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	Measurement Period 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,	Broward	2010	Jan-Dec	0.076	0.056	0.038	--	--	NA	NA	NA	0.015	0.0059	NA	0.0004
	Lincoln Park Elementary School		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	Broward	2010	Jan-Dec	0.065	0.054	0.049	NA	NA	NA	NA	NA	NA	NA	NA	0.0071
	7000 N. Ocean Drive		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/m^3**		**50 µg/m^3**
12-011-0010	Fort Lauderdale,	Broward	2010	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	37	32	NA	15.4
	Lincoln Park Elementary School		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	Broward	2009	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	35	34	NA	17.6
	2701 Plunkett Street		2008	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	82	64	NA	18.5
															NA	
Particulate Matter ($PM_{2.5}$) [a]	**Florida AAQS**				**NA**	**NA**		**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**35 µg/m^3** 98th	**15 µg/m^3**
12-011-2003	Pompano Beach	Broward	2010	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	13.5	12.2	12.2	6.69
	1951 NE 48th Street		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	Broward	2009	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	10.2	10.2	10.2	6.47
	2701 Plunkett Street		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	Broward	2010	Jan-Dec	0.107	0.074	NA	NA	NA	NA	NA	0.069	NA	NA	NA	NA
	7000 N. Ocean Drive		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,	Broward	2010	Jan-Dec	2.3	2.3	NA	NA	NA	1.8	1.6	NA	NA	NA	NA	NA
	Lincoln Park Elementary School		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	Broward	2009	Jan-Dec	1.8	1.8	NA	NA	NA	1.5	1.5	NA	NA	NA	NA	NA
	2701 Plunkett Street		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

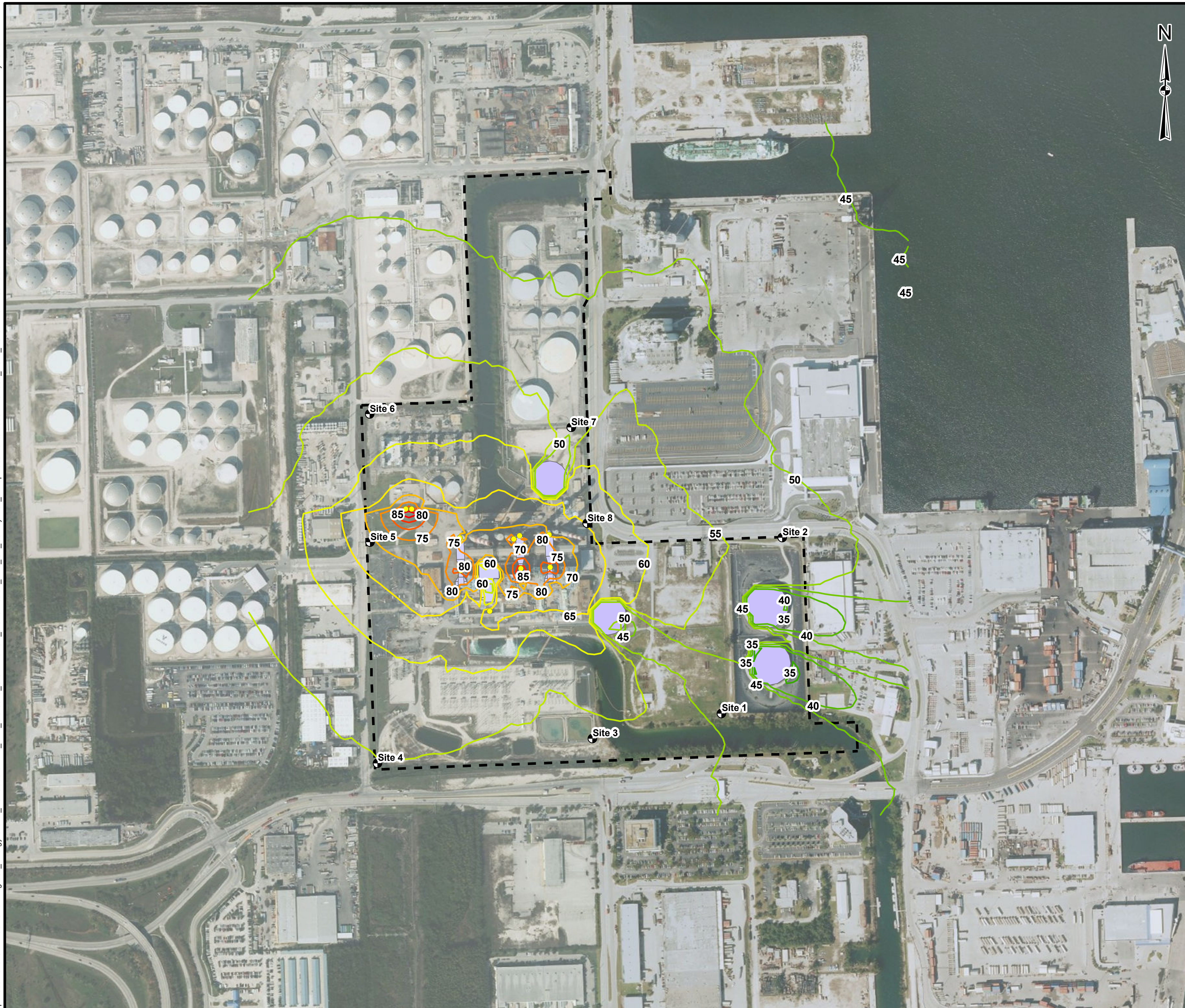
	Sound Pressure Levels (dBA)				
Site	**2004 [a]**	**2011 [b]**	**Modeled**	**Overall [c]**	**Overall- 2004**
1: Southeast corner fence line near tankyard	57	52	49	54	-3
2. Northern gate of eastern tankyard off of Eisenhower Blvd	67	52	53	55	-12
3: Southwest of discharge canal	62	58	54	59	-2
5: Western 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.

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



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	
CHECK			**FIGURE 6.7.2-1**
REVIEW			

FPL