.5	13.0
NO_x	lb/hr	55.0	52.1	50.3	47.9
CO	lb/hr	146.4	138.8	134.0	127.5
VOC (as methane)	lb/hr	23.9	22.7	21.9	20.8
Sulfuric Acid Mist	lb/hr	0.55	0.52	0.50	0.48
Lead	lb/hr	0.026	0.024	0.023	0.022

[a] Refer to Appendix 10.2.5, Subappendix A for detailed information on basis of pollutant emission rates and operating data.

Source: MPS, 2011 - CT Performance Data; Golder Associates, 2011.

TABLE 4.4.1-2B
STACK, OPERATING, AND EMISSION DATA FOR
THE COMBUSTION TURBINES/HRSGS FOR FOR PEEC OPERATION—
ULTRA LOW SULFUR DISTILLATE OIL COMBUSTION, SIEMENS H CT

		Operating and Emission Data[a] for Ambient Temperature			
		Combustion Turbine/ HRSG			
Parameter	**Units**	**35 °F**	**59 °F**	**75 °F**	**95 °F**
CT/HRSG Stack Data					
Height	ft	149	149	149	149
Diameter	ft	22	22	22	22
100 Percent Load					
Temperature	°F	359	357	355	354
Velocity	ft/sec	79.4	75.8	72.8	68.3
Maximum Hourly Emissions per Unit					
SO_2	lb/hr	4.1	3.9	3.8	3.6
$PM/PM_{10}/PM_{2.5}$	lb/hr	60.1	57.0	55.0	51.9
NO_x	lb/hr	88.8	84.6	81.0	77.3
CO	lb/hr	68.0	64.0	62.0	59.0
VOC (as methane)	lb/hr	39.0	37.0	35.0	34.0
Sulfuric Acid Mist	lb/hr	0.80	0.76	0.73	0.70
Lead	lb/hr	0.038	0.036	0.034	0.033
80 Percent Load					
Temperature	°F	359	357	355	354
Velocity	ft/sec	64.1	61.6	59.6	57.3
Maximum Hourly Emissions per Unit					
SO_2	lb/hr	3.4	3.2	3.1	2.9
$PM/PM_{10}/PM_{2.5}$	lb/hr	48.9	46.8	44.8	42.8
NO_x	lb/hr	73.9	69.5	66.3	62.3
CO	lb/hr	56.0	53.0	50.0	47.0
VOC (as methane)	lb/hr	32.0	30.0	29.0	27.0
Sulfuric Acid Mist	lb/hr	0.67	0.63	0.60	0.56
Lead	lb/hr	0.031	0.030	0.028	0.027
70 Percent Load					
Temperature	°F	359	357	355	354
Velocity	ft/sec	57.9	56.0	54.5	52.7
Maximum Hourly Emissions per Unit					
SO_2	lb/hr	3.1	2.9	2.8	2.7
$PM/PM_{10}/PM_{2.5}$	lb/hr	43.8	42.8	40.7	39.7
NO_x	lb/hr	67.6	63.6	60.6	57.1
CO	lb/hr	51.0	48.0	46.0	43.0
VOC (as methane)	lb/hr	29.0	28.0	26.0	25.0
Sulfuric Acid Mist	lb/hr	0.61	0.57	0.55	0.52
Lead	lb/hr	0.029	0.027	0.026	0.024

[a] Refer to Appendix 10.2.5, Subappendix B for detailed information on basis of pollutant emission rates and operating data.

Source: Siemens, 2011 - CT Performance Data; Golder Associates, 2011.

TABLE 4.4.1-3A
SUMMARY OF MAXIMUM POTENTIAL ANNUAL EMISSIONS FOR PEEC OPERATION, MPS 501J CT

	PEEC Project Maximum Potential Annual Emissions (TPY)								Netting Calculations		
Pollutant	3 CTs/HRSGs [a]	1 Auxiliary Boiler [b]	2 Emergency Generators	1 Natural Gas Heater	2 Gas Compressors	1 Fire Pump Engine	Fuel Oil Storage Tank	TOTAL	Maximum 2-Year Average from Existing Units 1 to 4 [c] (TPY)	Change (TPY)	PSD Significant Emission Rate (TPY)
SO_2	208	0.56	0.003	0.24	2.60	0.00018	NA	211	9,494	-9,283	40
PM	120	0.74	0.28	0.32	2.98	0.013	NA	124	604	-479	25
PM_{10}	120	0.74	0.28	0.32	2.98	0.013	NA	124	604	-479	15
$PM_{2.5}$	120	0.74	0.28	0.32	2.98	0.013	NA	124	402	-278	10
NO_x	337	4.99	4.87	4.25	25.2	0.22	NA	376	4,260	-3,884	40
CO	914	7.98	6.00	3.57	25.6	0.086	NA	958	885	73	100
VOC (as methane)	86.2	0.54	0.71	0.23	7.3	0.033	5.82	101	77	23.8	40
Sulfuric Acid Mist	40.4	Neg.	Neg.	Neg.	Neg.	Neg.	NA	40.4	422	-382	7
Lead	0.049	Neg.	Neg.	Neg.	Neg.	Neg.	NA	0.049	0.10	-0.049	0.6
Greenhouse Gases (CO_2e)	4,410,327	11,670	687	5,072	55,313	15	NA	4,483,085	2,551,038	1,932,047	75,000

Source: Golder, 2011.

[a] Based on oil-firing for 1,000 hours (maximum).

[b] An auxiliary boiler is only required to supply steam to the MPS 501J CT during startup.

[c] Based on actual emissions from Annual Operating Reports from 2006-2010.

Note: Neg.= negligible; NA= not applicable

TABLE 4.4.1-3B
SUMMARY OF MAXIMUM POTENTIAL ANNUAL EMISSIONS FOR PEEC OPERATION, SIEMENS H CT

	PEEC Project Maximum Potential Annual Emissions (TPY)							Netting Calculations		
Pollutant	3 CTs/HRSGs [a]	2 Emergency Generators	1 Natural Gas Heater	2 Gas Compressors	1 Fire Pump Engine	Fuel Oil Storage Tank	TOTAL	Maximum 2-Year Average from Existing Units 1 to 4 [b] (TPY)	Change (TPY)	PSD Significant Emission Rate (TPY)
SO_2	187	0.003	0.24	2.60	0.00018	NA	190	9,494	-9,304	40
PM	242	0.28	0.32	2.98	0.013	NA	246	604	-358	25
PM_{10}	242	0.28	0.32	2.98	0.013	NA	246	604	-358	15
$PM_{2.5}$	242	0.28	0.32	2.98	0.013	NA	246	402	-156	10
NO_x	348	4.87	4.25	25.2	0.22	NA	382	4,260	-3,878	40
CO	631	6.00	3.57	25.6	0.086	NA	666	885	-219	100
VOC (as methane)	92.1	0.71	0.23	7.3	0.033	5.82	106	77	29.2	40
Sulfuric Acid Mist	36.4	Neg.	Neg.	Neg.	Neg.	NA	36.4	422	-386	7
Lead	0.052	Neg.	Neg.	Neg.	Neg.	NA	0.052	0.10	-0.047	0.6
Greenhouse Gases (CO_2e)	4,058,754	687	5,072	55,313	15	NA	4,119,841	2,551,038	1,568,804	75,000

Source: Golder, 2011.

[a] Based on oil-firing for 1,000 hours (maximum).

[b] Based on actual emissions from Annual Operating Reports from 2006-2010.

Note: Neg.= negligible; NA= not applicable

TABLE 4.6.0-1
PEEC 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 depending upon source. Refer to Sections 4.5.4 and 4.6.4.
Heat Recovery Steam Generator Blowdown	Based on analytical characterization of historical data	—	Reused in wastewater process or disposed of as industrial wastewater into the circulating water system (cooling water discharge).
Cooling System Water (Biocide Addition Chlorine, Scale Inhibitor, Pretreatment Chemicals)	Based on analytical characterization by vendor supplying chemical	—	Disposed of as industrial wastewater into the circulating water system.
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 HRSG blowdown into circulating water system (cooling water discharge)].
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 circulating water system. 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 the circulating water system.

TABLE 4.6.0-1
PEEC 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 steam blow quench water, etc.)	Based on historical data	—	Disposed of depending on source. Refer to Chapter 5.
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 CFR 273 EPA determination	Recycled as universal waste.
Oily Separated Waste Water	Based on analytical results	—	Separated water is routed to onsite ponds. 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.

Note: Wastes during dismantlement of Units 1 through 4 are discussed in Section 5.1.

TABLE 4.7.0-1
FPL GENERAL WASTE HANDLING 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 satellite accumulation 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 designated area.
2. Pallets (poor condition) and scrap wood: place in designated area.
3. White paper and file stock: place in designated bin.
4. Aluminum cans: place in designated bin marked “Aluminum Cans”.
5. Metal scrap: place in “metal” designed dumpster.
6. Empty drums (poor condition): empty, crush and place in “metal” dumpster.
7. Fluorescent bulbs (intact): place into original box and store in Universal Waste Storage Area.
8. Lead acid batteries: place on pallet in Hazardous Waste Area.
9. Dry alkaline cell batteries: place in appropriate designated universal waste 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 can into scrap metal drum designated for this purpose. Residual materials in drum are managed as Hazardous Waste.

TABLE 4.7.0-1
FPL GENERAL WASTE HANDLING GUIDELINES (Page 2 of 2)

Recycling (continued)

12. Used oil filters: drain filters for at least 24 hours and place drained oil filters into appropriate drums. Do not put plastic bags into drum.
13. Metal shavings: place in designated scrap metal drum.
14. Mercury liquid: notify Environmental Plant Leader.

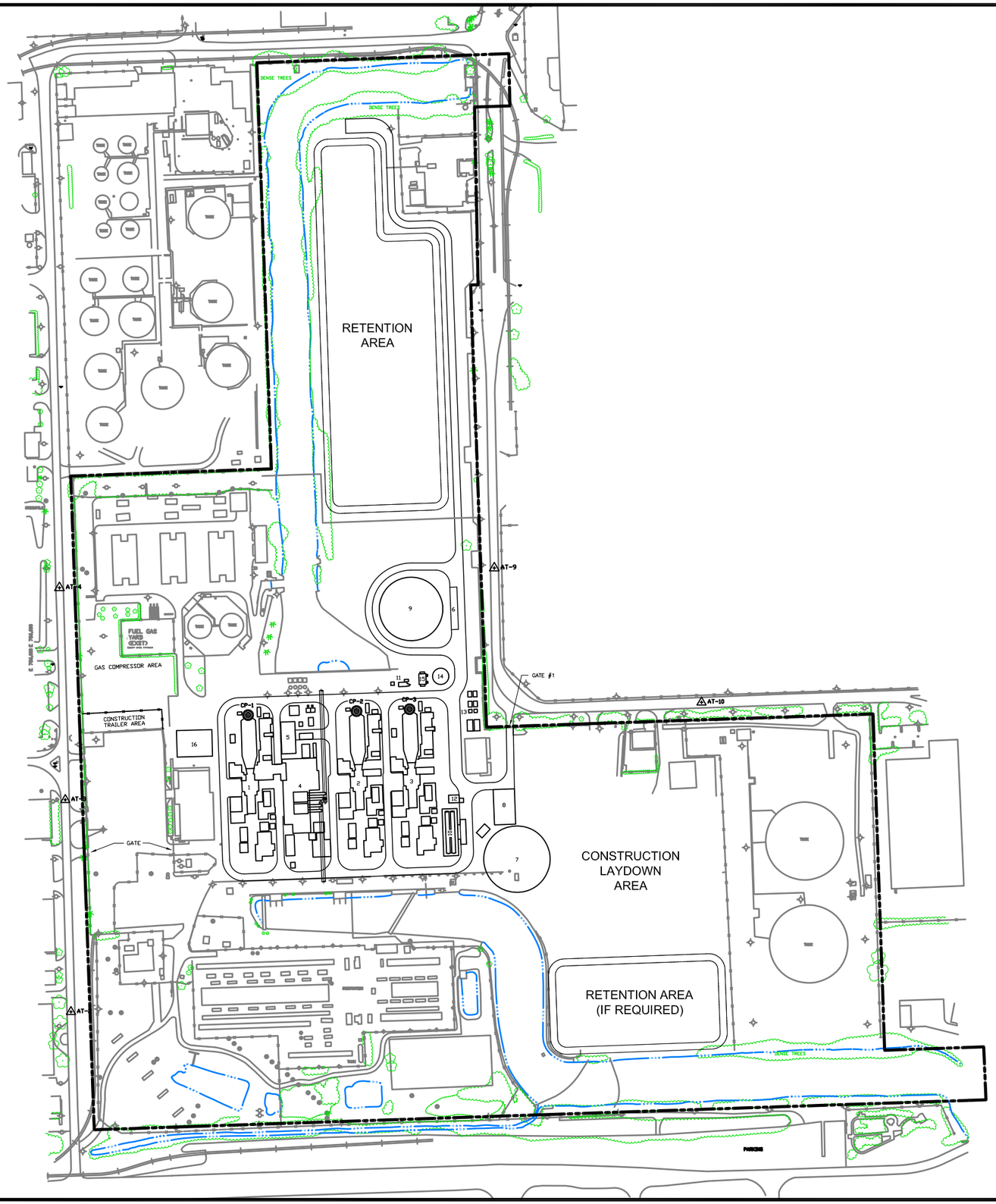
Non-Regulated Waste Disposal

1. Normal trash: minimize and dispose, place into Plant dumpster.
2. Used oil: place into 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.

Hazardous Waste Disposal *

1. Solvent-contaminated rags: place into "Solvent Rag" Satellite Accumulation Drum Area. When full, place in Hazardous Waste Area unless rag laundering program has been implemented. Where rag laundering program has been implemented, place rags into designated bins.
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 waste (punctured and non-punctured): 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.

*** While accumulated onsite, hazardous waste drums must include the words "Hazardous Waste" and the accumulation start date. Drums used for satellite accumulation of hazardous waste may use words that identify the contents until moved to storage for disposal and then the words "Hazardous Waste" and the accumulation date(s) must be added.**



LEGEND

PROPERTY LINE

WATER

VEGETATION / BRUSH

FACILITIES LEGEND

ITEM NO.	DESCRIPTION	NORTH	EAST	REFERENCE LOCATION
1	COMBUSTION TURBINE NO. 5A			
2	COMBUSTION TURBINE NO. 5B			
3	COMBUSTION TURBINE NO. 5C			
4	STEAM TURBINE 5			
5	CONTROL/HURRICANE SHELTER			
6	FUEL TRUCK UNLOADING			
7	DEMINERALIZED WATER STORAGE TANK			
8	DEMIN WATER TREATMENT TRAILER PARKING			
9	FUEL STORAGE TANK			
10	AMMONIA STORAGE TANK & TRANSFER PUMPS			
11	AUX BOILER			
12	H2 BULK STORAGE			
13	AIR COMPRESSORS & RECEIVERS			
14	FIRE WATER STORAGE TANK			
15	FIRE PUMP SHELTER			
16	DRY STORAGE			

REFERENCES

1.) BASE MAP TAKEN FROM CADD FILE ORIGINALLY PREPARED BY BLACK & VEATCH TITLED "FLORIDA POWER & LIGHT, PORT EVERGLADES PLANT, SITE – ARRANGEMENTS, OVERALL SITE PLOT PLAN", DRAWING No. AND CADD FILE NAME 174101–DS–0001, REVISION 0, DATED 08/18/11.

325 0 325

SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

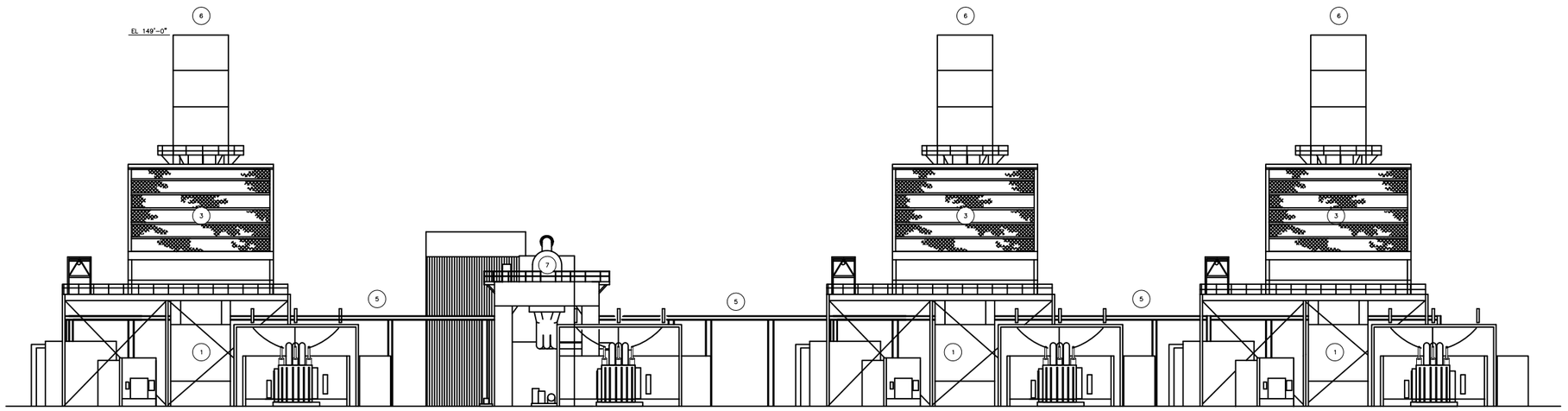
CONCEPTUAL PLOT PLAN

FPL

PROJECT No.	113–87618		FILE No.	11387618–A019	
DESIGN	RL	08/25/11	SCALE	AS SHOWN	REV. 0
CADD	NRL	1/13/2012			
CHECK	RCM	1/13/2012			
REVIEW	KFK	1/13/2012			

4.2.0-1

Drawing file: 113–87618A019 ConceptualSitePlan.dwg Jan 13, 2012 – 7:39pm



SOUTH ELEVATION
SCALE: 1"=30'-0"

NORTH ELEVATION
SCALE: 1"=30'-0"

LEGEND	
ITEM NO.	DESCRIPTION
1	GAS TURBINE & GENERATOR
2	
3	GT AIR INLET FILTER
4	
5	PIPE RACK
6	STACK
7	STEAM TURBINE

REFERENCES: ORGINAL PROFILES CREATED BY BLACK & VEATCH. DRAWING NAME SITE-ARRANGEMENTS ELEVATIONS DRAWING No. 174101-DS-0051, Rev. 0. DATED 18/AUG/2011

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
0	01/01/01	XXX	REV_DESC	XXX		

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

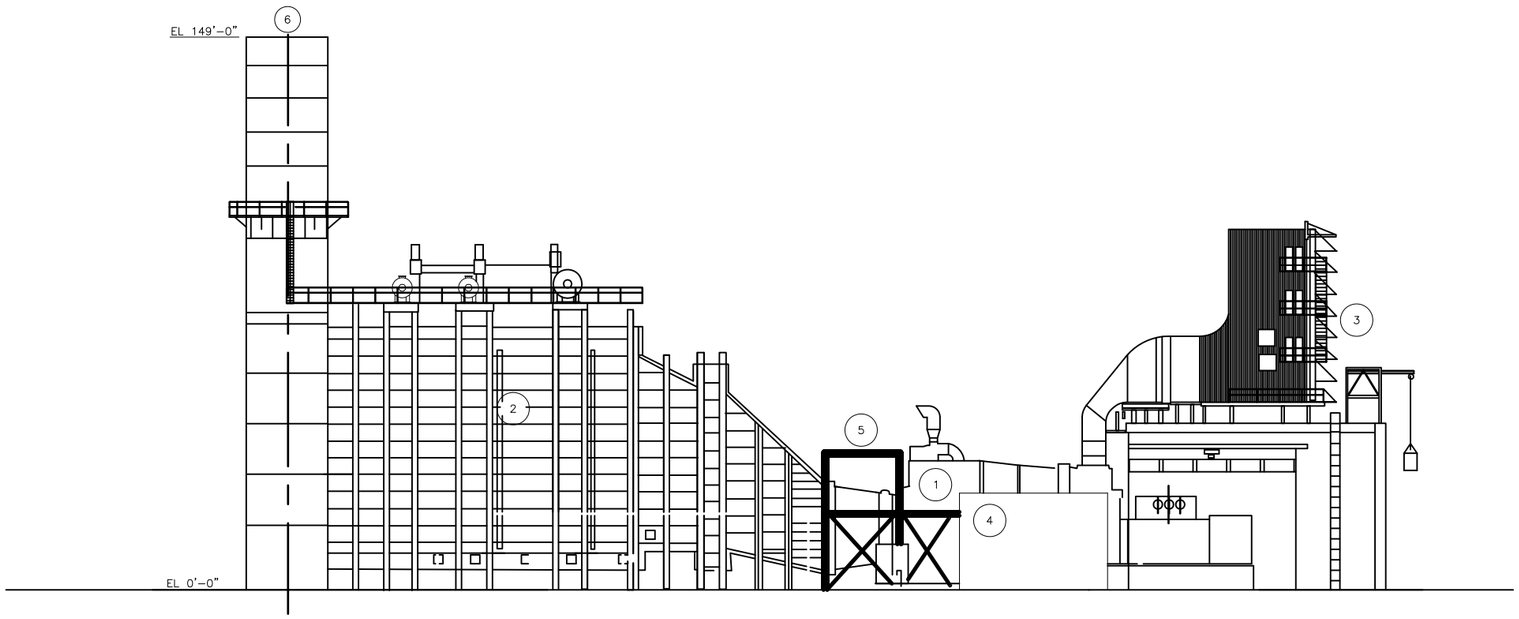
NORTH-SOUTH PROFILE OF COMBUSTION TURBINES AND HRSGs

FPL

PROJECT No.	113-87618		FILE No.	113-87618A030	
DESIGN	NRL	11/7/2011	SCALE	AS SHOWN	REV. 0
CADD	NRL	11/7/2011			
CHECK					
REVIEW					

FIGURE 4.2.0-2

Drawing file: 113-87618A030_NorthSouthProfile.dwg Nov 07, 2011 - 3:30pm



WEST ELEVATION
SCALE: 1/16"=1'-0"

LEGEND	
ITEM NO.	DESCRIPTION
1	GAS TURBINE & GENERATOR
2	HRSG
3	GT AIR INLET FILTER
4	CT TURBINE ENCLOSURE
5	PIPE RACK
6	STACK

EAST ELEVATION
SCALE: 1/16"=1'-0"

REFERENCES: ORGINAL PROFILES CREATED BY BLACK & VEATCH. DRAWING NAME SITE-ARRANGEMENTS ELEVATIONS DRAWING No. 174101-DS-0050, Rev. 0. DATED 18/AUG/2011

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1	01/01/01	XXX	REV_DESC	XXX		

PROJECT
FPL
PORT EVERGLADES ENERGY CENTER

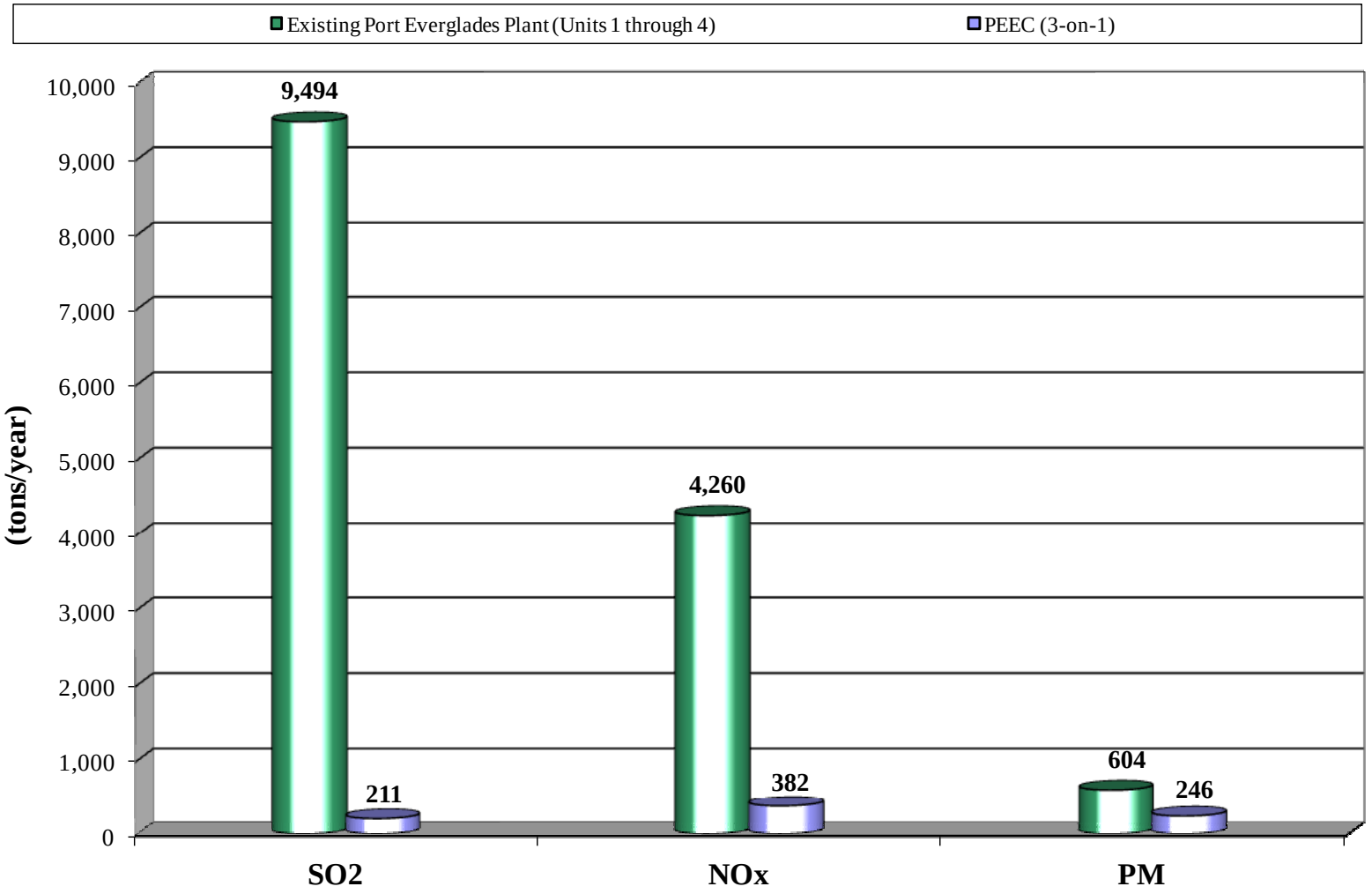
TITLE
EAST-WEST PROFILE OF COMBUSTION TURBINES AND HRSGs

FPL

PROJECT No.		113-87618	FILE No.		113-87618_A029
DESIGN	NRL	11/7/2011	SCALE	AS SHOWN	REV. 0
CADD	NRL	11/7/2011			
CHECK					
REVIEW					

FIGURE 4.2.0-3

Drawing file: 113-87618A029_EastWestProfile.dwg Nov 07, 2011 - 3:30pm



Notes: Existing Port Everglades based on 2006 and 2007 with an approximate capacity factor of 29%.
PEEC based on 100% capacity factor on natural gas and light oil;
7,760 hours on gas and 1,000 hours of oil at full load.

Figure 4.4.1-1.
Comparison of Historical Actual SO_2, NO_x, and PM Annual Emissions (TPY) for the Existing Port Everglades Plant Units 1 through 4 Compared to Projected Maximum Potential Annual Emissions (TPY) for PEEC

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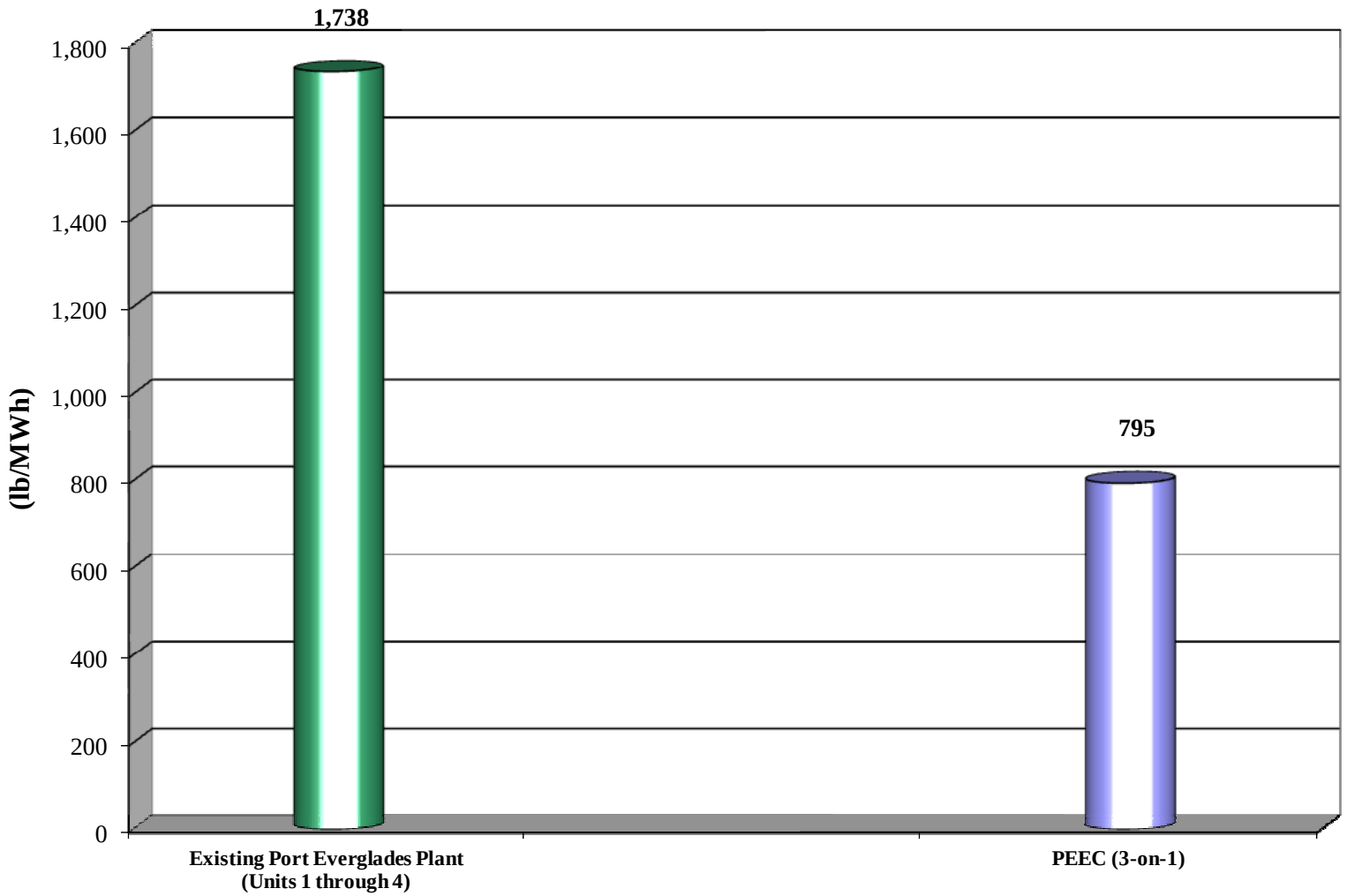
Source: Golder, 2011.



Notes: Existing Port Everglades based on 2007 eGrid Data from EPA (2010).
PEEC based on 100% capacity factor on natural gas and light oil;
7,760 hours on gas and 1,000 hours of oil at full load.

Figure 4.4.2-1.
Comparison of CO_2 Emission Rates (lb/MW-hr) for the Existing Port Everglades Plant Units 1 through 4 and PEEC

Y:\Projects\2011\113-87618 FPL PEEC SCA\Chapters\Chapter 4\Figures\Figure 4.4.2-1.docx

Source: Golder, 2011.

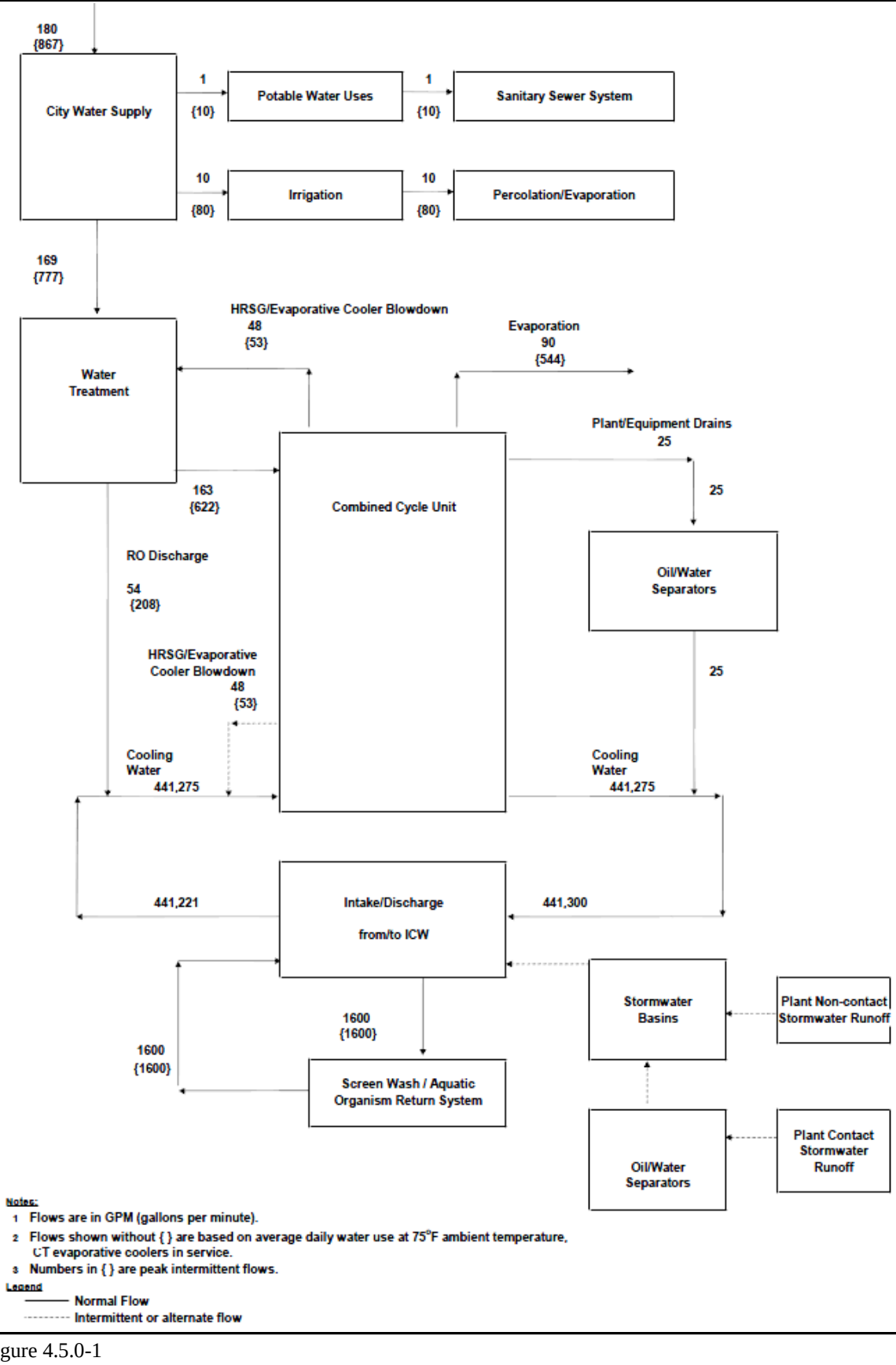


Figure 4.5.0-1
Water Balance for PEEC

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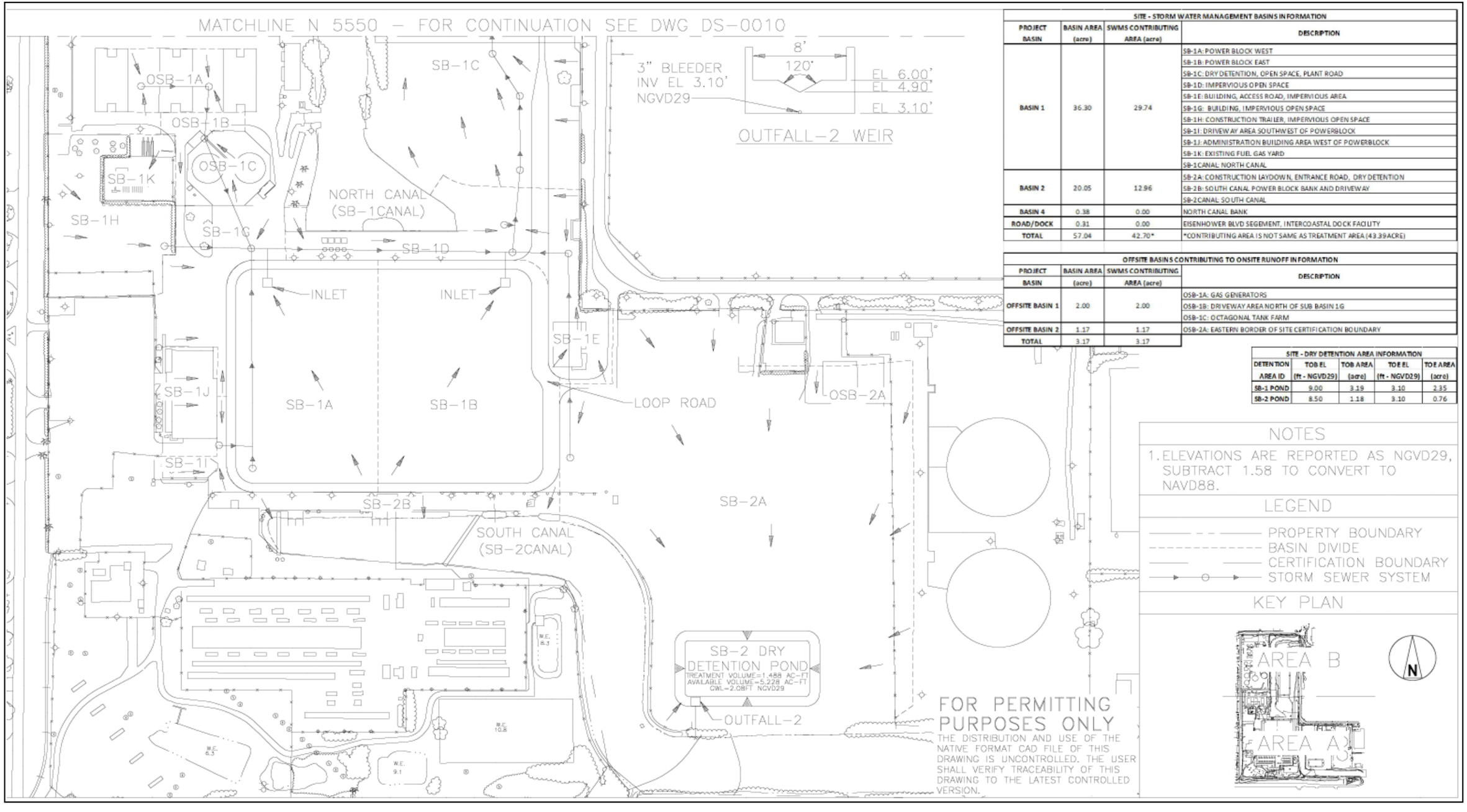
Source: FPL, 2012.



SITE - STORM WATER MANAGEMENT BASINS INFORMATION

PROJECT BASIN	BASIN AREA (acre)	SWMS CONTRIBUTING AREA (acre)	DESCRIPTION
BASIN 1	36.30	29.74	SB-1A: POWER BLOCK WEST
			SB-1B: POWER BLOCK EAST
			SB-1C: DRY DETENTION, OPEN SPACE, PLANT ROAD
			SB-1D: IMPERVIOUS OPEN SPACE
			SB-1E: BUILDING, ACCESS ROAD, IMPERVIOUS AREA
			SB-1G: BUILDING, IMPERVIOUS OPEN SPACE
			SB-1H: CONSTRUCTION TRAILER, IMPERVIOUS OPEN SPACE
			SB-1I: DRIVEWAY AREA SOUTHWEST OF POWERBLOCK
			SB-1J: ADMINISTRATION BUILDING AREA WEST OF POWERBLOCK
			SB-1K: EXISTING FUEL GAS YARD
			SB-1CANAL NORTH CANAL
BASIN 2	20.05	12.96	SB-2A: CONSTRUCTION LAYDOWN, ENTRANCE ROAD, DRY DETENTION
			SB-2B: SOUTH CANAL POWER BLOCK BANK AND DRIVEWAY
			SB-2CANAL SOUTH CANAL
BASIN 4	0.38	0.00	NORTH CANAL BANK
ROAD/DOCK	0.31	0.00	EISENHOWER BLVD SEGEMENT, INTERCOASTAL DOCK FACILITY
TOTAL	57.04	42.70*	*CONTRIBUTING AREA IS NOT SAME AS TREATMENT AREA (43.39ACRE)

OFFSITE BASINS CONTRIBUTING TO ONSITE RUNOFF INFORMATION

PROJECT BASIN	BASIN AREA (acre)	SWMS CONTRIBUTING AREA (acre)	DESCRIPTION
OFFSITE BASIN 1	2.00	2.00	OSB-1A: GAS GENERATORS
			OSB-1B: DRIVEWAY AREA NORTH OF SUB BASIN 1G
			OSB-1C: OCTAGONAL TANK FARM
OFFSITE BASIN 2	1.17	1.17	OSB-2A: EASTERN BORDER OF SITE CERTIFICATION BOUNDARY
TOTAL	3.17	3.17	

SITE - DRY DETENTION AREA INFORMATION

DETENTION AREA ID	TOB EL (ft - NGVD29)	TOB AREA (acre)	TOE EL (ft - NGVD29)	TOE AREA (acre)
SB-1 POND	9.00	3.19	3.10	2.35
SB-2 POND	8.50	1.18	3.10	0.76

Figure 4.8.2-1a
Construction Stormwater Management Plan – Area A – Drawing No. 174101-DS-0009

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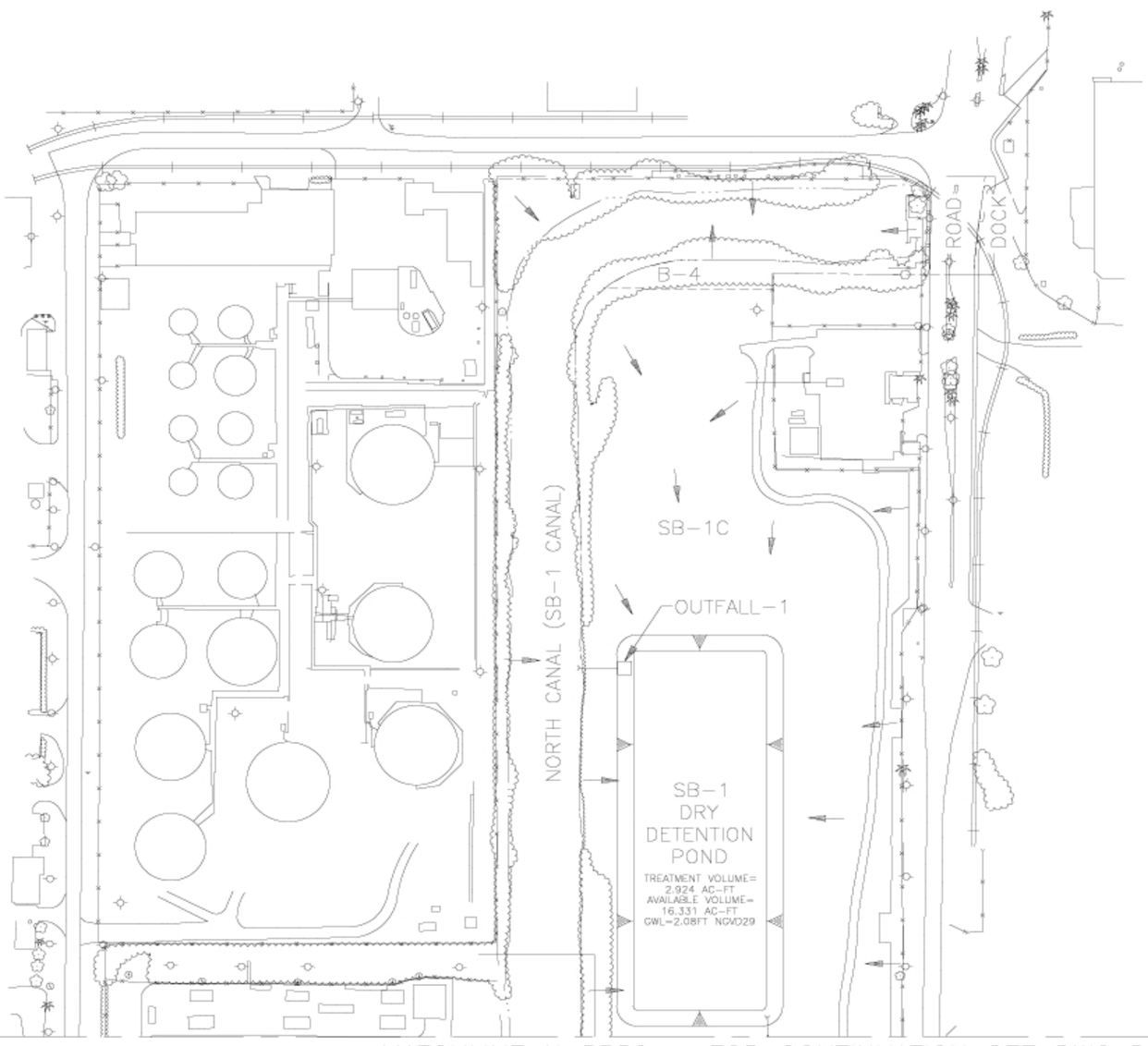
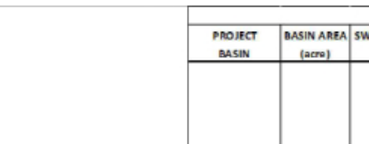
Source: Black & Veatch, 2012.



SITE - STORM WATER MANAGEMENT BASINS INFORMATION			
PROJECT BASIN	BASIN AREA (acre)	SWMS CONTRIBUTING AREA (acre)	DESCRIPTION
BASIN 1	36.30	29.74	SB-1A: POWER BLOCK WEST
			SB-1B: POWER BLOCK EAST
			SB-1C: DRY DETENTION, OPEN SPACE, PLANT ROAD
			SB-1D: IMPERVIOUS OPEN SPACE
			SB-1E: BUILDING, ACCESS ROAD, IMPERVIOUS AREA
			SB-1G: BUILDING, IMPERVIOUS OPEN SPACE
			SB-1H: CONSTRUCTION TRAILER, IMPERVIOUS OPEN SPACE
			SB-1I: DRIVEWAY AREA SOUTHWEST OF POWERBLOCK
			SB-1J: ADMINISTRATION BUILDING AREA WEST OF POWERBLOCK
			SB-1K: EXISTING FUEL GAS YARD
			SB-1CANAL: NORTH CANAL
BASIN 2	20.05	12.96	SB-2A: CONSTRUCTION LAYDOWN, ENTRANCE ROAD, DRY DETENTION
			SB-2B: SOUTH CANAL POWER BLOCK BANK AND DRIVEWAY
			SB-2CANAL: SOUTH CANAL
BASIN 4	0.38	0.00	NORTH CANAL BANK
ROAD/DOCK	0.31	0.00	EISENHOWER BLVD SEGEMENT, INTERCOASTAL DOCK FACILITY
TOTAL	57.04	42.70*	*CONTRIBUTING AREA IS NOT SAME AS TREATMENT AREA (43.39ACRE)

OFFSITE BASINS CONTRIBUTING TO ONSITE RUNOFF INFORMATION			
PROJECT BASIN	BASIN AREA (acre)	SWMS CONTRIBUTING AREA (acre)	DESCRIPTION
OFFSITE BASIN 1	2.00	2.00	OSB-1A: GAS GENERATORS
			OSB-1B: DRIVEWAY AREA NORTH OF SUB BASIN 1G
			OSB-1C: OCTAGONAL TANK FARM
OFFSITE BASIN 2	1.17	1.17	OSB-2A: EASTERN BORDER OF SITE CERTIFICATION BOUNDARY
TOTAL	3.17	3.17	

SITE - DRY DETENTION AREA INFORMATION				
DETENTION AREA ID	TOB EL (ft - NGVD29)	TOB AREA (acre)	TOE EL (ft - NGVD29)	TOE AREA (acre)
SB-1 POND	9.00	3.19	3.10	2.35
SB-2 POND	8.50	1.18	3.10	0.76



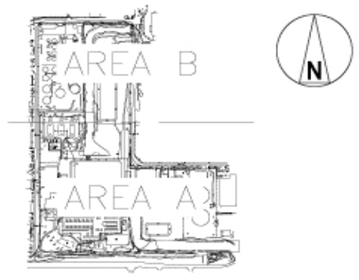
NOTES

1. ELEVATIONS ARE REPORTED AS NGVD29, SUBTRACT 1.58 TO CONVERT TO NAVD88.

LEGEND

PROPERTY BOUNDARY
BASIN DIVIDE
CERTIFICATION BOUNDARY
STORM SEWER SYSTEM

KEY PLAN



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THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD FILE OF THIS DRAWING IS UNCONTROLLED. THE USER SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE LATEST CONTROLLED VERSION.

Figure 4.8.2-1b
Construction Stormwater Management Plan – Area B – Drawing No. 174101-DS-0010

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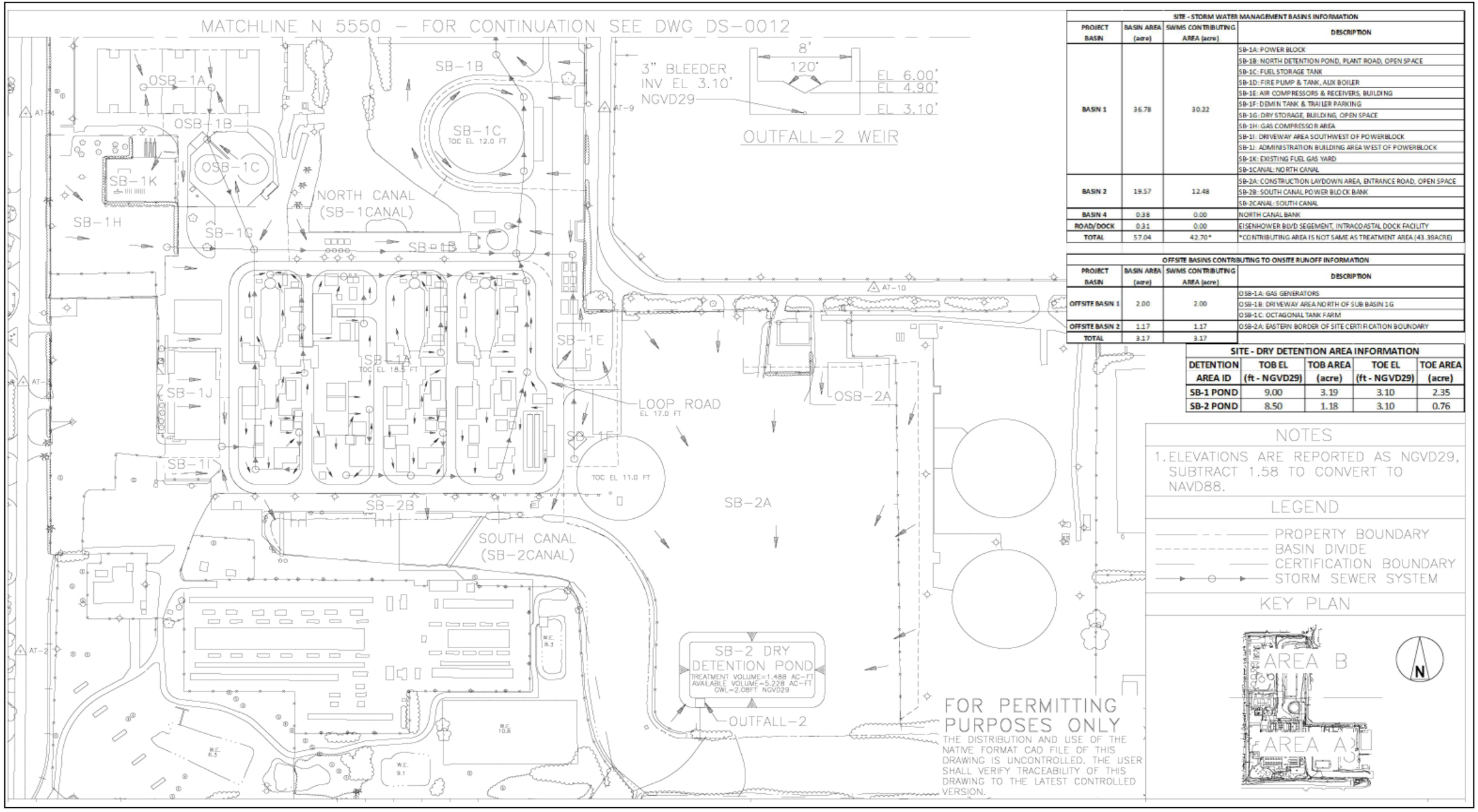
Source: Black & Veatch, 2012.



SITE - STORM WATER MANAGEMENT BASINS INFORMATION

PROJECT BASIN	BASIN AREA (acre)	SWIMS CONTRIBUTING AREA (acre)	DESCRIPTION
BASIN 1	36.78	30.22	SB-1A: POWER BLOCK
			SB-1B: NORTH DETENTION POND, PLANT ROAD, OPEN SPACE
			SB-1C: FUEL STORAGE TANK
			SB-1D: FIRE PUMP & TANK, AUX BOILER
			SB-1E: AIR COMPRESSORS & RECEIVERS, BUILDING
			SB-1F: DEMIN TANK & TRAILER PARKING
			SB-1G: DRY STORAGE, BUILDING, OPEN SPACE
			SB-1H: GAS COMPRESSOR AREA
			SB-1I: DRIVEWAY AREA SOUTHWEST OF POWERBLOCK
			SB-1J: ADMINISTRATION BUILDING AREA WEST OF POWERBLOCK
			SB-1K: EXISTING FUEL GAS YARD
			SB-1CANAL: NORTH CANAL
BASIN 2	19.57	12.48	SB-2A: CONSTRUCTION LAYDOWN AREA, ENTRANCE ROAD, OPEN SPACE
			SB-2B: SOUTH CANAL POWER BLOCK BANK
			SB-2CANAL: SOUTH CANAL
BASIN 4	0.38	0.00	NORTH CANAL BANK
ROAD/DOCK	0.31	0.00	EISENHOWER BLVD SEGEMENT, INTRACOASTAL DOCK FACILITY
TOTAL	57.04	42.70*	*CONTRIBUTING AREA IS NOT SAME AS TREATMENT AREA (43.39ACRE)

OFFSITE BASINS CONTRIBUTING TO ONSITE RUNOFF INFORMATION

PROJECT BASIN	BASIN AREA (acre)	SWIMS CONTRIBUTING AREA (acre)	DESCRIPTION
OFFSITE BASIN 1	2.00	2.00	OSB-1A: GAS GENERATORS
			OSB-1B: DRIVEWAY AREA NORTH OF SUB BASIN 1G
			OSB-1C: OCTAGONAL TANK FARM
OFFSITE BASIN 2	1.17	1.17	OSB-2A: EASTERN BORDER OF SITE CERTIFICATION BOUNDARY
TOTAL	3.17	3.17	

SITE - DRY DETENTION AREA INFORMATION

DETENTION AREA ID	TOB EL (ft - NGVD29)	TOB AREA (acre)	TOE EL (ft - NGVD29)	TOE AREA (acre)
SB-1 POND	9.00	3.19	3.10	2.35
SB-2 POND	8.50	1.18	3.10	0.76

NOTES

1. ELEVATIONS ARE REPORTED AS NGVD29, SUBTRACT 1.58 TO CONVERT TO NAVD88.

LEGEND

PROPERTY BOUNDARY
BASIN DIVIDE
CERTIFICATION BOUNDARY
STORM SEWER SYSTEM

KEY PLAN

FOR PERMITTING PURPOSES ONLY

THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD FILE OF THIS DRAWING IS UNCONTROLLED. THE USER SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE LATEST CONTROLLED VERSION.

Figure 4.8.3-1a
Operation Stormwater Management Plan – Area A – Drawing No. 174101-DS-0011

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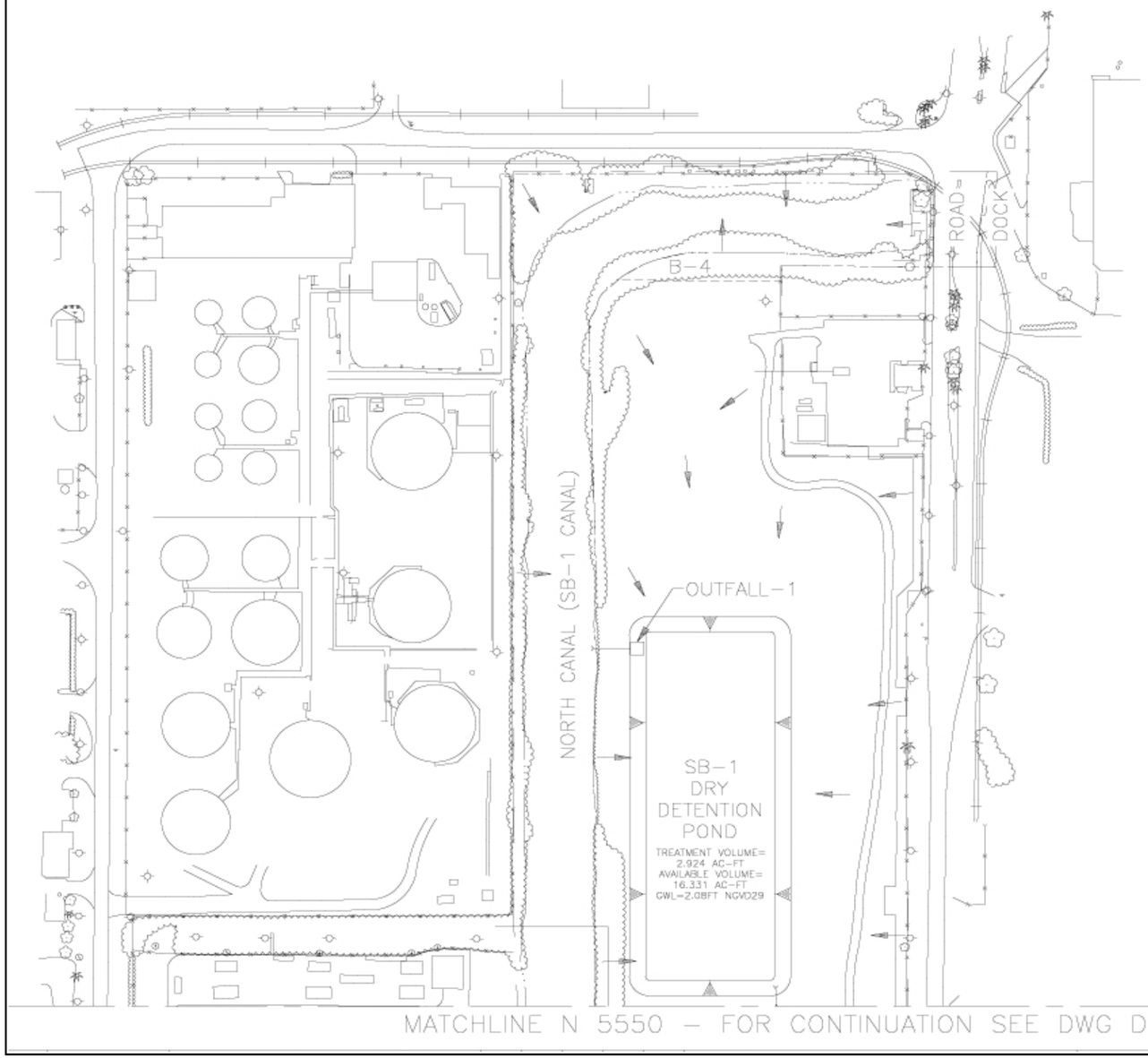
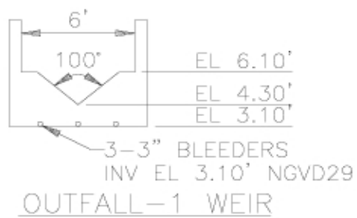
Source: Black & Veatch, 2012.





SITE - STORM WATER MANAGEMENT BASINS INFORMATION

PROJECT BASIN	BASIN AREA (acre)	SWMS CONTRIBUTING AREA (acre)	DESCRIPTION
BASIN 1	36.78	30.22	SB-1A: POWER BLOCK
			SB-1B: NORTH DETENTION POND, PLANT ROAD, OPEN SPACE
			SB-1C: FUEL STORAGE TANK
			SB-1D: FIRE PUMP & TANK, AUX BOILER
			SB-1E: AIR COMPRESSORS & RECEIVERS, BUILDING
			SB-1F: DEMIN TANK & TRAILER PARKING
			SB-1G: DRY STORAGE, BUILDING, OPEN SPACE
			SB-1H: GAS COMPRESSOR AREA
			SB-1I: DRIVEWAY AREA SOUTHWEST OF POWERBLOCK
			SB-1J: ADMINISTRATION BUILDING AREA WEST OF POWERBLOCK
			SB-1K: EXISTING FUEL GAS YARD
			SB-1CANAL: NORTH CANAL
BASIN 2	19.57	12.48	SB-2A: CONSTRUCTION LAYDOWN AREA, ENTRANCE ROAD, OPEN SPACE
			SB-2B: SOUTH CANAL POWER BLOCK BANK
			SB-2CANAL: SOUTH CANAL
BASIN 4	0.38	0.00	NORTH CANAL BANK
ROAD/DOCK	0.31	0.00	EISENHOWER BLVD SEGEMENT, INTRACOASTAL DOCK FACILITY
TOTAL	57.04	42.70*	*CONTRIBUTING AREA IS NOT SAME AS TREATMENT AREA (43.39ACRE)

OFFSITE BASINS CONTRIBUTING TO ONSITE RUNOFF INFORMATION

PROJECT BASIN	BASIN AREA (acre)	SWMS CONTRIBUTING AREA (acre)	DESCRIPTION
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			OSB-1B: DRIVEWAY AREA NORTH OF SUB BASIN 1G
			OSB-1C: OCTAGONAL TANK FARM
OFFSITE BASIN 2	1.17	1.17	OSB-2A: EASTERN BORDER OF SITE CERTIFICATION BOUNDARY
TOTAL	3.17	3.17	

SITE - DRY DETENTION AREA INFORMATION

DETENTION AREA ID	TOB EL (ft - NGVD29)	TOB AREA (acre)	TOE EL (ft - NGVD29)	TOE AREA (acre)
SB-1 POND	9.00	3.19	3.10	2.35
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NOTES

1. ELEVATIONS ARE REPORTED AS NGVD29, SUBTRACT 1.58 TO CONVERT TO NAVD88.

LEGEND

PROPERTY BOUNDARY
BASIN DIVIDE
CERTIFICATION BOUNDARY
STORM SEWER SYSTEM

KEY PLAN

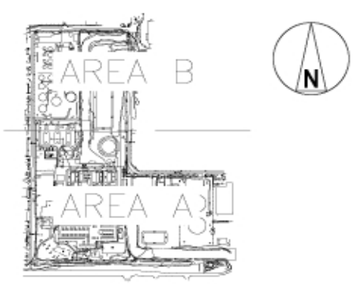

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Figure 4.8.3-1b
Operation Stormwater Management Plan – Area B – Drawing No. 174101-DS-0012

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Source: Black & Veatch, 2012.

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

The following sections address the environmental effects of dismantlement, site preparation and construction of the combined cycle unit, including the construction parking and laydown areas. The environmental effects are discussed with respect to impacts on land, surface water, groundwater, ecology, air quality, solid waste, landmarks and sensitive areas, and impacts on archaeological and historic sites. It is important to note that during this approximately 3-year construction period, the existing Port Everglades Plant facilities will no longer be in operation. Therefore, while the Project construction activities will have the impacts discussed in the following sections, impacts of the operation of the existing Plant will be eliminated during this period.

5.1 Land Impacts

5.1.1 General Construction Impacts

The portions of the Port Everglades Plant property that will be affected by the construction of the Project are shown on Figures 3.1.1-3 and 4.2.0-1.

Many of the existing Port Everglades Plant facilities will be dismantled prior to the start of construction. Construction and dismantlement materials will be either recycled or disposed of in accordance with applicable regulations. Dismantlement activities will include dismantling of mechanical and electrical equipment and may include explosive dismantlement of certain structures. Equipment such as the steam turbines, electric generators, and mechanical, electrical, and instrumentation equipment may be manually removed prior to any use of explosives. Dismantlement will involve the use of cranes, robotic demolition machines, jackhammers, loaders, and dump trucks. Dismantlement debris will be transported offsite for recycling for beneficial reuse or disposed of in a licensed landfill. If necessary, to protect the public during Project dismantlement work, appropriate protective measures will be installed along the perimeter of the Site or as appropriate at other Project locations.

During dismantlement, asbestos containing insulation and other friable asbestos containing materials and hazardous materials will be removed from the structures. These materials will be identified prior to beginning dismantlement activities and disposed of according to applicable regulations. Utility and fuel systems, including water, sewer, oil, gas, and electrical systems, will be disconnected and isolated, as applicable. As required for PEEC construction, existing fuel oil delivery and storage

infrastructure associated with Port Everglades Units 1 through 4 that includes but not limited to underground piping and tanks, will be excavated, drained, and removed pursuant to applicable regulations.

The existing Plant stacks will be pre-washed and evaluated for hazardous and asbestos containing materials. Hazardous materials will be disposed of in accordance with applicable regulations. Friable asbestos containing materials in the stacks will be removed and asbestos containing materials that cannot be removed will be identified and addressed during dismantlement to mitigate asbestos exposure to the environment.

Controlled explosive techniques may be used to dismantle large structures. Explosives would be used to implode portions of the structure to safely lower structures for subsequent removal from the Site. The large structures where explosives may be used include the stacks, steam generator structures, steam turbine generator pedestals, and other large concrete components. Explosive charges would be placed by licensed, experienced contractors to weaken the supporting structures and foundations to lower the structures to the ground. The controlled, directed explosions would be of extremely short duration, lasting only seconds. Any use of explosives will be coordinated with local government authorities to minimize any potential impacts to Port Everglades, as well as nearby businesses. Appropriate and timely notices will be given to nearby residents and businesses prior to the use of explosives.

Reasonable precautions will be taken to minimize fugitive emissions during any explosive dismantlement activities. Water may be used to control fugitive emissions during the use of explosives or other dismantlement activities that could generate fugitive emissions.

Controlled explosive techniques have been successfully used in the modernization of the Cape Canaveral Plant in August 2010 and the Riviera Plant in June 2011. These plants consisted of nominal 300 and 400 MW fossil fueled steam generating units very similar to the units of the Port Everglades Plant. The modernization of the Cape Canaveral and Riviera Plants is underway, and the new plants are referred to as the Cape Canaveral Next Generation Clean Energy Center (CCEC) and Riviera Beach Next Generation Clean Energy Center (RBEC).

Waste material (e.g., concrete, scrap metal) will be recycled or disposed of in accordance with local and state requirements (see Table 5.1.1-1). Structural material such as concrete may be used as fill.

Material that cannot be recycled will be disposed of in an approved landfill [i.e., a construction and demolition (C&D) or MSW Class I landfill, as appropriate]. Any hazardous waste will be managed according to applicable rules and regulations (see Table 5.1.1-1).

Similar dismantlement techniques have been used for the FPL Lauderdale, Fort Myers, and Sanford Repowering Projects, and CCEC and RBEC. In all these Projects, the steam generators and associated mechanical and electrical equipment were removed. Based on this experience, only localized impacts are expected to occur during this phase of construction, which will last for approximately 14 months.

The Site has been occupied by an operating power generation facility for more than 50 years and contains minimum vegetation. The upland areas to be used for Project construction, including the construction parking and laydown areas, will be cleared of such minimal vegetation as necessary. The Site soils are generally suitable for the development of the PEEC, obviating the need for substantial filling. Unsuitable soils will be removed and clean fill added, as necessary.

The construction parking and laydown areas may be stabilized with rock, limestone, and shell. Other more lightly used areas may be seeded or sodded with grass to prevent erosion.

The construction parking and laydown areas will also contain the construction office trailers and portable structures. The latter are used to store construction material and construction equipment, as well as areas for assembly of plant components. The number of trailers and portable structures would be based on the contractor requirements and phases of construction (e.g., dismantlement, site preparation, and structural, mechanical, and electrical construction activities) (see Figure 3.1.1-3).

Construction contractors will be required to implement BMPs 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 applicable requirements.

5.1.2 Roads

Site access for the construction of the Project will be via existing roadways and facility entrances from Eller Drive and SE 14th Avenue, as well as SE 19th Avenue and Eisenhower Boulevard. The Port Everglades Plant has access gates on Eisenhower Boulevard and SW 14th Avenue that currently support existing operations. No equipment or heavy truck traffic will be directed through residential streets.

The construction workforce for the Project is expected to average approximately 290 workers during the period between 2013and 2016. Dismantlement of the existing Plant facilities is anticipated to commence in 2012, and Project construction is anticipated to conclude in the summer of 2016. Peak construction is estimated at approximately 650 workers in mid 2015. Subsection 5.7.2 presents the construction traffic analysis performed for the Project.

Fugitive dust generation from construction traffic will be minimized through paving roads and the use of water sprinkling or other dust suppressant techniques.

5.1.3 Flood Zones

The majority of the Site and the area designated for the Power Block is within Zone X and is not within the 100 year floodplain. The southeastern portion of the Site is shown on the current FEMA flood zone map (Figure 3.1.3-1) as being within Zone AE (within the 100 year floodplain). No permanent habitable structures are planned to be constructed within Zone AE.

The construction parking and laydown areas situated in the southeastern portion of the Site are partially located within Zone AE.

5.1.4 Topography and Soils

The existing grade of the Site is nominally 15 to 17 ft (NGVD 1929). The finished grade of the Site, which includes the Power Block and supporting facilities and equipment for PEEC, will remain at the existing nominal site elevation of 15 to 17 ft. After dismantling Units 1 through 4, site preparation will be minimal due to the existing industrial nature of the Site. As necessary for structural stability, material will be backfilled for foundations of structures and piping. Areas will be graded and some amounts of rock fill may be used to help support the Plant/foundations, piping, electrical duct banks, trenches, and manholes. Foundations required to support heavy loads (e.g., columns, CTs, HRSG, steam turbine generators) will be supported on deep foundations such as piles, augured cast piles, stone columns, or other ground improvement methods to reduce settlement to acceptable levels.

Prior to construction of PEEC, FPL will conduct environmental assessments and perform necessary remediation of impacted media (soil and groundwater) in accordance with applicable state, federal and local regulations. The assessments will be conducted within the Port Everglades Plant Property for those areas associated with Units 1 through 4. This includes, but is not limited to, the existing Power Block area for Units 1 through 4, fuel oil delivery and storage infrastructure, industrial

wastewater treatment facility and maintenance areas. Removal of this existing infrastructure may involve the appropriate management of impacted media, including petroleum impacted media, solid waste, hazardous waste, and management or closure of underground and above storage tanks.

Dewatering will be required for equipment foundations and for maintenance, repair and refurbishment of the existing once-through cooling water system, including dismantlement and construction of the circulating water pipes. Such temporary dewatering will be limited in volume and localized. The duration of dewatering is approximately 9 months. Impacts of dewatering on surficial groundwater are addressed in Section 5.3. There will be no offsite impacts on the surficial aquifer and no impacts on the underlying deeper aquifers because excavation and dewatering depths will be less than 10 ft below the water table elevation (approximately −8 ft NGVD 29).

Current topographic features of the Site reflect its historic use as a power plant site. No adverse impact to soil stability or bearing strength is anticipated from the Project because deep foundations, such as piles, augured cast piles, stone columns or other ground improvement method will be used for PEEC; 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 of the Site.

Elevations of the land surface during construction will be approximately the same as the existing Site elevation. As a result, no significant changes in topography will be observable from offsite locations and site topography will not be affected by construction related activities. Project work will involve the use of temporary construction cranes. The existing Units 1 through 4 stacks are approximately 343 ft high, and the existing boiler structures are approximately 140 ft high. The impacts on viewshed will not be significant, because the construction cranes and new structures will be lower in height than the existing structures.

Groundwater levels will not be significantly affected by modifications to soil percolation from the 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 groundwater levels, because the surface infiltration will affect only localized areas within the Site and construction parking and laydown areas.

The construction laydown and parking areas will remain at their existing elevations. During construction, the extent of earth disturbances will be minimized as much as is practical in accordance with the SWPPP as described in Subsection 4.8.2. Areas outside of cut and fill operations will be protected against unnecessary equipment traffic. Aggregate surfaced areas may be provided for access, while limerock surfacing may be provided for the construction support areas.

5.2 Impact on Surface Water Bodies and Uses

5.2.1 Impact Assessment

No adverse impacts to surface waters are anticipated due to site preparation and construction. No dredging or filling or construction of shoreline facilities in waters of the state is expected as part of the Project. The existing infrastructure of the intake and discharge canals will be used without modification. The existing infrastructure of the intake and discharge structures for Units 3 and 4 will be used for PEEC. Construction water use, dewatering, and stormwater management are discussed below.

5.2.1.1 Construction Water Use

Water used during Project construction, including dismantlement and remediation, will be obtained from the City of Fort Lauderdale, stormwater ponds, dewatering effluent, vendor supplied sources, or existing wells. Construction water uses include soil improvement, hydrostatic testing, chemical cleaning, steam blows, fugitive dust control, potable supply, and irrigation. Construction water use is estimated to average 200 gpm with peak demands at 1000 gpm. These amounts are less than requirements for PEEC that the City of Fort Lauderdale has agreed it can supply (see Appendix 10.10 for City of Fort Lauderdale letter).

Chemicals may be added to the water used for hydrostatic testing to meet manufacturer's specifications for pH control. The water from hydrostatic testing of HRSGs, piping, and tank systems will be contained onsite after such testing is completed. Hydrostatic test water will be tested, treated if necessary and either routed to the stormwater ponds for percolation/evaporation or discharged to existing intake or discharge canals. Alternatively, the water may be disposed of at a local POTW or a licensed disposal facility.

Chemical cleaning of the HRSGs and steam piping systems will be performed near the end of the construction period (Section 4.6). 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 may 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 for a short period. The proposed auxiliary boiler for PEEC or temporary boilers will be used to generate steam for cleaning. Non-hazardous wastewaters from chemical cleaning of the HRSGs and steam piping may be routed to the City of Fort Lauderdale POTW or other approved facility. Non-hazardous wastewaters may be tested, treated if necessary and either routed to the stormwater ponds for percolation/evaporation or discharged to existing intake or discharge canals. During construction, the construction labor force may 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. A temporary connection to the existing POTW may be used during construction.

Potable water for consumption, emergency eyewash, and shower stations during construction will be obtained from the existing City of Fort Lauderdale potable water connection or contractor supplied potable water. See Appendix 10.10 for the letter from City of Fort Lauderdale.

Water from the City of Fort Lauderdale, stormwater ponds, or dewatering activities may be used as necessary to mitigate fugitive dust emissions during Project construction.

5.2.1.2 Construction Dewatering

During construction of PEEC, dewatering activities will be required for various structures to be located at depths below the surficial groundwater table, including excavations for major foundations, dismantlement and installation of underground circulating water pipes, and miscellaneous trenching activities. The dewatering effluent will be routed to onsite stormwater basins or temporary holding basins for reuse, evaporation/percolation and/or, if necessary, released to the intake/discharge canals. In order to meet regulatory requirements for discharge to surface and groundwater, the dewatering effluent may require treatment for pH, turbidity, and metals. The dewatering effluent treatment system will be designed to ensure that any discharge to surface waters will meet applicable water quality standards.

If necessary, chemical dosing and clarification may be the initial dewatering effluent treatment processes used. Coagulant and polymer may be added to the influent water to facilitate settling of the suspended particulates. Particulates will settle out of the water in the clarifier as a semi-solid. In order to create a disposable product, the semi-solid material may be further dewatered in a filter press, producing a solid with low moisture content. FPL will meet the non-procedural requirements for the applicable water quality regulations.

If necessary, following clarification to remove the smaller particulates that do not settle out in the process, filtration may be employed. After the filtration process, testing may be performed to assess water quality. Ion exchange processes may be required to further remove selected ions from the effluent water before release to the existing intake or discharge canals. In the ion exchange process, elevated ions in concentrations exceeding surface water quality standards will be replaced by sodium or hydrogen. The regeneration process, if necessary, may be performed offsite by a contracted water treatment company.

Dewatering activities could produce up to 1 MGD (peak day) and up to 10 MG of groundwater over several months of the Project construction period. If necessary, an onsite lined holding pond or a day tank may be provided to collect dewatering effluent from various locations onsite, routing the water to the dewatering effluent treatment processes. If required, this treatment process will continuously treat dewatering effluent before release to percolation/evaporation basins or surface water. Solid waste produced from the dewatering effluent treatment process may be tested, as necessary, and placed onsite or disposed of at an approved facility.

No dewatering activities will be required for the construction parking and laydown areas.

5.2.1.3 Construction Stormwater

Construction stormwater will be managed as described in Subsection 4.8.2 and Appendix 10.11 Stormwater Management Plan. FPL will prepare a comprehensive SWPPP, as required under the FDEP Generic Permit for Stormwater Discharge from Large and Small Construction Activities, addressing both the dismantlement of the existing Plant and the construction of PEEC. The SWPPP will be prepared to mitigate impacts due to stormwater during dismantlement and construction. As a result, no adverse impacts to surface waters due to site preparation and construction are anticipated.

5.2.2 Measuring and Monitoring Programs

Discharge of treated stormwater associated with construction activities will be monitored as required under applicable regulations. Turbidity will be measured weekly at all points of discharge and at a background station in the receiving body of water to ensure that turbidity is not more than 29 Nephelometric Turbidity Units (NTU) above background.

FPL will sample the dewatering effluent for applicable water quality parameters and treat the dewatering effluent, as necessary, to meet applicable water quality standards at the point of discharge.

5.3 Groundwater Impacts

5.3.1 Impact Assessment

Activities associated with the construction of PEEC are not expected to produce any significant changes to groundwater quality, quantity, or levels in the vicinity of the Site, construction parking and laydown areas, or locations for the associated linear facilities. Dewatering will be confined to localized onsite areas associated with construction of the Power Block and maintenance, repair, and refurbishment of portions of the existing once-through cooling system. As a result, no adverse impacts to groundwater resources or offsite wells will occur from dewatering activities.

While the ground surface in the Power Block area is generally between 15 and 17 ft NGVD 29, the water table is between 1.0 and 1.5 ft NGVD 29. Therefore, dewatering is required primarily to remove the old circulating water pipes and to install the new circulating water pipes. Most of the other foundation excavations will be above the normal water table. Also, some dewatering may be required to remove accumulated stormwater from excavations following rain events. The Project dewatering plan anticipates 3 sequential phases: 1 for dismantlement and 2 for construction. During the dismantlement phase, the existing circulating water pipes will be removed. This phase will take approximately 2 months. The second phase (intake circulating water pipe construction) will take approximately 3 months, and the third phase (discharge circulating water pipe construction) will take approximately 4 months.

The dewatering analysis used the numerical model MODFLOW 2000 to estimate the dewatering quantities. The model and the procedures used are described in greater detail in the Dewatering Report for Port Everglades Energy Center (Golder, 2011) that is included in SCA Appendix 10.9. The dewatering quantities calculated by the model are separated into two components: the initial

dewatering quantity and the maintenance quantity. The initial dewatering quantity is the volume of water pumped in the first 1 to 5 days of each dewatering phase to dewater the aquifer. The maintenance quantity is the volume of water that must be pumped over the remainder of the dewatering project to maintain the dewatered conditions. The model results show that approximately 1.5 to 3.0 MG will be pumped during the initial dewatering of all three phases (combined total). Maintenance volumes pumped over the remaining 9 months likely will be between 1.0 MG and 3.5 MG, but could be as high as 10 MG depending on rainfall recharge and other factors.

The model results also show that the surficial aquifer drawdown will be contained within the Site boundaries. There will be no adverse offsite impacts from the proposed dewatering activities.

5.3.2 Measuring and Monitoring Programs

During construction dewatering, the effluent will be monitored as discussed above in Subsection 5.2.2.

5.4 Ecological Impacts

5.4.1 Impact Assessment

5.4.1.1 Terrestrial Systems

The terrestrial systems on the entire Site were cleared and previously impacted in connection with the construction of the Port Everglades Plant in the late 1950s and early 1960s. Construction of the PEEC upon these previously impacted areas, which have been used for power plant operations for more than 50 years, will not cause adverse ecological impacts.

The Site does not contain unique wildlife species and is not considered important wildlife habitat because of its disturbed nature (see Subsection 3.3.6.2, Pre-Existing Stresses, Terrestrial Systems).

No adverse impacts to federal or state listed terrestrial plants and animals are expected in association with the construction at the Site, due to the existing developed nature of the Site and lack of suitable habitat for listed species.

Fugitive dust generated by construction activities will be minimized through reasonable precautions to prevent unconfined emissions of PM (see Subsection 5.5.2). Any localized fugitive dust will not adversely affect offsite terrestrial systems in the vicinity.

Noise from construction activities is not anticipated to significantly affect wildlife in the vicinity of the Site. Presently, the area experiences noise from industrial activities associated with activities within Port Everglades, transportation activities (aircraft from Fort Lauderdale-Hollywood International Airport, motor vehicles on area roadways), and the operation of the existing Plant. No noise sensitive wildlife is known to occur on the Site or in its vicinity, since wildlife in the area would have been acclimated to noise associated with the existing Plant operations and surrounding activities.

5.4.1.2 Aquatic Systems/Wetlands

There are no jurisdictional wetlands on the Site except the manmade cooling-water intake and discharge canals. FPL has recently conducted routine repair, refurbishment, and maintenance work on the existing intake and discharge structures. The existing infrastructure of the intake and discharge structures may be modified or reconfigured landward of the existing structures for PEEC. This may require repair of the seawalls in the intake and discharge canals. This repair is exempt from state Environmental Resource Permit (ERP) requirements pursuant to FDEP Rule 62-312.050(1)(j), F.A.C., which allows for seawall restoration in upland areas or within 1 ft waterward of its previous location.

After construction is complete, the intake and discharge structures not used will be closed off at the existing seawall and backfilled. A portion of the infrastructure of the intake and discharge structures will remain and be incorporated into PEEC. The dredging required for the replacement of equipment within the existing intake and discharge areas qualifies for an exemption from state permitting requirements for performance of maintenance dredging of existing manmade canals, channels, basins, berths, and intake and discharge structures.

The planned manatee temporary heating system (MTHS) (see Subsection 5.4.1.3 for description) intake and discharge pipes and necessary structures, will be installed in the existing discharge canal. The MTHS may require support piles and structures for equipment. The MTHS will be designed and constructed to provide adequate protection to manatees. Authorization for necessary environmental approvals for the MTHS will be sought outside the SCA process.

5.4.1.3 Endangered and Threatened Species

Manatees (*Trichechus manatus*), an endangered species protected under the Endangered Species Act and the Marine Mammal Protection Act, have regularly been observed in the vicinity of the cooling water discharge canal. Operation of the existing Units 1 through 4 will cease prior to dismantlement

and construction activities associated with the modernization Project. Consequently, there will be a 3 year period, until operation of PEEC commences, during which the normal warm water discharge will not occur from Units 1 through 4. FPL will comply with the Manatee Protection Plan, pursuant to the Plant's IWW Permit, to avoid potential adverse impacts to manatees during this approximately 3 year period.

Authorization for necessary environmental approvals for the MTHS will be sought outside the SCA process. FPL proposes to install a 12 MMBtu/hr heater system to continue to provide a "manatee refuge" by discharging warm water while Units 1 through 4 are modernized to PEEC. The manatee refuge will be located within the existing cooling water discharge canal. Warm water will be discharged pursuant to the Manatee Protection Plan.

No adverse impacts to federal or state listed species are expected in association with the construction of the Project, due to the fact that construction will occur entirely within existing developed areas and will utilize existing infrastructure at the cooling-water intake and discharge.

5.4.2 Measuring and Monitoring Programs

5.4.2.1 Terrestrial Systems

No monitoring programs are needed due to the lack of habitat for protected species.

5.4.2.2 Aquatic Systems/Wetlands

All in water activities will be performed in accordance with the Standard Manatee Conditions for In-water Work (FWS, 2005) or the *Standard Manatee Construction Conditions for Artificial Warm Water Refugia During the Period of November 15 Through March 31* (as outlined in the FPL Port Everglades Plant Manatee Protection Plan approved by FDEP on August 18, 1999). FPL will continue to monitor water temperature pursuant to the Manatee Protection Plan.

5.5 Air Impacts

5.5.1 Air Emissions

Construction activities will result in the generation of fugitive PM_{10} emissions and vehicle exhaust emissions. Fugitive PM_{10} emissions will result primarily from onsite vehicular travel over paved and unpaved roads. Onsite construction 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, including the construction support area, primarily over paved surfaced roadways. Exposed land areas may also generate fugitive dust due to wind erosion.

Emissions of fugitive PM_{10} from these activities are 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.

Table 5.5.1-1 shows the estimated maximum air emissions during dismantlement of Units 1 through 4, site preparation, and construction of PEEC.

During the construction period, fugitive PM_{10} emissions will result from dismantlement and site preparation by removing unsuitable soils and replacing the soils with fill and grading. The PM_{10} emissions for these activities are estimated to be approximately 0.03 ton for soil removal, 0.13 ton for transport of materials, and 0.14 ton for grading.

Emissions will also result from exhaust of construction equipment such as trucks and graders. Construction equipment will produce emissions of CO, NO_x, VOC, PM_{10}, and SO_2. Estimated exhaust emissions were based on EPA emission factors for non-road diesel engines. CO, NO_x and VOC emissions were estimated using EPA Tier 3 non-road emission standards (40 CFR 89). EPA's Tier 3 emission standards were phased in from 2006 to 2008 and apply to engines from 11 to 750 hp. On June 29, 2004, EPA established Tier 4 non-road emission standards that will be phased in from 2008 to 2015 (69 Federal Register 38958-39273). Tier 4 establishes lower emission standards for PM and NO_x and the requirement to use ULSD fuel. Some of the construction equipment will likely include engines meeting EPA Tier 4 emissions standards. EPA non-road diesel engine rules required the use of ULSD fuel in non-road engines starting in 2010 (EPA, 2008b). The use of ULSD fuel will minimize SO_2 and PM_{10} emissions from any Tier 3 engines. Based on the EPA emission factors and the estimated maximum number of vehicles, the CO, NO_x, VOC, PM_{10}, and SO_2 emissions during site preparation are estimated to be 1.26, 1.31, 0.15, 0.07, and <0.01 tons, respectively, for dismantlement and site preparation.

Fugitive PM_{10} emissions may occur from wind erosion from open areas. The areas subject to wind erosion will generally be small due to the nature of construction activities and control measures taken,

such as seeding. Fugitive PM_{10} emissions from wind erosion have been estimated to be a total of 1.04 tons during the construction period.

Fugitive PM_{10} emissions will also result from onsite construction traffic. Based on the average construction workforce, PM_{10} emissions from paved and unpaved roads have been estimated to be a total of 2.03 tons during the construction period. Reasonable precautions pursuant to FDEP Rule 62-296.320(4)(c)3., F.A.C., will be used to reduce the amount of fugitive emissions from onsite paved and unpaved roads (e.g., watering).

Once dismantlement and site preparation are nearing completion, the construction of the 3-on-1 combined cycle unit and associated facilities will be initiated. Emissions will also result from construction equipment operating onsite with diesel and gasoline engines including cranes, trucks, compressors, etc. The CO, NO_x, VOC, PM_{10}, and SO_2 emissions are estimated to be 3.62, 4.30, 0.41, 0.21, and 0.01 TPY, respectively, during the erection of the component parts of the combined cycle unit.

Two temporary boilers may be used during construction of PEEC for chemical cleaning and steam blow activities. A description of the temporary and auxiliary boilers is contained in Appendix 10.2.5. The maximum emissions from the boilers are 18.5, 30.9, 1.2, 3.3, and 0.4 TPY for CO, NO_x, VOC, PM_{10}, and SO_2, respectively.

Table 5.5.1-1 includes emission estimates for construction activities at the construction support area and parking and laydown areas. Reasonable precautions pursuant to FDEP Rule 62-296.320(4)(c)3, F.A.C., will be used to minimize fugitive particulate emissions.

5.5.2 Control Measures

A number of control measures will be implemented during the construction period to minimize air emissions and potential impacts pursuant to FDEP Rule 62-296.320(4)(c)3, F.A.C. The Site consists of compacted soils that are difficult for wind to pick up, thereby reducing fugitive emissions due to wind. After grading, the untraveled or lightly used areas may be paved, provided with an erosion resistant covering, or vegetated to minimize fugitive PM and wind erosion. Watering on an as needed basis will control fugitive dust from highly traveled areas.

5.6 Solid Wastes

Solid waste materials generated during Project construction will be disposed of in accordance with applicable rules and regulations. Construction and dismantlement 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 MSW) will be collected in appropriate waste collection containers for disposal at an approved offsite location. Solid wastes from dismantlement will be managed according to Table 5.1.1-1.

As described in Section 4.6 and listed in Table 4.6.0-1, there are a variety of potential solid waste streams resulting from the construction and operation of PEEC. During construction, the solid waste streams will be managed as presented in Table 4.6.0-1. Solvent rags will be separated and either laundered or disposed appropriately. If aerosol cans are punctured prior to disposal, the residual contents 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 collected 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 4.7.0-1 with appropriate modifications to accommodate the construction of the Project.

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 used or created as part of their work. This responsibility includes the proper recordkeeping, transportation, storage, handling, and offsite disposal of such wastes. Contractors will be required to coordinate with FPL and provide documentation of all activities related to hazardous material and/or wastes.

5.7 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. Construction activities will be contained within the existing plant property and follow applicable regulations; all traffic and equipment deliveries will remain on identified roadways; and practices will be maintained to reduce potential disruption to surrounding areas and eliminate unnecessary air, noise, and traffic impacts. Chapter 7.0 of this SCA provides information on income, employment, tax revenue, and service needs associated with the construction workforce. This section focuses on workforce requirements and the impacts of construction related traffic, housing, education, and noise.

5.7.1 Construction Workforce

The construction workforce for the Project is expected to average approximately 290 workers during the period between 2013 and 2016. Initial preparation for PEEC construction may begin in the second half of 2012. Dismantlement of the existing Units 1 through 4 is anticipated to commence in 2012 and Project construction to conclude in the summer of 2016. Peak construction employment for the Project is estimated at approximately 650 workers in mid 2015. The construction workforce trade categories (by percentage) for the Project will be approximately as follows:

Trade Category	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**

FPL will promote employment of local workers by distributing Project information to the community about types of jobs and skills required, and local training opportunities. Notice of Project employment opportunities will appear in local media and FPL will sponsor or participate in area job fairs. Contractors will be solely responsible for hiring the construction workforce.

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

5.7.2 Transportation

Dismantlement activities are anticipated to begin as early as 2012. Peak construction is estimated at approximately 650 workers in mid 2015. The potential impact from construction traffic was based on all construction workers arriving to the construction parking areas by automobile with an occupancy of 1.3 workers per vehicle. This occupancy results in approximately 500 vehicles anticipated during the peak construction period. With 500 inbound during the a.m. peak hour and 500 outbound during the p.m. peak hour period, the total daily traffic volume of approximately 1,000 (workforce) trips per day. FPL or its contractors may desire the use of buses to transport construction workers to the Site from offsite parking areas. Therefore, the peak traffic analysis described in this subsection provides a conservative analysis of potential transportation impacts during construction.

To develop future year (2015) traffic volumes, three separate analyses were undertaken. The first analysis converts the existing a.m. and p.m. peak hour traffic counts collected in the field during the month of October 2011 to average peak season conditions. Based on the Florida Department of Transportation's (FDOT's) Peak Season Factor Category report, an adjustment factor of 1.18 is required to convert traffic counts collected in the fourth week of October 2011 to average peak season conditions (refer to SCA Appendix 10.7.4). The second analysis includes a growth factor to project 2011 peak season traffic volumes to future conditions (year 2015) as shown in Table 5.7.2-1.

The trip distribution and traffic assignment for the Project was based on the existing traffic patterns and examination of the surrounding street system. The morning peak hour is listed below (evening peak hour would be in the opposite direction):

- 25 percent via S.R. 84
    - 20 percent continues east of U.S. 1
    - 5 percent travels north-south along U.S. 1 south of S.R. 84
- 55 percent via I-595
- 15 percent via Griffin Road
    - 15 percent travels north-south along U.S. 1 north of Griffin Road
- 5 percent via U.S. 1 north of S.R. 84

To evaluate the effect of construction workforce on the roadway segments the construction traffic was added to the projected future conditions. This analysis is shown in Table 5.7.2-2. As shown in this table, acceptable levels of services will be maintained through the year 2015. The additional traffic created by the peak construction workforce will not degrade the operating conditions of the roadway network located in the vicinity of the Project.

Based on the above, approximately 80 percent of the construction trips are anticipated to arrive/depart via Eller Drive. To further evaluate this intersection, capacity/level of service analyses were also performed. The analyses were undertaken following the capacity/level of service procedures outlined in the Highway Capacity Manual with results presented in Table 5.7.2-3.

The additional traffic created by the peak construction workforce will not degrade the operating conditions of the roadway system, although, as indicated in Table 5.7.2-3, during the peak construction, level of service deficiencies may be experienced on several movements of the Eller Drive/SE 14th Avenue intersection during the a.m. and p.m. peak hours. A traffic management plan, that may include the use of traffic management specialist (police officers) during peak hours, will be developed to minimize the duration of any level of service deficiencies resulting from construction traffic.

5.7.3 Housing

An average of 290 construction workers during the period 2013 and 2016 will be required during Project construction, with a peak of 650 workers. Many of these workers will be employed for only a portion of the construction period due to the changing skill requirements throughout Project construction.

There is a significant labor pool of construction workers in Palm Beach, Broward, and Miami-Dade Counties, which is estimated at over 55,584 (UF/BEBR, 2011). With only a portion of the construction labor to be specialized and potentially come from areas outside these three counties, only a small percentage of these workers may require temporary local accommodations. Although some of these workers could select permanent housing, generally owner occupied for the duration of their stay, the majority are expected to live in temporary housing (e.g., renting). Still others could elect to reside in transitional housing, such as residential hotels, motels, rooms in private homes, or to bring their own housing in the form of campers and mobile homes. With an abundance of lodging accommodations (approximately 135,799 public lodging units), Broward County (UF/BEBR, 2011)

will be able to accommodate both the general and specialized construction workers during their temporary stay within the area.

5.7.4 Education

Because of the short duration of employment (based on anticipated skill requirements and construction activities), few workers are anticipated to permanently relocate with their families. As a result, there will be little in-migration of school aged children resulting from Project construction. No significant adverse effects on local elementary, middle, or high school enrollment are, therefore, anticipated.

5.7.5 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. There are no residential land uses in the immediate area of the plant. The nearest residential locations that could potentially be impacted by the construction activities are northeast, northwest and west of the Site at distances exceeding 1 kilometer.

Construction will require installation of foundations; erection of major components of the combined cycle unit such as the CTs, HRSGs, and steam turbine generator; and refurbishment of the once-through 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 approximately 70 to 90 dBA (measured at a distance of 50 ft).

The evaluation of noise impacts from Project construction activities was performed using results from a noise propagation computer program (Computer Aided Noise Abatement, CadnaA) to estimate noise source levels. Noise source levels are entered as octave band SPLs. 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 International Organization for Standards, ISO 9613-1, *Attenuation of Sound During Propagation Outdoors – Part 1: Calculation of the Absorption of Sound by the Atmosphere*. 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 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 numbers and types of construction equipment was assumed to calculate construction noise levels. Two types of construction activities were modeled; one during the daytime including weekends when several types of heavy equipment are operated and one during the nighttime including weekends when lighter construction activities occur, such as mechanical and electrical installation that use much less heavy equipment.

Table 5.7.5-1 lists the major categories of equipment that will be used during the construction of PEEC and their associated noise characteristics. A total of 16 daytime and 8 nighttime noise sources were used to predict maximum SPLs from construction at the Site and the construction parking and laydown areas. This included a full array of construction equipment from bulldozers to forklifts that would be used for Site preparation to cranes and welders used to assemble Plant components. For the purpose of the construction noise impact analyses, it is assumed that the equipment will only operate a fraction of the time over the construction period. In order to account for this intermittent equipment operation, usage factors were incorporated into the model for each piece of equipment. These usage factors can be found in the EPA document *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances*, 1971, and are also presented in Table 5.7.5-1. Most of the heavy construction activities are expected to occur during the daytime hours, but some nighttime activities are expected and were included in the modeling results. Most of the heavy construction activities will occur during the first 6 to 8 months after dismantlement of Port Everglades Plant Units 1 through 4.

The noise levels resulting from these combinations of equipment were input as multiple sources into the model. Octave bands were estimated from *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances* (EPA, 1971). Only the atmospheric attenuation option was enabled during the noise modeling runs.

Figure 5.7.5-1 presents the maximum daytime noise levels associated with the construction of the Project. This figure represents the average SPLs with the construction equipment operating in accordance to their usage factors throughout a 12 hour work day. The nighttime noise levels are not show in Figure 5.7.5-1, as nighttime activities are expected to be less than those during the daytime, but they are presented in Figure 5.7.5-2. The results can be considered conservative, in that it is unlikely that all of the equipment would operate in accordance to their usage rate on the same day. The impacts shown in Figure 5.7.5-2 were evaluated along with the L_{50} noise levels observed during the noise monitoring conducted in August 2011 including the period when the Gas Turbine Power Park – Port Everglades was operating. Table 5.7.5-2 presents the existing, modeled, and overall sound levels during construction. The difference between the existing sound level and overall sound level in dBA is also shown in the table.

There are no Florida noise regulations that are applicable for the construction of PEEC. PEEC is located within the City of Hollywood, which has a noise ordinance codified in Chapter 100: Noise, Title IX General Regulations, City of Hollywood Code of Ordinances. While the City of Hollywood noise ordinance does not have quantitative noise limits, there is a limitation on construction, alteration, repair, excavation, or demolition of any building or structure no earlier than 7:00 a.m. and no later than 6:00 p.m., Monday through Friday. Such work is also restricted to no earlier than 8:00 a.m. and no later than 6:00 p.m. on Saturday, and no times on Sunday. The City of Hollywood allows construction work to proceed outside the time limitations with specific approval from the City of Hollywood. The City of Hollywood noise ordinance prohibits unreasonably loud noise as defined in the ordinance.

As described above, nighttime construction activities will occur during the construction of PEEC. Construction activities may also occur on weekends. FPL is seeking approval through the SCA for construction activities outside the City of Hollywood time limitations.

In order to evaluate the noise impacts during construction as unreasonably loud, the overall sound levels from PEEC were compared to the Broward County noise ordinance (Broward County, Code of Ordinances, Part II, Article VII. – Noise, in Chapter 27 – Pollution Control). The overall noise levels included the noise determined from the CadnaA modeling results plus the L_{90} background.

The Broward County noise ordinance limits the maximum allowable sound levels measured at the property boundary with governmental facilities, community service facilities, commercial/business

facilities to 65 dBA as an L_{50} (sound level exceeded 50 percent of the time) and an L_{max} of 75 dBA at all times, day and night. The properties in the vicinity of PEEC are primarily industrial as part of the Port Everglades Development District. While there are no maximum allowable sound level limits for industrial properties, the use of the maximum allowable sound level limits for governmental/ community/commercial/business facilities provide a conservative basis for assessing potential noise impacts in industrial areas. As shown in Figures 5.7.5-1 and 5.7.5-2 and Table 5.7.5-2, the modeled SPLs from PEEC construction activities are not predicted to exceed 65 dBA during the daytime or nighttime. When background sound levels are added to the sound levels determined from the modeling, Table 5.7.5-2 also shows that the overall sound levels are not predicted to exceed 65 dBA for most of the monitoring locations. An exception is the overall afternoon sound levels (background plus modeled) at Monitoring Location 5. The baseline noise level measured at this location exceeded 65 dBA as a result of the operation of the existing units associated with the Gas Turbine Power Park – Port Everglades that were operating at the time of the measurements. These units normally operate only a few hundred hours per year and is not expected to contribute significantly to noise levels during the construction of PEEC.

Several nearby communities, such as the City of Dania Beach located west of the Site and the City of Fort Lauderdale located north and west of the Site, have noise ordinances that include industrial land use. Both cities have a maximum permissible sound level of 75 dBA for a receiving land use classified as industrial.

The results of the evaluation of potential noise impacts from the construction of PEEC determined that the maximum overall sound levels will not result in unreasonably loud noise as prohibited by the City of Hollywood noise ordinance and will be less than the Broward County maximum allowable sound levels for properties that are governmental facilities, community service facilities, or commercial/business facilities. Pursuant to the City of Hollywood's Code of Ordinances, construction equipment for the Project will be operated in accordance with manufacturer's specifications and the equipment will be in good repair and utilize all available noise baffling methods specified by the manufacturer [Code Section 100.06(B)]. The properties in the vicinity of PEEC are primarily industrial as a result of activities associated with the Port Everglades Development District.

The potential use of explosives and the resulting noise will cause elevated noise levels for a very short duration (several seconds). Such activities will be performed in accordance with all applicable

regulations. Nearby residences and business will receive appropriate prior notice of such activities. During the initial startup of the Project, steam blows will be conducted to clean piping. Steam blows used during construction to clean out new piping and equipment will result in elevated noise levels for short durations (i.e., minutes) over several weeks, including nighttime events. Prior to these events, notification will be made to those locations that may be able to notice elevated noise levels.

5.8 Impact on Landmarks and Sensitive Areas

As discussed in Subsection 3.2.5 (Regional, Scenic, Cultural, and Natural Landmarks), Subsection 3.2.8.1 (Education), and Subsection 3.2.8.6 (Recreational Facilities), there exists within 5 miles of the Site:

- Two State Parks (Hugh Taylor Birch State Park and John U. Lloyd Beach State Park)
- Two areas containing Critical Habitat (Staghorn coral and Elkhorn coral)
- Four areas designated as Outstanding Florida Waters (Hugh Taylor Birch State Park, John U. Lloyd Beach State Park, Hollywood North Beach Park, and West Lake Park)
- Ten Broward County Regional and Neighborhood Parks (Roosevelt Gardens Park, Franklin Park, Reverend Samuel Delevoe Park, Sunview Park, Secret Woods Nature Center, Boaters Park, Topeekeegee Yugnee Park, West Lake Park, Anne Kolb Nature Center, and Hollywood North Beach Park)
- 48 Public Schools and 26 Private Schools

Project construction activities will be contained within the existing Site and will meet all regulatory requirements for the activities and associated equipment. Construction activities will not result in changes to the accessibility or use of these facilities and construction traffic patterns will be kept to major thoroughfares and away from residential streets.

Emissions of fugitive PM resulting from dismantlement of the existing Plant, site preparation, and construction of PEEC will be mitigated through BMPs. Construction noise is anticipated to be at or near existing noise levels. Visual impacts will be minor since the construction equipment such as cranes will be lower in height and less visible than the existing Units 1 through 4. Temporary cranes may be visible offsite from some vantage points. No use related impacts are anticipated from Project construction at any other public recreational facilities since these areas are a considerable distance from the Site.

FPL will provide communication and coordination with regulatory agencies, neighborhood associations, and the general public to distribute information on the Project and the construction activities.

5.9 Impact on Archaeological and Historic Sites

A desktop cultural resource survey was conducted by Archaeological and Historical Conservancy, Inc. in September 2011 of the Port Everglades Plant property and an area that extends approximately 1 mile from the Site. The survey included a review of relevant archives and literature that contained cultural resource reports for locations in coastal Broward County, a review of information from the FMSF, a site reconnaissance visit, examination of USGS maps (specifically for Port Everglades and Fort Lauderdale South Quadrangles), and the collection and review of aerial photographs (color and black/white). The survey determined that there are no previously recorded archaeological sites or historic standing structures within the Port Everglades Plant property and there is a low probability for archaeological sites and features.

If historical or archaeological artifacts are discovered during construction, the appropriate agencies will be notified and proper procedures will be followed.

5.10 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 adverse influences on the environment or ecological systems of the Site or adjacent areas.

5.11 Benefits from 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 290 workers during most of the construction period (between 2013 and 2016) with approximately 650 workers during peak construction in mid 2015. 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. Chapter 7.0 provides more detail on the social and economic benefits of the Project. As discussed in Chapter 7.0, the economic benefits of the Project include:

- $1.1 billion total capital costs,
- $100 million direct project labor,
- Projected economic benefit of $858 million during the construction period including direct, indirect and induced benefits,
- Projected benefit of 7,105 direct and indirect jobs during the construction period,
- Annual operational payroll of approximately $5.2 million and fixed operational costs of $4.8 million (in 2016),
- Property tax revenue of $372 million from 2017 to 2046 consisting of:
  - $114 million to the City of Hollywood,
  - $126 million to Broward County,
  - $122 million to the school district, and
  - $10 million to other taxing authorities,
- Projected operational benefit of $810 million from 2017 through 2046,
- Approximately 90 percent reduction in air emission rates, and
- Reduction in CO2 emissions in FPL's system of 22 million tons from 2016 to 2047.

TABLE 5.1.1-1

POTENTIAL DISMANTLEMENT MATERIAL AND DISPOSAL OPTIONS

Potential Material	Potential Media and Location	Management Options
Asbestos	Buildings, tiles, cables and lines.	Asbestos will be abated consistent with the State's rules and by a licensed contractor in accordance with 469.003, F.S.
Lead Paint	Buildings, tanks, handrails and miscellaneous structures.	Paint chips will be cut and drummed for characterization, if necessary, and proper disposal.
Tanks/Structure and Washwater	Tanks and structures on site that require washing prior to dismantling.	Decontaminated tanks cut for recycling and salvaged or disposed of as solid waste Washwater characterized and disposed by an approved contractor.
Special Materials with Polychlorinated Biphenyls (PCBs)	PCB-containing ballasts, transformers, electrical equipment, caulk, concrete joints, cable insulation, flow meters, etc.	Characterized and disposed of in accordance with state/federal requirements.
Soil and Other Contaminated Media	No current knowledge of contamination.	Soil excavation will be conducted in accordance with FPL's spill response procedures and FDEP Bureau of Waste Cleanup requirements.
Ash, Concrete, Scrap Metal	Buildings, structures, etc.	Material will be recycled or disposed of in an approved landfill as appropriate.
Hazardous / Universal Wastes and Hazardous Materials	Multiple types of unused or spent media including batteries, lamps, thermostats and pesticides.	Recycled or reused, or stored and managed in accordance with FPL's waste management procedures and applicable regulations.

TABLE 5.5.1-1
ESTIMATED AIR EMISSIONS DURING SITE PREPARATION AND CONSTRUCTION OF PROJECT

Construction Activity	Type Operation	Amount	Units	Pollutant	Emissions	Units	Controls
Demolition/Site Preparation							
Soil and Fill Placement	Batch Drop	80,000	tons	PM_{10}	0.03	tons	High moisture material
Soil and Fill Movements	Unpaved Roads	583	VMT	PM_{10}	0.13	tons	Watering as necessary
Grading	Unpaved Roads	1,461	VMT	PM_{10}	0.14	tons	Chemical dust suppressant
Equipment Emissions	Diesel Engines	23,316	gallons	PM_{10}	0.07	tons	EPA Non-Road Tier 3
				NO_x	1.31	tons	EPA Non-Road Tier 3
				SO_2	< 0.01	tons	EPA Non-Road Tier 3
				CO	1.26	tons	EPA Non-Road Tier 3
				VOC	0.15	tons	EPA Non-Road Tier 3
Open Areas	Wind Erosion	12	acres	PM_{10}	1.04	TPY	Watering as necessary
Construction Worker On-site Traffic	Paved Roads	77,980	VMT/yr	PM_{10}	2.03	TPY	Watering/Sweeping as necessary
Facilities Construction	Diesel Engines	87,360	gal/yr	PM_{10}	0.21	TPY	EPA Non-Road Tier 3
				NO_x	4.30	TPY	EPA Non-Road Tier 3
				SO_2	0.01	TPY	EPA Non-Road Tier 3
				CO	3.62	TPY	EPA Non-Road Tier 3
				VOC	0.41	TPY	EPA Non-Road Tier 3
Construction Boilers	Construction steam (2 boilers, 1,500 hours)	150	MMBtu/hr	PM_{10}	3.3	tons	Good combustion practices
				NO_x	30.9	tons	Good combustion practices
				SO_2	0.4	tons	Good combustion practices
				CO	18.5	tons	Good combustion practices
				VOC	1.2	tons	Good combustion practices

Note: VMT = vehicle miles traveled; acres based on open areas at any one time.
The following EPA emission factors were used to estimate emissions.
EPA, 1992 Fugitive Dust Background and Technical Information Document for Best Available Control Measures; Section 2.3.1.3.3, Wind Emissions from Continuously Active Piles.
EPA, 2006a; AP-42, Section 13.2.1 Paved Roads.
EPA, 2006b; AP-42, Section 13.2.2 Unpaved Roads.
EPA, 2006c; AP-42, Section 13.2.4 for Aggregate Handling and Storage Piles.
EPA, 2006d; AP-42, Section 13.2.5 Industrial Wind Erosion.
EPA, 2008; 40 CFR Part 89 Control of Emissions of New and In-use Compression Engines.

TABLE 5.7.2-1
PORT EVERGLADES ENERGY CENTER
FUTURE TRAFFIC CONDITIONS

Roadway	From	To	Number of Lanes	2015 Projected AADT	Level of Service* Projected
Griffin Road	I-95	U.S. 1	6	34,180	C
S.R. 84	I-95	SW 9th Ave	8	58,449	D
	SW 9th Ave	U.S. 1	6	47,308	D
I-595	I-95	U.S. 1	8	122,417	D
I-595/Eller Drive	U.S. 1	SW 14th Ave	4	29,548	B
U.S. 1/Federal Highway	Griffin Road	I-595/Eller Drive	6	53,519	C
	I-595/Eller Drive	S.R. 84	6	43,835	B

Source: Broward County Metropolitan Planning Organization, 2011

Note: AADT= annual average daily traffic

*Level of Service (LOS) Descriptions (FDOT)

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.

TABLE 5.7.2-2
PORT EVERGLADES ENERGY CENTER
FUTURE TRAFFIC CONDITIONS WITH CONSTRUCTION TRIPS

Roadway	From	To	Number of Lanes	2015 Projected with Construction Trips AADT	Level of Service* Projected
Griffin Road	I-95	U.S. 1	6	34,330	C
S.R. 84	I-95	SW 9th Ave	8	58,699	D
	SW 9th Ave	U.S. 1	6	47,558	D
I-595	I-95	U.S. 1	8	122,967	D
I-595/Eller Drive	U.S. 1	SW 14th Ave	4	30,348	B
U.S. 1/Federal Highway	Griffin Road	I-595/Eller Drive	6	53,669	C
	I-595/Eller Drive	S.R. 84	6	43,885	B

Source: Broward County Metropolitan Planning Organization, 2011

Note: AADT= annual average daily traffic

*Level of Service (LOS) Descriptions (FDOT)

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.

TABLE 5.7.2-3
INTERSECTION LEVEL OF SERVICE* – STOP CONTROL INTERSECTION

Intersection/Movement	2011 Existing	Future Traffic Condition	
		Year 2015 without Project	Year 2015 with Project
Eller Drive/SE 14th Ave.			
EB Left Turn	A (B)	A (B)	B (B)
SB Left Turn	C (C)	C (D)	F (D)
SB Right Turn	B (C)	B (E)	B (F)

Source: Highway Capacity Manual

Notes: a.m. peak hours (p.m. peak hours)
EB- eastbound; SB- southbound

*Level of Service (LOS) Descriptions (Florida Department of Transportation)

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.

TABLE 5.7.5-1
SUMMARY OF NOISE SOURCE DATA USED TO PREDICT SOUND PRESSURE DURING THE CONSTRUCTION OF PEEC

Sources	Source Height (m)	Sound Power Level (dB) for Octave Band Center Frequency (Hz)									Overall Sound Power Level (dBA)	Equipment Usage Factor[a]
		31.5	63	125	250	500	1000	2000	4000	8000		
Onsite												
Bulldozer 1	2	0	106.6	103.6	101.6	102.6	99.6	96.6	94.6	96.6	105.3	0.4
Bulldozer 2	2	0	106.6	103.6	101.6	102.6	99.6	96.6	94.6	96.6	105.3	0.4
Crane 1[b]	2	0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	115.6	0.16
Crane 2	2	0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	115.6	0.16
Crane 3	2	0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	115.6	0.16
Crane 4	2	0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	115.6	0.16
Front End Loader 1[b]	2	0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	115.6	0.4
Front End Loader 2	2	0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	115.6	0.4
Front End Loader 3	2	0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	115.6	0.4
Front End Loader 4	2	0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	115.6	0.4
Welder 1[b]	2	0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6	0.16
Welder 2[b]	2	0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6	0.16
Welder 3[b]	2	0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6	0.16
Welder 4[b]	2	0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6	0.16
Welder 5[b]	2	0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6	0.16
Welder 6[b]	2	0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6	0.16

[a] Equipment Usage Factor is based on *Noise From Construction Equipment and Operations, Building Equipment, and Home Appliances,* Appendix A.

[b] Equipment modeled both during the daytime and nighttime.

TABLE 5.7.5-2

EXISTING BACKGROUND, MODELED, AND OVERALL SOUND PRESSURE LEVELS FOR THE CONSTRUCTION OF PEEC

Monitoring Location	Time	Sound Levels (dBA)		
		Existing [a]	Modeled	Overall [b]
1: Southeast corner fence line near tankyard	Afternoon	52.2	55.5	57.2
	Night	45.7	50.5	51.7
	Morning	50.7	55.5	56.7
2: Northern gate of eastern tankyard off of Eisenhower Blvd	Afternoon	52.0	54.4	56.4
	Night	48.7	50.0	52.4
	Morning	50.3	54.4	55.8
3: Southwest of discharge canal	Afternoon	58.1	58.7	61.4
	Night	44.0	53.3	53.8
	Morning	56.4	58.7	60.7
4: Southwestern corner near gate	Afternoon	57.4	56.6	60.0
	Night	47.9	52.1	53.5
	Morning	54.6	56.6	58.7
5: Western fence line just north of paved parking lot	Afternoon	67.9	64.7	69.6
	Night	50.3	59.0	59.5
	Morning	53.2	64.7	65.0
6: Northwest fence line corner	Afternoon	73.2	59.1	73.4
	Night	62.4	55.0	63.1
	Morning	62.8	59.1	64.3
7: Northern fence line, south of tankyard access gate	Afternoon	56.8	59.5	61.4
	Night	51.5	56.5	57.7
	Morning	58.9	59.5	62.2
8: Inside fence line, west of main gate and guard shack	Afternoon	56.8	63.6	64.4
	Night	54.0	59.3	60.4
	Morning	53.9	63.6	64.0

[a] L_{90} sound levels collected on August 1 and 2, 2011

[b] Modeled results logarithmically added to the existing baseline measurements.

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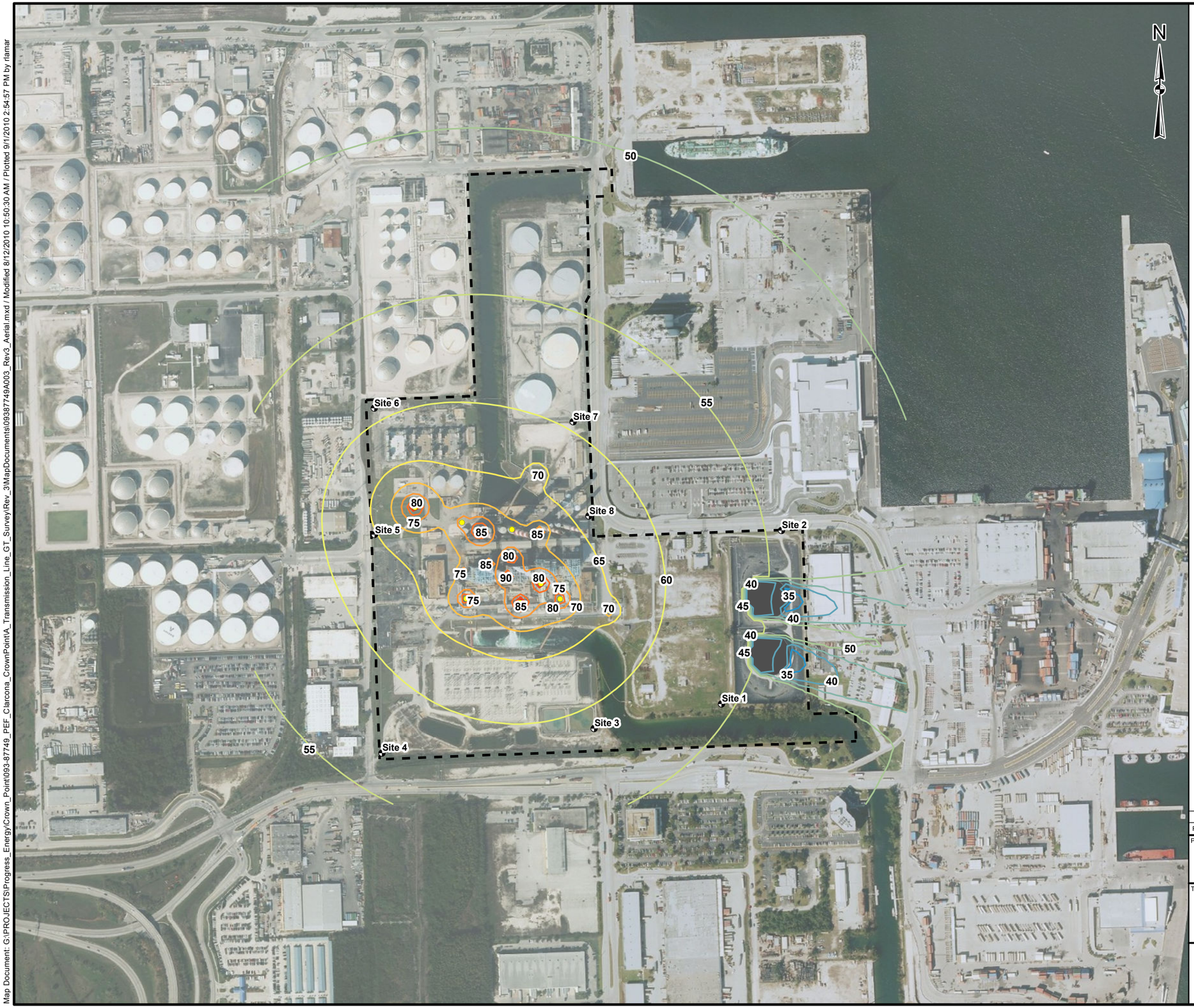


LEGEND

- PEEC Property Boundary
- Noise Monitoring Locations
- Source Locations

Noise Impact Contours

- 35 dB
- 40 dB
- 45 dB
- 50 dB
- 55 dB
- 60 dB
- 65 dB
- 70 dB
- 75 dB
- 80 dB
- 85 dB
- 90 dB

REFERENCES

1. Port Everglades Energy Center Property Boundary, FPL, 2011
2. Noise Monitoring Locations, Noise Impact Contours, Source Locations, Golder Associates Inc., 2011
3. Aerial Image courtesy of Microsoft Bing Service OpenGIS Map Server, Accessed October 2011

500 250 0 Feet

Rev.	Date	Des.	Revision Description	xxx	xxx	xxx

PROJECT

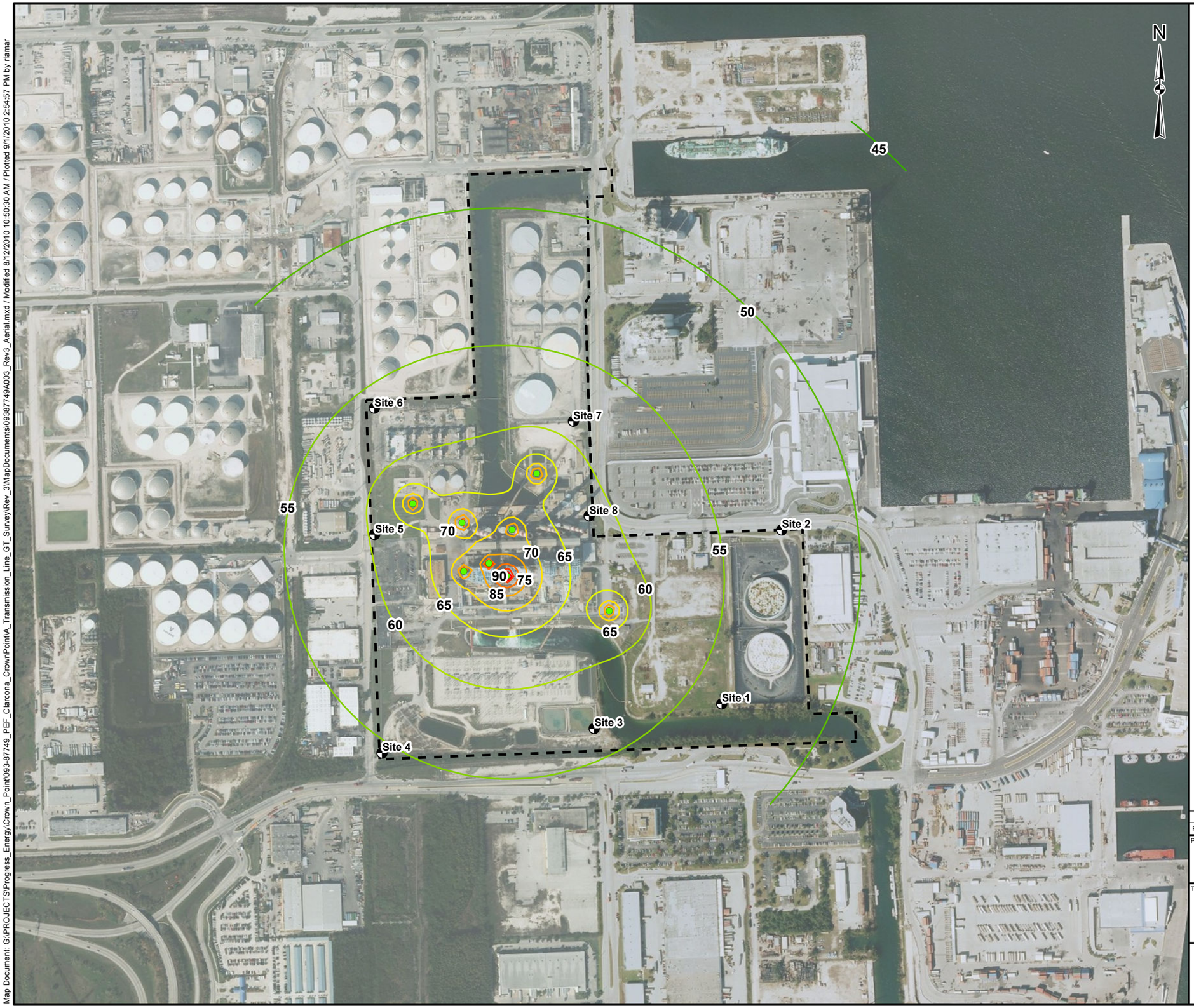
FPL
PORT EVERGLADES ENERGY CENTER

TITLE

CONSTRUCTION NOISE IMPACT CONTOURS DAY

PROJECT No.		113-87618	FILE No.		113-87618A023
DESIGN	DAB	10/18/2011	SCALE: AS SHOWN	REV.	0
GIS	NRL	11/7/2011	FIGURE 5.7.5-1		
CHECK					
REVIEW					

Map Document: G:\PROJECTS\Progress_Energy\Crown_Point\093-87749_PEF_Clarcona_CrownPoint\A_Transmission_Line_GT_Survey\Rev_3\MapDocuments\09387749A003_Rev3_Aerial.mxd / Modified 8/12/2010 10:50:30 AM / Plotted 9/1/2010 2:54:57 PM by rlamar



LEGEND

- Noise Monitoring Locations
- PEEC Property Boundary
- Source Locations

Noise Impact Contours

- 45 dB
- 50 dB
- 55 dB
- 60 dB
- 65 dB
- 70 dB
- 75 dB
- 80 dB
- 85 dB
- 90 dB

REFERENCES

1. Port Everglades Energy Center Property Boundary, FPL, 2011
2. Noise Monitoring Locations, Noise Impact Contours, Source Locations, Golder Associates Inc., 2011
3. Aerial Image courtesy of Microsoft Bing Service OpenGIS Map Server, Accessed October 2011

500 250 0
Feet

Rev.	Date	Des.	Revision Description	xxx	xxx	xxx

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

CONSTRUCTION NOISE IMPACT CONTOURS NIGHT

PROJECT No.	113-87618		FILE No.	113-87618A024	
DESIGN	DAB	10/18/2011	SCALE: AS SHOWN	REV.	0
GIS	NRL	11/7/2011			
CHECK					
REVIEW					

FPL

FIGURE 5.7.5-2

6.0 EFFECTS OF PLANT OPERATION

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

6.1 Effects of the Operation of the Heat Dissipation System

6.1.1 Temperature Effect on Receiving Body of Water

PEEC's once-through cooling system will use the existing infrastructure of the Port Everglades Plant Unit 3 and 4 intake and discharge structures.

The condenser heat rejection rate for PEEC will be approximately half that of the existing Port Everglades Plant Units 1 through 4. The full load discharge heat rejection rate for the existing Port Everglades Plant Units 1 through 4 is approximately 6.08 billion Btu/hr and the full load discharge heat rejection rate for PEEC will be approximately 2.98 billion Btu/hr. While the total discharge flow rate for the existing Units 1 through 4 is approximately 899,600 gpm, the total discharge flow rate for PEEC will be approximately 441,275 gpm. Therefore, the discharge heat rejection rate and the discharge flow rate will be approximately half that of the existing Units 1 through 4. The full load overall design temperature rise across the condenser will remain approximately the same.

The lower heat rejection rate of the PEEC facility creates an opportunity for engineering design options. One option is to reduce the flow rate while maintaining the temperature rise across the condensers. A second option is to reduce the temperature rise across the condensers while maintaining a higher flow rate. A third option is some combination of the first two. Based on environmental considerations, FPL selected the first option. The reasons are discussed further below.

The existing Port Everglades Plant has operated at this location for over 45 years using a once-through cooling system. As discussed in Section 3.3.4.1, previous biological assessments have found no adverse impact of the existing thermal plume on fish, shellfish, or plankton from operation of the Units 1 through 4 (ABI, 1987); and the studies found no adverse impact to benthos outside the discharge canal. Within the discharge canal the impacts were seasonal and temporary.

Where the discharge canal enters the ICW, the water is relatively deep and the channel is maintained by dredging. The shoreline is protected with bulkheads and armoring. Consequently, there is no significant submerged aquatic vegetation or wetlands along the western shoreline of the ICW, where

the heated water enters the ICW. Also, this area does not provide spawning sites, food production, nursery areas, or migratory pathways.

Previous thermal plume modeling showed that the heated water, as it enters the ICW, stratifies and remains at the surface. This reduces potential impacts to benthic communities and provides passage for fish and other aquatic organisms. Furthermore, when PEEC is operational, the size of the thermal plume in the ICW will be significantly reduced because the heat load to the aquatic environment will be approximately half that of the existing Port Everglades Plant Units 1 through 4.

Another important environmental benefit of the first option is that it minimizes the potential impacts of impingement and entrainment at the intakes. EPA has concluded, everything else equal, that impingement and entrainment mortality rates are proportional to the rate of withdrawal [FR Vol. 69, No.131/Friday, July 9, 2004, page 41612]. As part of PEEC, FPL will install state-of-the-art traveling screens with an aquatic organism return system in the existing Unit 3 and 4 intake structures to minimize impingement mortality. Reducing the intake flow rate by half will further reduce impingement and entrainment mortality of fish and shellfish by approximately 50 percent.

The state of the art traveling screens will incorporate protective measures including modified Ristroph-type screens with collection buckets (or equivalent) designed to minimize turbulence to aquatic organisms, and a guard rail or barrier to prevent loss of aquatic organisms from the collection bucket. The screen panels will use smooth woven mesh (or equivalent) to prevent abrasion of the aquatic organisms. The screen wash will use a dual spray system (or equivalent) with a low pressure wash to remove organisms prior to a high pressure wash to remove trash. The aquatic organism return system will return the organisms to the source water in a manner that does not promote predation or re-impingement. The routes for the aquatic organism return system are discussed in Section 3.2.4.

The cooling-water intake structure withdraws water from the head of Port Slip No. 3, which is connected to the Port Everglades Turning Basin. The slip is dredged to approximately 38 ft and has bulkheads along three sides. There is no submerged aquatic vegetation or emergent wetland habitat in the Port Everglades Turning Basin or the Slip. These areas do not provide spawning sites, food production, nursery areas, or migratory pathways. Therefore, the intake location should minimize potential for impingement and entrainment.

The Clean Water Act (CWA) Section 316 related studies, including the thermal modeling report (Envirosphere, c. 1975), the biological impact assessments of the existing thermal plume (ABI, 1987), and the Port Everglades Impingement Mortality and Entrainment Characterization Study (ENSR, 2008), are provided in SCA Appendix 10.2.1.

As described in Subsection 4.5.1, atypical steam turbine bypass operation during periods startup and shutdown, steam turbine shutdowns, or other atypical/emergency operating conditions, where steam is being produced in the heat recovery steam generators and discharged directly into the condenser without passing through the steam turbine, is referred to as "Bypass Operation". During the majority of the operating scenarios while in Bypass Operation, the amount of thermal energy delivered to the condenser does not exceed the design full load thermal discharge.

The Port Everglades Plant thermal discharge existed on July 1, 1972, and thus is subject to the thermal surface water criteria established by FDEP Rule 62-302.520(1), F.A.C. Modernization of the existing Port Everglades Plant Units 1 through 4 will decrease the thermal loading to the aquatic environment compared to the thermal loading from the existing Units 1 through 4. In fact, it will reduce the thermal loading to the aquatic environment by approximately 50 percent. Consequently, the narrative thermal surface water criteria for existing power plants will remain applicable to the once-through cooling discharge from PEEC.

6.1.2 Effects on Aquatic Life

No significant adverse effects on aquatic life from the PEEC thermal discharge are expected for the following reasons:

1. The existing Port Everglades Plant has operated at this location for over 45 years using a once-through cooling system. The cooling system for PEEC will utilize the existing intake and discharge canals and structures, and the flow rate through the system will not increase over the existing rates.
2. Previous biological assessments have found no adverse impact of the existing thermal plume on fish, shellfish, or plankton from operation of the Units 1 through 4 (ABI, 1987); and the studies found no adverse impact to benthos outside the discharge canal. Within the discharge canal the impacts were seasonal and temporary.
3. There is no sensitive aquatic habitat such as submerged aquatic vegetation or wetlands along the western shoreline of the ICW, where the heated water enters the ICW. Nor is there sensitive habitat at the intake location.
4. The maximum temperature rise across the condensers for the PEEC facility will be approximately the same as the existing Units 1 through 4.

5. When PEEC is operational, the total heat load to the aquatic environment will be approximately half that of the existing Units 1 through 4. Therefore, the size of the thermal plume in the ICW will be significantly reduced.

In fact, as discussed in Section 6.1.1, the flow reduction and the reduced heat load will reduce effects to the aquatic environment and the addition of an aquatic organism return will further reduce aquatic potential effects due to impingement.

The cooling water discharge canal lies within an area designated by Broward County as essential habitat for the Florida manatee. Manatees are known to use the area around the existing Port Everglades Plant as a thermal refuge. PEEC will continue to provide a thermal refuge for manatees as FPL will continue to endeavor to release heated water to the discharge canal when the ambient water temperature falls below the threshold identified in the Plant's Manatee Protection Plan.

Over the course of operation of PEEC the seawalls in the intake and discharge canals may require repair. This repair is exempt from state Environmental Resource Permit (ERP) requirements pursuant to FDEP Rule 62-312.050(1)(j), F.A.C., which allows for seawall restoration in upland areas or within 1 ft waterward of its previous location.

Maintenance dredging of the intake and discharge canals, and other required maintenance or repair of the intake and discharge structures will continue during operation of PEEC.

6.1.3 Biological Effects of Modified Circulation

Because the cooling water flow for PEEC will be withdrawn from the same location (i.e., Port Slip No. 3) and the cooling water discharge will be via the existing discharge canal, the circulation patterns will not change. However, the flow for PEEC will be reduced with lower intake and discharge volumes. The circulation induced by the once-through cooling system likely has a small but beneficial effect on water quality in the Port. The intake withdraws water from the back of Port Slip No. 3, which helps to move ocean water from the ICW near the tidal inlet through the Port Turning Basin. PEEC is expected to be operational year round with no seasonal effects.

6.1.4 Effects of Off-stream Cooling

There will be no effects of off-stream cooling with PEEC because off-stream cooling will not be used.

6.1.5 Measurement Program

The existing measurement program associated with the Port Everglades Plant's IWW Permit (see Appendix 10.6) will continue to be adequate for measuring the physical and chemical parameters of waters that may be affected by operation of PEEC.

6.2 Effects of Chemical and Biocide Discharges

6.2.1 Industrial Wastewater Discharges

PEEC will discharge four wastewater streams in addition to the once-through cooling water as described in Section 4.6 under the requirements of the IWW Permit:

- Continuous: An estimated 1,600 gpm average (1,600 gpm peak) of screen wash and aquatic organism return water. After the trash is removed the wash water will be returned to the intake canal or returned to the source water with the organisms.
- Intermittent: An estimated 48 gpm average (53 gpm peak) of HRSG blowdown and evaporative cooler blowdown, which is relatively pure water.
- Intermittent: An estimated average of 54 gpm (208 gpm peak) of RO reject/demineralizer regeneration water which will have a relatively high TDS content compared to the source water.
- Intermittent: An estimated average of 25 gpm of wash water and plant/equipment drain discharge wastewater.

The intermittent wastewater streams, which have a combined peak discharge of 286 gpm and average discharge of 127 gpm, will be mixed with the once-through cooling water discharge, resulting in a significant dilution ranging from approximately 1,500-to-1 up to 3,400-to-1. As described in Section 4.6, the HRSG and evaporative cooler blowdown will be reused to the greatest extent practicable, which will result in even greater dilution ratios. The constituents in these wastewaters are basically concentrated dissolved solids from the potable water source, and the discharge is to a high TDS estuarine environment. At these dilution rates, these small flows will have no adverse effect on the ICW, and therefore, it is FPL's position that the antidegradation considerations specified in Section 403.088(2)(b), F.S., are not applicable to the PEEC project.

6.2.2 Cooling Tower Blowdown

PEEC will not have cooling towers. Therefore, there will not be any cooling tower blowdown.

6.2.3 Measurement Programs

Because the characteristics of the IWW discharges will be essentially the same for PEEC, the measurement program associated with the IWW Permit (see SCA Appendix 10.2.2) will be adequate for measuring the physical and chemical parameters of waters that may be affected by operation of PEEC. FPL proposes to conduct the measurement programs required under the IWW Permit with the exception of groundwater monitoring requirements, which will no longer be necessary because of the elimination of the existing sources.

6.3 Impacts on Water Supplies

6.3.1 Surface Water

Marine surface water from the ICW will continue to provide cooling water for PEEC, as it is used today for the existing Port Everglades Plant Unist 1 through 4. Operation of PEEC will not cause any significant changes in hydrologic or water quality conditions due to diversion, interception, or additions to surface water flow compared to those from the existing Port Everglades Units 1 through 4. Therefore, PEEC will have no adverse impact to surface water.

6.3.2 Groundwater

PEEC will not use groundwater for any purpose. As part of the Project, the onsite sources of discharges to groundwater will be eliminated. Therefore, PEEC will have no adverse impact to groundwater.

6.3.3 Drinking Water

PEEC will continue to use municipal potable water from the City of Fort Lauderdale to provide drinking water for employees, process water makeup and for irrigation, as does the existing Port Everglades Plant. Because the PEEC wastewater discharges will be to only the ICW and the sanitary sewer system, there will be no impact to drinking water sources from the Project.

6.3.4 Leachate and Runoff

Operation of the PEEC will not generate leachate and the stormwater management system has been designed to prevent direct discharge to surface waters. Therefore, there will be no adverse impact to water supplies due to runoff or leachate from PEEC.

6.3.5 Measurement Programs

No additional monitoring or measurement programs are proposed.

6.4 Solid/Hazardous Waste Disposal Impacts

As discussed in Section 4.7, the potential solid and hazardous waste associated with the operation of PEEC will be handled according to the waste handling guidelines presented in Table 4.7.0-1.

6.4.1 Solid Waste

The operation of PEEC will generate only minor amounts of solid wastes (e.g., used turbine inlet filters, operations and maintenance wastes, MSW, and water pretreatment solids). As explained in Section 4.7, all solid wastes generated during operation of PEEC will be disposed of in appropriately licensed offsite landfills or by other approved methods. There will be no adverse impacts resulting from solid waste generated by PEEC.

6.4.2 Hazardous Waste

The handling of any hazardous wastes resulting from the operation of PEEC is described in Section 4.7. FPL will contract with an approved and licensed disposal company to transport and dispose of small quantities of hazardous waste at licensed facilities in a manner that complies with all federal, state, and local environmental regulations. The existing FPL Port Everglades Plant is a Conditionally Exempt Small Quantity Generator (CESQG) of hazardous waste, and this is not expected to change with the operation of PEEC. There will be no adverse impacts resulting from hazardous wastes generated by PEEC.

6.5 Sanitary and Other Waste Discharges

Sanitary wastes from operation of PEEC will be routed using the existing connection to the City of Fort Lauderdale wastewater system for treatment and disposal. Quantities will remain approximately the same as they historically have been for the existing Port Everglades Plant. There will be no adverse impacts from sanitary wastes generated by PEEC.

6.6 Air Quality Impacts

PEEC will reduce emissions of air pollutants that have AAQS by approximately 14,000 TPY compared to existing Units 1 through 4 operations, or an emission reduction of approximately 90 percent. In addition, the use of the cleanest fuels (natural gas and ULSD oil will result in no visible plume during normal operations.

As shown in Table 6.6.0-1, the maximum total air quality impacts for PEEC and the existing Units 1 through 4 are predicted to be below and in compliance with the AAQS. The AAQS are standards that protect the public health, including the health of sensitive populations such as asthmatics, children and the elderly. Total air quality impacts include the maximum impacts predicted for PEEC, added to appropriate background concentrations. Background concentrations are based on the maximum measured concentration from representative air quality data in the vicinity of the Site. As shown in Table 6.6.0-1, the maximum predicted impact of PEEC without background concentrations is well below the AAQS. The total air quality concentrations predicted for PEEC and Units 1 through 4 are very conservative estimates since the maximum predicted impacts from the modeling analyses do not occur at the same locations or periods as the background concentrations that are based on measurements. For SO_2, the predicted maximum impacts for PEEC alone will be less than 5 percent of the AAQS and, with background concentrations, the total predicted maximum impacts are less than 60 percent of the AAQS. The maximum total air quality impacts are primarily due to background concentrations, particularly for the 1 hour average impacts. In fact, for SO_2, PPEC maximum impacts are over 60 times lower than those for the existing Units 1 through 4.

For PM_{10}, the predicted maximum impacts for PEEC alone will be less than 5 of the AAQS and, with background concentrations, less than 40 percent of the AAQS. Similar to SO_2, the maximum total air quality impacts are primarily due to background concentrations.

For nitrogen dioxide (NO_2) and CO, the predicted maximum total air quality impacts are also primarily due to background concentrations. For PEEC alone, the predicted maximum NO_2 and CO impacts are approximately 16 and 1 percent, respectively, of the AAQS. The predicted maximum total NO_2 and CO impacts for PEEC, with background concentrations, are approximately 65 and 23 percent of the AAQS.

The following sections present a summary of the air quality modeling methodology for the air quality impact analyses for the Project. Detailed information is contained in Appendix 10.2.5, Air Construction Permit Application.

6.6.1 Impact Assessment

6.6.1.1 Regulatory Applicability

PSD review is only applicable to PEEC due to the net change in GHG emissions; the net changes in emissions of other regulated pollutants do not exceed the PSD significant emission rates (see Tables

4.4.1-3A to 4.4.1-3B) and, therefore, do not trigger PSD review for those pollutants. Consequently, an air quality impact analysis is not required under FDEP air regulations. Nonetheless, air quality impacts were estimated for the existing Units 1 through 4 and PEEC in the vicinity of the Site for comparison with the AAQS.

6.6.1.2 Analysis Approach and Assumptions

General Modeling Approach

The AAQS analysis performed for the Project is a source impact analysis that evaluates whether the predicted concentrations from air emission sources will comply with the AAQS. These concentrations include the modeled impacts from sources at the Site added to a background concentration. The background concentration accounts for sources not included in the modeling analysis. The general air modeling approach for estimating air quality impacts for this Project followed EPA and FDEP modeling guidelines.

Air Quality Models

The selection of air quality models to calculate air quality impacts for the existing Units 1 through 4 and PEEC must be based on the models' ability to simulate impacts in the vicinity of the Site. The American Meteorological Society and EPA Regulatory Model (AERMOD) dispersion model was used to evaluate the pollutant impacts due to the proposed sources at PEEC. AERMOD (Version 11353) is available on the EPA's Internet website, Support Center for Regulatory Air Models (SCRAM), within the Technology Transfer Network (TTN).

EPA and FDEP recommend that AERMOD be used to predict pollutant concentrations at receptors located within 50 km from a source. AERMOD calculates hourly concentrations based on hourly meteorological data. AERMOD is applicable for the type of Project sources and area in which the Project is located since AERMOD is recognized as containing the latest scientific algorithms for simulating plume behavior in all types of terrain.

AERMOD was used to predict the maximum pollutant concentrations due to the existing Units 1 through 4 and PEEC in nearby areas surrounding the Site.

Meteorological Data

Meteorological data used in AERMOD to determine air quality impacts consisted of a concurrent 5-year period of hourly surface weather observations and upper air sounding data collected from the National Weather Service (NWS) stations located at the Fort Lauderdale-Hollywood International

Airport and Florida International University (FIU) in Miami, respectively. The 5-year period of the meteorological data was from 2006 through 2010 and was prepared by the FDEP. The NWS office at the airport is located approximately 2.5 km (1.2 miles) southwest of the Site. The areas between the airport and PEEC are totally flat with similar land characteristics. As such, the meteorological parameters collected at the airport are considered to be representative of those that exist at the Site.

Emission Inventory

Existing Units 1 through 4 – The emissions and stack parameters for the existing Units 1 through 4 at the Port Everglades Power Plant are presented in Appendix 10.2.5. Units 1 through 4 will be retired before PEEC begins operation.

The short term emission rates were based on the maximum rate allowed by the permit for each unit (Permit No. 0110036-009-AV, February 2010), EPA AP-42 emission factors for combustion of fuel oil, or, in the case of SO_2, the maximum historical sulfur content of 1 percent used over the last 5 years [equivalent to approximately 1.1 lb/MMBtu (HHV)].

PEEC Sources – Summaries of the criteria pollutant emission rates, physical stack and stack operating parameters for PEEC that were used in the air modeling analysis are presented in Tables 4.4.1-1A to 4.4.1-2A for the MPS "J" CTs for natural gas firing and fuel oil firing, respectively. Similarly, summaries are presented in Tables 4.4.1-1-B to 4.4.1-2-B for the Siemens "H" CTs for natural gas firing and fuel oil firing, respectively.

The maximum air quality impacts for PEEC were predicted for a range of possible operating conditions. The emission and stack operating parameters are presented for three operating loads and 35°F, 75°F, and 95°F ambient temperatures for the CTs firing both natural gas and oil.

A total of 18 modeling scenarios were considered for the MPS "J" CTs operating in the following conditions:

- For natural gas firing and oil firing, ambient temperatures of 35°F, 75°F, and 95°F at:
  - 100 percent operating load
  - 75 percent operating load
  - 50 percent operating load

A total of 18 modeling scenarios were also considered for the Siemens "H" CTs operating in the following conditions:

- For natural gas firing, ambient temperatures of 35°F, 75°F, and 95°F at:
  - 100 percent operating load
  - 80 percent operating load
  - 60 percent operating load
- For fuel oil firing, ambient temperatures of 35°F, 75°F, and 95°F at:
  - 100 percent operating load
  - 80 percent operating load
  - 70 percent operating load

The load analysis was performed using the exit gas operating data for the MPS "J" CT/HRSG and the Siemens "H" CT/HRSG. Once the worst case operating condition was determined for each CT, subsequent analyses were performed with exit gas operating data specific to each CT vendor.

Additional analyses were performed for SO_2, NO_x, PM_{10}, and CO emissions to address the combined impact of the CTs and other PEEC sources. Detailed descriptions of the other PEEC sources are presented in Appendix 10.2.5.

The proposed combined cycle unit will have HRSG stack heights of 149 ft. Because the proposed stack heights are less than "Good Engineering Practice" (GEP), building downwash effects were included in the modeling analysis. In addition, since the stack heights for the other PEEC sources are also less than GEP, building downwash effects were included in the modeling analysis for these sources.

Receptor Locations

To determine the maximum impact for all pollutants and averaging times in the vicinity of the Site, concentrations were predicted at receptors located in detailed receptor grids centered on the proposed combined cycle unit, the modeling origin, and extended from the Port Everglades Plant Property boundary out 5 km. More than 3,000 receptors were used in the analysis to determine the maximum impacts for the existing Port Everglades Plant Units 1 through 4 and PEEC.

Background Concentrations

Background concentrations are necessary to determine total predicted ambient air concentrations for comparison with the AAQS. Background concentrations are defined as concentrations due to sources

(natural and anthropogenic) other than those specifically included in the modeling analysis. For all pollutants, background would include other point sources not included in the modeling, fugitive emission sources, and natural background sources. The maximum measured pollutant concentrations from monitoring data, representative of air quality near the Site and presented in Table 6.6.0-2, were used to provide conservative estimates of the concentrations from other sources.

Greenhouse Gas Emissions (CO_2)

PEEC will be among the most efficient natural gas-fired generating units in Florida and the country, which will displace generation produced by less efficient units in FPL's system and concomitantly reduce the amount of CO_2 emissions. With the addition of PEEC, CO_2 emissions will decrease in FPL's system by 22 million tons from 2016 through 2047 (see Section 4.4). PEEC, along with other efforts to reduce GHG emissions such as nuclear additions (uprates for existing nuclear units and new nuclear units), make up FPL's GHG emission reduction strategy. A discussion of NextEra Energy's and FPL's commitment to lower GHG emissions and the strategy to reduce GHG emissions in Florida is presented in Appendix 10.8.

6.6.2 Monitoring Programs

6.6.2.1 Ambient Air Quality Monitoring

FDEP has air monitoring stations that measure air quality in Broward County (see Table 6.6.0-2). The air quality concentrations measured at these stations comply with, and are anticipated to continue to comply with, all applicable ambient standards with PEEC as demonstrated in the previous sections.

6.6.2.2 Air Emissions Monitoring

The CTs for PEEC will be subject to NSPS and the acid rain program (40 CFR 75). Continuous monitoring will be required pursuant to applicable NSPS and the acid rain program. Monitoring of fuel sulfur content will also be performed pursuant to these programs. Initial performance testing of the CTs for SO_2 and NO_x emissions will be conducted as required by Subpart KKKK.

Continuous emission monitoring (CEM) for SO_2 and NO_x is required for natural gas and oil fired affected units in accordance with the provisions of 40 CFR 75. SO_2 emissions may be determined using procedures established in Appendix D, 40 CFR Part 75. CO_2 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 Part 75 CEM requirements, including QA/QC procedures are,

in general, more stringent than those specified in the NSPS for Subpart KKKK. New units are required to meet the requirements not later than 90 days after the unit commences commercial operation. PEEC will be required either to install CEMs for NO_x or otherwise meet the Part 75 requirements.

Initial and periodic compliance testing of pollutants emitted by PEEC will be conducted pursuant to the FDEP requirements as specified in the FDEP Air Construction Permit Application (Appendix 10.2.5).

6.7 Noise Impacts

6.7.1 Methodology

The methodology for determining the potential noise impacts for the operation of PEEC were developed using the CadnaA computer model, a computerized software program for calculation, presentation, assessment and prediction of environmental noise (DataKustik, 2008).

CadnaA 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, structures, 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 International Organization for Standardization, ISO 9613-1 *Attenuation of Sound During Propagation Outdoors - Part 1: Calculation of the Absorption of Sound by the Atmosphere*. The CadnaA path specific attenuation can be specified to account for the effects of soil, 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.

The noise impacts of PEEC operations were evaluated using the sound power levels for the various types of sources associated with the Project. The noise resulting from the operation of PEEC include noise sources associated with the three CTs and associated electric generators, three HRSGs, steam turbine generator, three transformers and natural gas compressor station. The sound power levels

used in the analysis for the 3-on-1 combined cycle unit were based on information developed from manufactures that was field verified using actual field measurements of similar units. These sound power levels conservatively represent the actual noise levels seen in field measurements. For the natural gas compressor station, the sound power levels were developed from the near field sound pressure level proposed vendor guarantee. The location of each noise source was based on its location in the computerized site plan. The computerized drawing was imported into the CadnaA model for the noise analysis. The heights of the major structures were also input into CadnaA, developing a three dimensional representation. Sources were input into CadnaA as point, area, and vertical area sources with appropriate dimensions.

The design of PEEC includes components that mitigate noise from being emitted to the surrounding environment. The majority of the noise sources, such as the steam generators, electric generators, compressors, and cooling water pumps, are located within enclosures that mitigate sounds emitted by equipment.

The L_w used in the analysis are presented in Table 6.7.1-1. There were 16 point sources, 12 area sources, and 28 vertical area sources input to CadnaA that represented the noise sources associated with PEEC. Noise sources such vent fans and transformers were input as point sources. The sources listed in Table 6.7.1-1 are identified by the source name, type, number and height including horizontal and vertical areas. Sources inside structures were input as area sources that are horizontal. The vertical area noise sources represent sides of structures such as the HRSG sides from which interior noise generated by the CT exhaust can be emitted. The atmospheric attenuation was set at the CadnaA default value, which is 10°C (50°F) and 70 percent relative humidity. For southern Florida, the average temperature is much higher than the default value for attenuation. As a result, using a lower ambient temperature would produce conservative results since cooler temperatures result in denser air and greater transmission of noise. The ground attenuation for the area was set to represent mixed adsorption to reflect a mixture of paved surfaces, water, and vegetation. No vegetation or other structures that can act as barriers were inputs to the model.

6.7.2 Impact Analysis

Figure 6.7.2-1 presents the modeled noise levels for the operation of PEEC for both onsite areas and extending offsite onto adjacent properties. This figure shows the modeled noise levels and the eight locations where background noise levels were measured. The modeled noise levels predicted from CadnaA and shown in Figure 6.7.2-1 do not include background, which can be variable depending

upon the activities in the area. Table 6.7.2-1 presents existing background, modeled PEEC, and overall sound pressure levels (SPLs) at each noise monitoring location. The background noise levels are presented in Subsection 3.3.8 and Appendix 10.7.3. The L_{90} background noise levels were used in the analysis since the L_{90} excludes the majority of the transient noise sources, such as motor vehicles and aircraft. In contrast, the L_{eq} or the average sound pressure level represents all the noise observed over the sampling period. As described in Section 3.3.8, there are a number of transient sources observed during the background monitoring such as motor vehicles, aircraft from Fort Lauderdale-Hollywood International Airport and industrial activity in the Port. As a result, the L_{90} is a representative background for predicting the contribution of PEEC to noise levels in the vicinity of the Site and is representative of the overall noise levels from a continuously operating noise source such as PEEC.

As described in Section 3.3.8, the background noise levels for the Project were obtained over a two day period that included two daytime measurements and one nighttime measurement. Existing Units 1 through 4 were not operating during any of the noise measurements. The afternoon daytime measurement included noise from several of the existing gas turbine units associated with the Gat Turbine Power Park-Port Everglades that currently operate only during periods of peak electrical demand. During the morning daytime measurements these gas turbine units were offline.

There are no Florida noise regulations that are applicable for the construction of PEEC. PEEC is located within City of Hollywood that has a noise ordinance codified in Chapter 100 Noise, Title IX General Regulations, City of Hollywood Code of Ordinances. The city noise ordinance does not have quantitative noise limits but prohibits unreasonably loud noise as defined in the ordinance. In order to evaluate the noise impacts during operation of PEEC, the modeled and overall sound levels from PEEC were compared to the Broward County noise ordinance (Broward County, Code of Ordinances, Part II, Article VII. - Noise, in Chapter 27 - Pollution Control; refer to Section 3.3.8). The Broward County noise ordinance limits the maximum allowable sound levels measured at the property boundary with governmental facilities, community service facilities, commercial/business facilities to 65 dBA as an L_{50} (sound level exceeded 50 percent of the time) and an L_{max} of 75 dBA at all times day and night. The properties in the vicinity of PEEC are primarily industrial as part of the Port Everglades Development District. While there are no maximum allowable sound level limits for industrial properties in the Broward County noise ordinance, the use of the maximum allowable sound level limits for governmental/community/commercial/business facilities provide a conservative

basis for assessing potential noise impacts in industrial areas. The overall noise levels included the noise determined from the CadnaA modeling results plus the L_{90} background.

As shown in Figure 6.7.2-1 and Table 6.7.2-1, the modeled SPLs from the normal operation of PEEC will not exceed 75 dBA during the daytime or nighttime at all monitoring locations and equal to or less than 65 dBA at all monitoring locations except Monitoring Location 5. The modeled SPL at Location 5 is due to the proximity of the natural gas compressors location relative to that receptor. As shown in Figure 6.7.2-1, modeled noise levels reduce to 65 dBA and less across the road (Southeast 1st Avenue).

Table 6.7.2-1 also shows that the overall sound levels will not exceed 75 dBA and are equal to or less than 65 dBA with the exception of the overall afternoon sound levels at Locations 6 and 5. At Location 6, the operation of the existing gas turbine units associated with the Gas Turbine Power Park – Port Everglades contributed to the afternoon background noise level resulting in the overall noise level of PEEC operation being higher than 65 dBA.

Several nearby communities, such as the City of Dania Beach located west of the Site and the City of Fort Lauderdale located north and west of the Site, have noise ordinances that include industrial land use. Both cities have a maximum permissible sound level of 75 dBA for a receiving land use classified as industrial. As shown in Table 6.7.2-1, overall noise levels predicted for the normal operation of PEEC were less than 75 dBA.

The existing Units 1 through 4 were not operating at the time of the background measurements. In order to contrast the overall noise levels of the operation of PEEC, noise measurements taken in August 2004 at the existing Port Everglades Plant were evaluated. These noise measurements were associated with the installation of the ESPs and were taken at 5 locations that were similar to the location where measurements were taken in August 2011. A comparison of the measured L_{90} observed in 2004 and 2011, the modeled noise impacts of PEEC, the overall noise levels (PEEC plus background) and the difference in the overall noise levels and the 2004 measurements when Units 1 through 4 were operating is shown in Table 6.7.2-2. As shown in this table, the overall noise levels predicted for the operation of PEEC including the 2004 measured background are lower at three of the five locations (Locations 1, 2, and 3) and only 1 dBA higher at Location 8. A difference of 1 dBA in SPLs is generally not noticeable by human hearing. In addition, the typical uncertainty in environmental noise observations due to temporal changes in noise sources is 3 dBA. The modeled

and overall noise levels for PEEC are higher than the 2004 measurement at Location 5 due to the location in proximity of the proposed natural gas compressor station. In 2004, while there was no plant equipment in direct proximity to Location 5, the background in 2004 with Units 1 through 4 operating is 7 dBA higher than the existing 2011 background noise level.

The Site and surrounding vicinity currently experiences noise associated with operation of the existing plant facilities, neighboring industrial facilities, and transportation (aircraft from Fort Lauderdale-Hollywood International Airport, motor vehicles from area roadways, and shipping activities). The normal operational noise from PEEC will be similar in magnitude and character to the existing Port Everglades Plant.

Based on the results of the noise impact analysis and the comparison to municipal numerical standards for a less intense land use (commercial versus industrial), the overall noise levels from the normal operation of PEEC will not produce any unreasonably loud noise.

Intermittent noise sources during routine startup, testing and maintenance, and emergency conditions may 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.

6.8 Changes in Non-Aquatic Species Populations

6.8.1 Impacts

There will be no adverse impacts to non-aquatic species resulting from the operation of PEEC. The existing Site has been disturbed during prior construction of the existing facilities and used continuously over the last 50 years of Port Everglades Plant operation. Vegetative communities were removed, topography was graded, and hydrology has been altered over that time period.

There will be no adverse impacts to federal or state listed terrestrial plants or animals during PEEC operations, due to the existing developed nature of the Site. No long-term change in the populations of any non-aquatic threatened or endangered species is anticipated as a result of the operation of PEEC.

There will be no changes in wildlife populations, including listed species populations, as a result of the operation of PEEC. The noise and lighting impacts associated with PEEC will be similar in

magnitude and character when compared to the existing Port Everglades Plant. Operation of PEEC will not deter the continued use by wildlife of undeveloped areas in the vicinity of the Site.

6.8.2 Monitoring

Because no adverse impacts to non-aquatic species populations are anticipated, no monitoring program is proposed.

6.9 Other Plant Operation Effects

6.9.1 Operations Traffic

The operational workforce for the Project is anticipated to be comparable to the current conditions as described in Subsection 3.2.8.2. Since the number of employees at PEEC will be similar to the existing plant, the number of traffic trips is not anticipated to increase. Because the number of daily and peak hour trips are not anticipated to increase as a result of the operation of the Project, no adverse impacts on traffic are anticipated.

6.9.2 Lighting

The existing Port Everglades Plant lighting will be dismantled, and new outdoor area lighting will be provided for PEEC, as required. Outdoor lighting will be necessary to satisfy OSHA requirements for worker safety, including lighting walkways, parking areas, and various equipment areas. Lighting is also necessary and required for security. Unconstrained lighting can cause light pollution and light trespass. Light pollution or sky glow is the term used to describe sky brightness caused by scattering of light in the atmosphere. Light trespass is the term used to describe light that strays from its intended purpose and becomes an annoyance.

Light trespass and light pollution at PEEC are expected to be less than the impact of existing Port Everglades Plant lighting. The profile of PEEC will be much lower than the profile of the existing Port Everglades Plant. The existing Port Everglades Plant stacks and boiler structures are approximately 343 ft and 140 ft high, respectively. The existing lighting causes these structures to be visible from considerable distances due to their height. In contrast, the profile of PEEC is much lower, with stack heights over two times lower. The three stacks associated with PEEC will be 149 ft high and the tallest structures (3 HRSGs) will be approximately 100 ft high. Necessary lighting will therefore be less visible than the existing Port Everglades Plant with four taller stacks and four taller boiler structures. Since the land use adjacent to PEEC is industrial with lighting for operations and security, the Project is not expected to cause light trespass to adjoining properties.

Light pollution and light trespass will be addressed when designing the outdoor lighting systems. Guidelines specifically addressing potential lighting issues are available from the Illuminating Engineering Society of North America. These guidelines will be incorporated into the outdoor lighting design to the extent possible while meeting OSHA and security requirements. Typical features to be incorporated are: minimize upward light from luminaries, minimize upward light in general so that light reaches its intended target, turn off lighting not needed for safety and security between 11:00 p.m. and sunrise, contain light within its intended target area by suitable choice of luminaries for light distribution, by selection of mounting height and physical location, and by minimizing glare in the horizontal or vertical directions. These features will result in lower lighting impacts from PEEC and much lower visibility of PEEC than the existing Port Everglades Plant. Since the land use adjacent to PEEC is industrial, the Project is not expected to cause light trespass to adjoining properties.

6.10 Archaeological Sites

No sites of historic or archaeological significance will be directly or indirectly impacted due to operation of PEEC. No sites listed or eligible for listing in the *National Register of Historic Places* are located in close proximity to the existing Site. No direct or indirect impacts are anticipated from the operation of PEEC. FPL will coordinate with the Florida Division of Historical Resources (DHR) and State Historic Preservation Office (SHPO) to determine the appropriate scope of work to meet applicable federal and state guidelines.

6.11 Resources Committed

The major irreversible and irretrievable commitments of national, state, and local resources due to PEEC are the continued use of the existing Site, the continued use of water for cooling and processes, and the continued use of fuels that include natural gas and ULSD oil. The continued use of these resources is more than offset by the higher efficiency of PEEC and environmental improvement compared to the existing Units 1 through 4.

PEEC will be located within that portion of the existing Port Everglades Plant within the Port Everglades Development District, which has already been significantly impacted by previous activities. PEEC will continue to provide electric power at a location within FPL's load center. This redevelopment is within an already existing industrial area, and impacts to the environment are significantly reduced when compared to the existing Units 1 through 4.

The use of water by the proposed PEEC units will be for condenser cooling, pollution control equipment (NO_x control when firing ULSD oil), other process water requirements, and potable water. However, the existing cooling water source and portions of the infrastructure will be used and allow the generation of a nominal 1,250 MW (net) with reduced water impacts. The cooling water requirements for the proposed combined cycle units are less than one half that of the nominal 1,250 MW existing facility. This amount is still more than sufficient to provide a warm water refuge for manatees.

Natural gas and ULSD oil will be consumed during the operation of PEEC. With the use of advanced combined cycle technology, the consumption of fossil fuels will be approximately 35 percent lower than the existing Units 1 through 4 for the same amount of electricity generated. This increased efficiency by using advanced combined cycle technology and the use of natural gas will result in a reduction of GHG emissions, the majority of which is CO_2. When expressed in terms of efficiency of electric generation (lb/MWh), the CO_2 emission rate after PEEC is complete will be less than one half of the existing CO_2 emission rate. In addition, PEEC, together with other system improvements, will reduce FPL's overall system CO_2 emissions by 22 million tons over its future operation.

Aqueous ammonia will be required for the operation of the PEEC's SCRs. While ammonia will be consumed, emissions of NO_x will be substantially reduced as a result. The use of ammonia in the SCR system, and the increased efficiency, results in a NO_x emission rate for PEEC in lb/MWh that is 98 percent less than the existing NO_x emission rate for Units 1 through 4.

PEEC's use of national, state, and local resources will be minimal given the production of efficient electric power, low environmental impacts, and the use of an existing and previously impacted site.

TABLE 6.6.0-1
SUMMARY OF PREDICTED POLLUTANT CONCENTRATIONS
FOR THE EXISTING UNITS 1 THROUGH 4 AT PORT EVERGLADES PLANT AND THE PEEC PROJECT
COMPARED TO AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	Maximum Concentration (ug/m^3) Existing Units 1, 2, 3 & 4 Only	Maximum Concentration (ug/m^3) PEEC Only [b]	Total Concentration (ug/m^3) including Background [a] Units 1, 2, 3 & 4	Total Concentration (ug/m^3) including Background [a] PEEC [b]	Ambient Air Quality Standard (AAQS) ($\mu g/m^3$)
SO_2	Annual	29.8	0.4	32.4	3.0	60
	24-Hour	200	3.3	221	24.2	260
	3-Hour	511	5.5	604	98.5	1,300
	1-Hour	NA	6.0	NA	106	197
PM_{10}	Annual	1.1	0.6	19.1	18.7	50
	24-Hour	6.8	4.9	55.8	53.9	150
$PM_{2.5}$	Annual	0.7	0.6	7.8	7.7	15
	24-Hour	4.5	4.9	20.5	20.9	35
NO_2	Annual	9.3	1.4	21.1	13.3	100
	1-Hour	NA	30.8	NA	123	188
CO	8-Hour	14.2	34.0	2,314	2,334	10,000
	1-Hour	21.1	38	3,203	3,220	40,000

[a] Background concentration based on the maximum measured concentration from representative air quality data for the Site.

[b] PEEC sources include the 3 CTs/HRSGs, fuel heater, and gas compressors.

TABLE 6.6.0-2
SUMMARY OF MAXIMUM MEASURED SO_2, NO_2, PM_{10}, $PM_{2.5}$, O_3, AND CO CONCENTRATIONS
REPRESENTATIVE OF PEEC PROJECT, 2008 THROUGH 2010

Pollutant/ AIRS Site No.	Location	County	Measurement Period Year	Months	Measured Concentration 1-Hour Highest	1-Hour 2nd Highest	1-Hour Percentile	3-Hour Highest	3-Hour 2nd Highest	8-Hour Highest	8-Hour 2nd Highest	8-Hour 3-year Average 4th Highest	24-Hour Highest	24-Hour 2nd Highest	24-Hour Percentile	Annual Average
Sulfur dioxide (SO_2) [c]	**Florida AAQS**				**NA**	**NA**	**0.075 ppm 99th**	**NA**	**0.5 ppm**	**NA**	**NA**	**NA**	**NA**	**0.1 ppm**		**0.02 ppm**
12-011-0010	Fort Lauderdale, Lincoln Park Elementary School	Broward	2010	Jan-Dec	0.076	0.056	0.038	--	--	NA	NA	NA	0.015	0.0059	NA	0.0004
			2009	Jan-Dec	0.096	0.072	--	0.057	0.057	NA	NA	NA	0.015	0.014	NA	0.0015
			2008	Jan-Dec	0.031	0.021	--	0.019	0.014	NA	NA	NA	0.005	0.004	NA	0.0011
Nitrogen dioxide (NO_2) [d]	**Florida AAQS**				**NA**	**NA**	**0.1 ppm 98th**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**		**0.053 ppm**
12-011-8002	Dania 7000 N. Ocean Drive	Broward	2010	Jan-Dec	0.065	0.054	0.049	NA	NA	NA	NA	NA	NA	NA	NA	0.0071
			2009	Jan-Dec	0.066	0.050	--	NA	NA	NA	NA	NA	NA	NA	NA	0.0065
			2008	Jan-Dec	0.058	0.055	--	NA	NA	NA	NA	NA	NA	NA	NA	0.0053
Particulate Matter (PM_{10}) [a]	**Florida AAQS**				**NA**	**NA**		**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**150 µg/m³**		**50 µg/m³**
12-011-0010	Fort Lauderdale, Lincoln Park Elementary School	Broward	2010	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	37	32	NA	15.4
			2009	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	49	43	NA	14.1
			2008	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	50	41	NA	18.7
12-011-3002	Hollywood 2701 Plunkett Street	Broward	2009	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	35	34	NA	17.6
			2008	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	82	64	NA	18.5
Particulate Matter ($PM_{2.5}$) [a]	**Florida AAQS**				**NA**	**NA**		**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**35 µg/m³ 98th**	**15 µg/m³**
12-011-2003	Pompano Beach 1951 NE 48th Street	Broward	2010	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	13.5	12.2	12.2	6.69
			2009	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	14.7	13.0	12.3	7.09
			2008	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	28.2	26.1	18.3	7.29
12-011-3002	Hollywood 2701 Plunkett Street	Broward	2009	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	10.2	10.2	10.2	6.47
			2008	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	30.0	24.5	21.8	7.69
Ozone (O_3) [b]	**Florida AAQS**				**NA**	**0.12 ppm**		**NA**	**NA**	**NA**	**NA**	**0.08 ppm**	**NA**	**NA**		**NA**
12-011-8002	Dania 7000 N. Ocean Drive	Broward	2010	Jan-Dec	0.107	0.074	NA	NA	NA	NA	NA	0.069	NA	NA	NA	NA
			2009	Jan-Dec	0.077	0.073	NA	NA	NA	NA	NA	0.069	NA	NA	NA	NA
			2008	Jan-Dec	0.083	0.082	NA	NA	NA	NA	NA	0.069	NA	NA	NA	NA
Carbon monoxide (CO)	**Florida AAQS**				**NA**	**35 ppm**		**NA**	**NA**	**NA**	**9 ppm**	**NA**	**NA**	**NA**		**NA**
12-011-0010	Fort Lauderdale, Lincoln Park Elementary School	Broward	2010	Jan-Dec	2.3	2.3	NA	NA	NA	1.8	1.6	NA	NA	NA	NA	NA
			2009	Jan-Dec	3.1	2.8	NA	NA	NA	2.0	1.9	NA	NA	NA	NA	NA
			2008	Jan-Dec	3.2	3.2	NA	NA	NA	2.5	2.5	NA	NA	NA	NA	NA
12-011-3002	Hollywood 2701 Plunkett Street	Broward	2009	Jan-Dec	1.8	1.8	NA	NA	NA	1.5	1.5	NA	NA	NA	NA	NA
			2008	Jan-Dec	2.4	2.1	NA	NA	NA	1.7	1.6	NA	NA	NA	NA	NA

Note: NA = not applicable.
AAQS = ambient air quality standard.

[a] On October 17, 2006, EPA promulgated revised PM_{10} and $PM_{2.5}$ AAQS; the $PM_{2.5}$ AAQS had been promulgated on July 18, 1997. For PM_{10}, the annual standard was revoked and the 24-hour standard was retained. The 24-hour $PM_{2.5}$ standard was revised to 35 µg/m^3 based on the 3-year averages of the 98th percentile values. The annual $PM_{2.5}$ standard of 15 µg/m^3, 3-year averages at community monitors, was retained. As of August 2008, Florida DEP has not yet adopted the revised standards.

[b] On July 18, 1997, EPA promulgated revised AAQS for ozone. The O_3 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. On March 27, 2008, EPA revised the 8-hour average ozone AAQS to 0.075 ppm, effective May 27, 2008. The format of the standard remained the same as the previous promulgation. As of August 2008, Florida DEP has not yet adopted the revised standards.

[c] On June 23, 2010, EPA promulgated the 1-hour SO_2 standard at a level of 75 parts per billion (ppb), based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations (effective August 23, 2010). EPA is also revoking both the existing 24-hour and annual primary SO_2 standards, effective one year after the designation of an area, pursuant to section 107 of the Clean Air Act.

[d] On February 9, 2010, EPA promulgated the 1-hour NO_2 standard at a level of 100 ppb, based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations (effective April 12, 2010).

TABLE 6.7.1-1
SOUND POWER LEVELS FOR NOISE SOURCES ASSOCIATED WITH THE OPERATION OF PEEC

Sources	Interior Noise Source	Source Type	Number of Sources	Source Height (m)	Sound Power Level (dB) for Octave Band Center Frequency (Hz)									Overall Sound Power Level (dBA)
					31.5	63	125	250	500	1000	2000	4000	8000	
HRSG Stack 1A	No	Point	1	45.00	49.0	55.0	68.0	71.0	80.0	106.5	100.0	74.0	56.0	107.6
HRSG Stack 1B	No	Point	1	45.00	49.0	55.0	68.0	71.0	80.0	106.5	100.0	74.0	56.0	107.6
HRSG Stack 1C	No	Point	1	45.00	49.0	55.0	68.0	71.0	80.0	106.5	100.0	74.0	56.0	107.6
Turbine Vent Fan 1A	No	Point	1	24.00	104.0	104.0	109.0	102.0	99.0	93.0	104.0	106.0	107.0	111.2
Turbine Vent Fan 1B	No	Point	1	24.00	104.0	104.0	109.0	102.0	99.0	93.0	104.0	106.0	107.0	111.2
Turbine Vent Fan 1C	No	Point	1	24.00	104.0	104.0	109.0	102.0	99.0	93.0	104.0	106.0	107.0	111.2
Gas Compressor Turbine Exhaust 1	No	Point	1	6.30	117.0	117.0	114.0	106.0	107.0	98.0	93.0	85.0	87.0	106.7
Gas Compressor Turbine Exhaust 2	No	Point	1	6.30	117.0	117.0	114.0	106.0	107.0	98.0	93.0	85.0	87.0	106.7
Gas Compressor Turbine Exhaust 3	No	Point	1	6.30	117.0	117.0	114.0	106.0	107.0	98.0	93.0	85.0	87.0	106.7
Boiler Feed Pump 1A	No	Point	1	2.00	103.0	100.0	97.0	96.0	97.0	96.0	97.0	89.0	77.0	101.7
Boiler Feed Pump 1B	No	Point	1	2.00	103.0	100.0	97.0	96.0	97.0	96.0	97.0	89.0	77.0	101.7
Boiler Feed Pump 1C	No	Point	1	2.00	103.0	100.0	97.0	96.0	97.0	96.0	97.0	89.0	77.0	101.7
CT Transformer 1A	No	Point	1	2.00	96.0	102.0	104.0	103.0	99.0	93.0	88.0	83.0	76.0	100.1
CT Transformer 1B	No	Point	1	2.00	96.0	102.0	104.0	103.0	99.0	93.0	88.0	83.0	76.0	100.1
CT Transformer 1C	No	Point	1	2.00	96.0	102.0	104.0	103.0	99.0	93.0	88.0	83.0	76.0	100.1
Steam Turbine Transformer	No	Point	1	2.00	99.0	105.0	107.0	106.0	102.0	96.0	91.0	86.0	79.0	103.1
CT 1A Top	No	Area	1	12.19	111.0	113.0	107.0	106.0	103.0	101.0	106.0	102.0	97.0	110.2
CT Generator 1A Top	No	Area	1	7.62	105.0	105.0	104.0	101.0	103.0	102.0	101.0	96.0	87.0	107.0
HRSG 1A Top	No	Area	1	23.75	111.0	116.0	112.0	104.0	94.0	93.0	81.0	61.0	31.0	100.7
Exhaust Duct 1A Top	No	Area	1	9.14 - 23.47	113.0	110.0	108.0	101.0	100.0	98.0	96.0	95.0	92.0	104.0
CT 1B Top	No	Area	1	12.19	111.0	113.0	107.0	106.0	103.0	101.0	106.0	102.0	97.0	110.2
CT Generator 1B Top	No	Area	1	7.62	105.0	105.0	104.0	101.0	103.0	102.0	101.0	96.0	87.0	107.0
HRSG 1B Top	No	Area	1	23.75	111.0	116.0	112.0	104.0	94.0	93.0	81.0	61.0	31.0	100.7
Exhaust Duct 1B Top	No	Area	1	9.14 - 23.47	113.0	110.0	108.0	101.0	100.0	98.0	96.0	95.0	92.0	104.0
CT 1C Top	No	Area	1	12.19	111.0	113.0	107.0	106.0	103.0	101.0	106.0	102.0	97.0	110.2
CT Generator 1C Top	No	Area	1	7.62	105.0	105.0	104.0	101.0	103.0	102.0	101.0	96.0	87.0	107.0
HRSG 1C Top	No	Area	1	23.75	111.0	116.0	112.0	104.0	94.0	93.0	81.0	61.0	31.0	100.7
Exhaust Duct 1C Top	No	Area	1	9.14 - 23.47	113.0	110.0	108.0	101.0	100.0	98.0	96.0	95.0	92.0	104.0
Air Inlet 1A	No	Vert_Area	1	30.48	96.0	100.0	93.0	88.0	80.0	72.0	68.0	76.0	71.0	84.7
CT Unit 1A Sides	No	Vert_Area	1	12.19	111.0	113.0	107.0	106.0	103.0	101.0	106.0	102.0	97.0	110.2
CT Generator 1A	No	Vert_Area	1	7.62	105.0	105.0	104.0	101.0	103.0	102.0	101.0	96.0	87.0	107.0
Exhaust Duct 1A Sides	No	Vert_Area	1	9.14 - 23.47	113.0	110.0	108.0	101.0	100.0	98.0	96.0	95.0	92.0	104.0
HRSG 1A Sides	No	Vert_Area	1	23.75	111.0	116.0	112.0	104.0	94.0	93.0	81.0	61.0	31.0	100.7
Air Inlet 1B	No	Vert_Area	1	30.48	96.0	100.0	93.0	88.0	80.0	72.0	68.0	76.0	71.0	84.7
CT Unit 1B Sides	No	Vert_Area	1	12.19	111.0	113.0	107.0	106.0	103.0	101.0	106.0	102.0	97.0	110.2
CT Generator 1B	No	Vert_Area	1	7.62	105.0	105.0	104.0	101.0	103.0	102.0	101.0	96.0	87.0	107.0
Exhaust Duct 1B Sides	No	Vert_Area	1	9.14 - 23.47	113.0	110.0	108.0	101.0	100.0	98.0	96.0	95.0	92.0	104.0
HRSG 1B Sides	No	Vert_Area	1	23.75	111.0	116.0	112.0	104.0	94.0	93.0	81.0	61.0	31.0	100.7

TABLE 6.7.2-1

EXISTING, MODELED, AND OVERALL SOUND PRESSURE LEVELS FOR THE OPERATION OF PEEC AT THE EIGHT BACKGROUND LOCATIONS

Monitoring Location	Time	Sound Pressure Levels (dBA)		
		Existing [a]	Modeled	Overall [b]
1: Southeast corner fence line near tankyard	Afternoon	52	49	54
	Night	46	49	51
	Morning	51	49	53
2: Northern gate of eastern tankyard off of Eisenhower Blvd	Afternoon	52	53	55
	Night	49	53	54
	Morning	50	53	55
3: Southwest of discharge canal	Afternoon	58	54	59
	Night	44	54	54
	Morning	56	54	58
4: Southwestern corner near gate	Afternoon	57	55	59
	Night	48	55	56
	Morning	55	55	58
5: Western fence line just north of paved parking lot	Afternoon	68	69	71
	Night	50	69	69
	Morning	53	69	69
6: Northwest fence line corner	Afternoon	73	57	73
	Night	62	57	64
	Morning	63	57	64
7: Northern fence line, south of tankyard access gate	Afternoon	57	51	58
	Night	52	51	54
	Morning	59	51	60
8: Inside fence line, west of main gate and guard shack	Afternoon	57	65	65
	Night	54	65	65
	Morning	54	65	65

[a] L_{90} sound levels collected on August 1 and 2, 2011.

[b] Modeled results logarithmically added to the existing baseline measurements.

TABLE 6.7.2-2

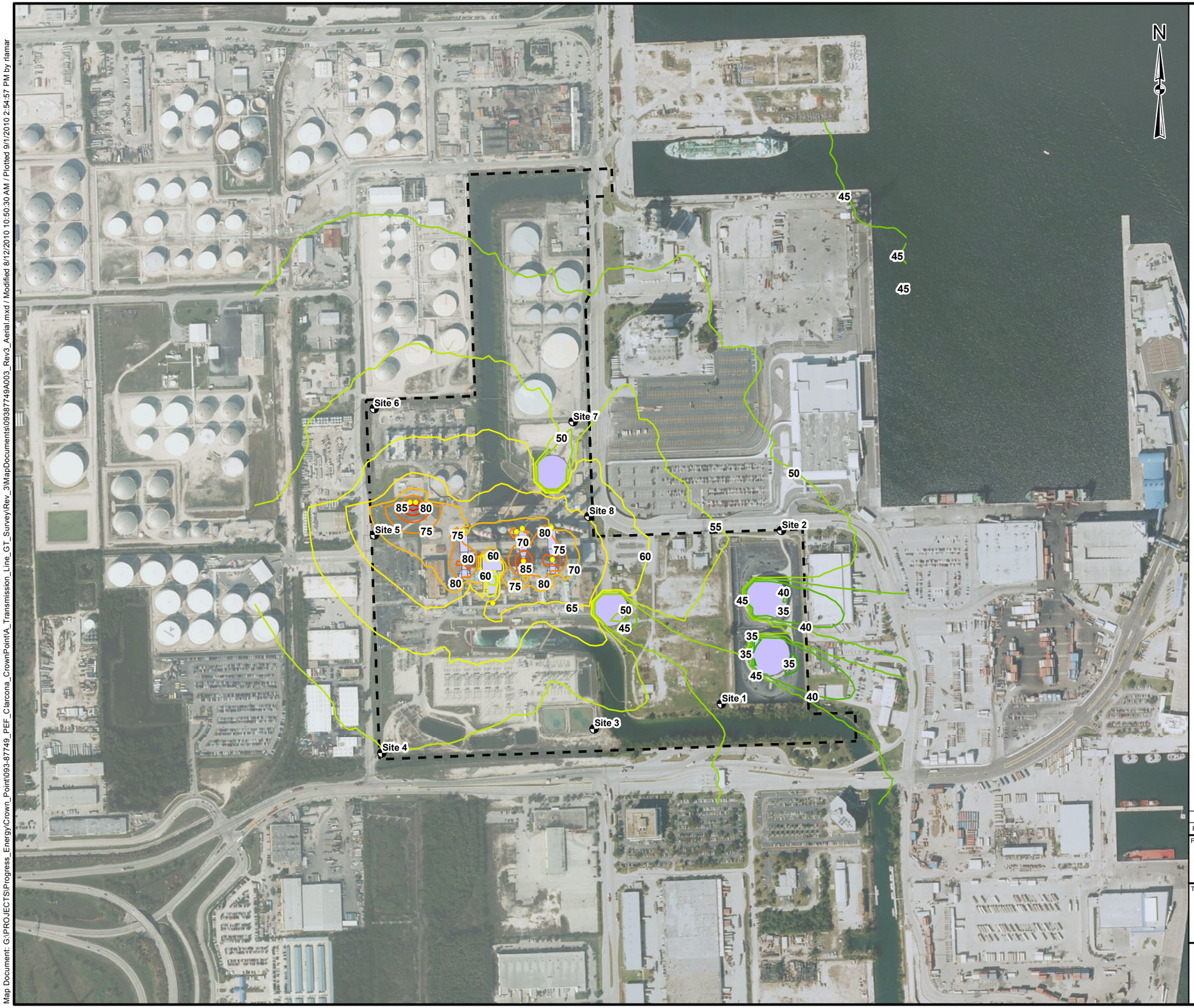
2004 AND 2011 BACKGROUND, MODELED AND OVERALL SOUND PRESSURE LEVELS FOR THE OPERATION OF PEEC

Site	Sound Pressure Levels (dBA)				
	2004 [a]	2011 [b]	Modeled	Overall [c]	Overall- 2004
1: Southeast corner fence line near tankyard	57	52	49	54	-3
2. Northern gate of eastern tankyard off of Eisenhower Blvd	67	52	53	55	-12
3: Southwest of discharge canal	62	58	54	59	-2
5: Western fence line just north of paved parking lot	65	68	69	71	7
8: Inside fence line, west of main gate and guard shack	64	57	65	65	1

[a] L_{90} sound levels collected on August 19, 2004 with Units 1 through 4 operating (Golder, 2005).

[b] L_{90} sound levels collected on August 1 and 2, 2011.

[c] Modeled results logarithmically added to the existing baseline measurements.



LEGEND

- PEEC Property Boundary
- Source Locations
- Noise Monitoring Locations

Noise Impact Countours

- 35 dB
- 40 dB
- 45 dB
- 50 dB
- 55 dB
- 60 dB
- 65 dB
- 70 dB
- 75 dB
- 80 dB
- 85 dB
- 90 dB

REFERENCES

1. Port Everglades Energy Center Property Boundary, FPL, 2011
2. Noise Monitoring Locations, Noise Impact Contours, Source Locations, Golder Associates Inc., 2011
3. Aerial Image courtesy of Microsoft Bing Service OpenGIS Map Server, Accessed October 2011

500 250 0
Feet

Rev.	Date	Des.	Revision Description	xxx	xxx	xxx

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

OPERATION
NOISE IMPACT CONTOURS

PROJECT No.		113-87618	FILE No.	113-87618A025	
DESIGN	DAB	10/18/2011	SCALE: AS SHOWN	REV.	0
GIS	NRL	11/4/2011	FIGURE 6.7.2-1		
CHECK					
REVIEW					

Map Document: G:\PROJECTS\Progress_Energy\Crown_Point\093-87749_PEF_Clarcona_CrownPointA_Transmission_Line_GT_Survey\Rev_3\MapDocuments\09387749A003_Rev3_Aerial.mxd / Modified 8/12/2010 10:50:30 AM / Plotted 9/1/2010 2:54:57 PM by rlamar

7.0 ECONOMIC AND SOCIAL EFFECTS OF PLANT CONSTRUCTION AND OPERATION

The purposes of this chapter are to identify the direct and indirect economic and social benefits and costs of the Project based on both temporary (construction) and long-term (operation) time periods, with an emphasis on effects not directly concerned with the use of electricity.

Socioeconomic impacts may occur when a project directly or indirectly changes a population, housing stock, or economic activities within a given area. Construction activities could also have temporary direct and indirect impacts. In addition, an indirect effect upon a project area could result from the potential significant impacts involving land use/neighborhood character, traffic, and noise.

Direct effects are those that are the result of the construction or operation of the Project. Indirect effects are those that are the result of changes in the livelihood of the 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 are often made to assess the relative values of anticipated costs and benefits.

This chapter is divided into two parts: benefits and costs. Section 7.1 addresses the economic and social benefits of the Project, including analyses of the direct and indirect effects of Project construction and operation of PEEC. Section 7.2 addresses the economic and social costs of the Project and includes analyses of the temporary and long-term indirect costs involving Project construction and operation of PEEC. All costs and benefits are based on 2011 dollar values unless otherwise indicated. Washington Economic Group conducted the economic analysis.

7.1 Economic and Social Benefits

7.1.1 Direct Economic and Social Benefits

The Project is anticipated to benefit the economies of the City of Hollywood, Broward County, and Florida. Direct benefits from construction will include construction workforce jobs and sales of equipment and materials. Direct benefits from the operation of PEEC include the capital expenditures, operation and maintenance expenditures, employment, and property tax revenues.

FPL estimates that the total Project capital costs will be approximately $1.1 billion. Principal components include the major equipment ($500 million); materials ($200 million); engineering, licensing and other costs ($300 million); and labor ($100 million).

Onsite construction activities (dismantlement, required remediation, and construction of the 3-on-1 combined cycle unit) are anticipated to begin in 2012 and conclude in the summer of 2016. Dismantlement may start in 2012 and take approximately 14 to 16 months. During the dismantlement of the existing Units 1 through 4, workers will be employed who are specialized in removing recyclable materials and dismantling equipment, removing insulation, preparing structures for dismantlement, and material removal.

The peak construction workforce (mid 2015) is estimated to be approximately 650 people, with an average construction workforce estimated at 290 people. The categories of workers anticipated over the Project construction period are presented below. The construction payroll for the Project is estimated to be $55 million during the peak year (2015) with an annual average of $33.3 million for the period 2014 through 2016.

Trade Category	**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**

PEEC will become operational in mid-2016. The total direct employment for operation of PEEC will be similar to the existing Port Everglades Plant, at approximately 40 full time jobs. The annual operational payroll will be approximately $5.2 million (2016 dollars). Other fixed operational costs of PEEC, excluding fuel costs, are estimated to be approximately $4.8 million annually (2016 dollars).

Due to the proximity of the Site to the large labor markets in Broward, Palm Beach, and Miami-Dade Counties, the labor demand for the Project construction and operation is anticipated to be met by workers living in this area, as well as skilled labor from outside the area.

The operation of PEEC is expected to generate $372 million in property tax revenue from 2017 to 2046. This is comprised of approximately $114 million to the City of Hollywood, approximately $126 million to Broward County, approximately $122 million to the school district, and approximately $10 million to other taxing authorities (SFWMD and Florida Inland Navigation District).

7.1.2 Economic Benefits of Construction

It is anticipated that the majority of the Project's expenditures, excluding major equipment, will be spent within Broward County and the surrounding region. These expenditures 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, earnings, and tax revenues. These synergistic economic benefits of the Project will be enjoyed by other businesses whose sales will increase as a result of the Project. For example, sales could increase for commercial services including gas stations, convenience stores, and restaurants. If construction workers were to frequent businesses before, during, or after their workday, it would result in increased business to area merchants. During the construction period, area suppliers could also benefit by supplying needed materials such as concrete, stone, drainage piping, and other building materials that are normally manufactured or produced in the region. In addition, construction equipment may be rented locally.

The economic benefits of the Project were determined using an economic model that incorporates the latest U.S. Department of Commerce data on income and employment for Florida. The synergistic economic benefits were determined for the direct, indirect, and induced effects, and include labor income and value added effects. Indirect effects result from an increase in demand that results from the need for material inputs. Induced effects are the regional economic growth resulting for indirect effects. Value-added effects are the portions of business revenues that are available to pay compensation to workers, capital income, and indirect business taxes. Value-added effects are also the principal source of income to households and a key measure of PEEC's contribution to the Broward County economy.

The PEEC construction activities were determined to have a projected economic benefit of $858 million during the construction period, including direct, indirect, and induced benefits. The

direct and indirect labor income benefits are projected to be $375 million and value added benefits are projected to be $483 million.

The economic benefits of the construction of PEEC will result in approximately 7,105 direct and indirect jobs. The industries associated with these jobs are:

- 4,373 jobs in knowledge-based services (Information Services, Finance & Insurance, Real Estate, Professional Services, Administrative, Educational Services, Health & Social Services, Arts, Entertainment & Recreation and Other Services).
- 1,934 jobs in construction.
- 298 jobs in retail trade.
- 227 jobs in visitor industry (includes accommodation and food services).
- 156 jobs in wholesale trade and transportation services (includes wholesale trade, transportation and warehousing).
- 74 jobs in manufacturing.
- 43 jobs in government and other industries.

7.1.3 Fiscal Benefits to Local Governments

The net economic impact of the Project on the City of Hollywood, Broward County, and other governmental entities, from years 2017 to 2046, is the difference between the total benefits and costs.

Operating revenues to government entities include *ad valorem* tax revenue, occupational licenses, building permit fees, utility taxes, State revenue proceeds, and charges for services (e.g., potable water and wastewater disposal) paid by FPL. Services are required for all residents who are working in the City and County. As a result, the City of Hollywood and Broward County will incur costs for these services related to the Project and its employees.

Operating costs to government entities include costs for services such as financial and administrative expenses, emergency and disaster relief, legislative and executive expenses, and comprehensive planning. Both the City and County governments also receive capital revenues and pay capital expenses. Capital revenues are based on impact fees, and capital expenses are costs related to purchases for roads, fire rescue, law enforcement, etc.

For PEEC, annual property taxes will accrue to the City of Hollywood, Broward County, the Broward County School District, and other taxing authorities. These funds are then distributed to the various entities within the governmental jurisdictions. The operation of PEEC is expected to generate $372 million in property tax revenue from 2017 to 2046. The property tax revenues for the PEEC Project are estimated over the assumed life of PEEC to be approximately $114 million to the City of Hollywood, approximately $126 million to Broward County's general fund, approximately $122 million to the school district, and approximately $10 million to other taxing authorities (SFWMD and Florida Inland Navigation District). Together, these economic benefits far outweigh the services that would be required by the operation of PEEC and its employees.

7.1.4 Economic Benefits of Operation

The Project will have significant direct, indirect, and induced economic benefits of its ongoing operation. During operation, the total direct, indirect, and induced economic benefits are projected to be $27 million per year. This includes labor income and value-added benefits. Assuming the Project lifespan of over 30 years, the total benefit is projected to be over $800 million.

7.1.5 Environmental Benefits

Construction and operation of the Project will not cause any adverse environmental impacts or impacts to the recreational values of the area. Environmental impacts of Project construction will be minimized.

Most importantly, the Project allows for the redevelopment of Units 1 through 4 and will result in more efficient power generation without using any additional land, water sources, or transmission line rights of way. PEEC will have a much sleeker profile, with the height of the new structures (stacks) at less than 150 feet compared to the approximately 343 foot height of the existing stacks. PEEC will reduce air emissions by approximately 90 percent and will reduce the rate of CO_2 emissions by approximately 50 percent. During the operation of PEEC, from years 2016 to 2047, the CO_2 reduction in FPL's system with PEEC will be approximately 22 million tons.

The existing Port Everglades Plant has been a refuge for the endangered manatee during the wintertime for decades. With the completion of PEEC, the Site will continue to serve as a refuge for this important Florida species long into the future. During the dismantlement and construction

period, FPL will continue to provide a warm-water refuge for the manatees consistent with the Manatee Protection Plan established pursuant to the existing Plant's IWW Permit.

7.2 Economic and Social Costs

7.2.1 Temporary External Costs

Over 55,854 construction workers reside within Broward, Palm Beach, and Miami-Dade Counties (UF/BEBR, 2011). Ample labor supply for the Project exists within commuting distance of the Site and thus a labor surplus exists within the region. As is typical with construction projects of similar duration, it is not anticipated that workers will relocate to the immediate area and alter the demands on public facilities and services.

As is typical with similar construction projects, some skilled workers from outside the region will commute from longer distances and will choose to live in transient accommodations (i.e., motels and hotels). Transient accommodations are plentiful in the area with approximately 106,551 units in apartment buildings, rooming houses, rental condominiums, and transient apartment building units in Broward County in 2010 (UF/BEBR, 2011).

Since workers will predominately commute and not relocate permanently into the region, it is not anticipated that construction will create new or unusual impacts or demands on public facilities or services.

Labor demands associated with the construction of the Project and operation of PEEC are not anticipated to create any labor shortages. Expenditures for equipment and materials and consumption by construction workers will boost incomes within the City, County, and surrounding counties. Population and housing impacts associated with the Project will be slight due to minimal in-migration expected into the area.

Temporary external social costs of the Project include the generation of traffic and noise during construction. Project construction, including dismantlement, remediation as necessary, and the construction of the 3-on-1 combined cycle unit, will last approximately 3.5 years with a peak period of approximately 12 months (mid-2015). The roadways utilized for the construction traffic associated with the Project will continue to operate at an acceptable level of service. Level of service deficiencies may be experienced during peak hours at the intersection of Eller Drive/SE 14th Avenue.

A traffic management plan will be developed which may include using traffic management specialists during peak construction periods. Alternatively, FPL or its contractors may desire the use of buses to transport construction workers to the Site from offsite parking areas that would reduce the construction traffic to the Site.

Construction-related activities will be contained within the Site and the construction parking and laydown areas.

Construction of the Project will not significantly impact residential, commercial, or recreational values and will improve the visual qualities in the vicinity of the Site.

Although the local community may experience some temporary impacts during the construction period, overall socioeconomic impacts associated with the construction of the Project will be favorable.

7.2.2 Long-Term External Costs

The external social cost impacts of PEEC operation will be minimal and localized. The Site provides access to FPL's existing transmission system, which minimizes interconnection requirements. The operation of PEEC will not cause any adverse impacts to public or private facilities used for recreational purposes or impairment to recreational values, result in any deterioration of aesthetic and scenic values, or restrict access to areas of scenic values.

The operational workforce for PEEC is anticipated to be approximately the same as for the existing Plant. As a result, there will be no adverse impacts of the operation of PEEC upon local services (e.g., schools, police, and transportation). PEEC will result in modifications of the current FPL property values that will in turn increase the *ad valorem* revenue. The long-term revenue source that will be paid to the City of Hollywood, Broward County, the School District, and other taxing authorities will be significantly greater than current sources and, with the operational practices to remain consistent with current practices, there will not be an increase of costs to the local government for public facilities or services.

FPL will minimize PEEC's impacts on the environment and the community, and the PEEC design will incorporate features that reduce the visual and other impacts, such as a lower profile, noise attenuation, and air pollution control equipment.

8.0 SITE AND DESIGN ALTERNATIVES

This optional Chapter of the SCA is not included in this application because it is not anticipated that an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) is required for the Project.

9.0 ELECTRICAL TRANSMISSION LINES

The Port Everglades Plant already has the transmission infrastructure necessary to transfer the power from the electric generators associated with PEEC to the transmission system. The existing system switchyard has equipment to support both 230 kV and 138 kV voltage levels. Two of the PEEC CTs will be connected to the existing Port Everglades 138 kV system switchyard. The third CT and the steam turbine generator will be connected to the existing Port Everglades 230 kV system switchyard. The facilities required in order to fully integrate the PEEC Project into the FPL transmission system include upgrading 4 existing 138 kV line sections to accommodate the proposed PEEC unit. No new transmission lines are required.

Improvements will be made to the Port Everglades existing transmission system switchyard adjacent to the certified Site to due to increased fault currents based on PEEC's slightly larger generation and FPL standard system reliability requirements. The vast majority of the improvements will be replacement in-kind components such as line terminals, bus structures, and breakers requiring no additional earthwork or foundations. Additional relays and a battery bank to improve system reliability are needed to meet current FPL transmission system standards and will require a small expansion to the existing relay vault in the existing system switchyard. Additionally, a new breaker installation to independently isolate the existing cable tap from the existing switchyard to the Port Substation is required to meet current FPL transmission system standards, requiring a small new foundation and slight fence line expansion. The vault expansion and additional breaker are reliability improvements required to meet current FPL transmission system standards and would have occurred in the future regardless of the PEEC Project. These minor improvements to the existing transmission system switchyard may require storm water permits which will be sought outside the SCA process. FPL will also make enhancements to the existing transmission system switchyard stormwater collection. The transmission system switchyard stormwater management enhancements will occur during the construction of PEEC

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