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.

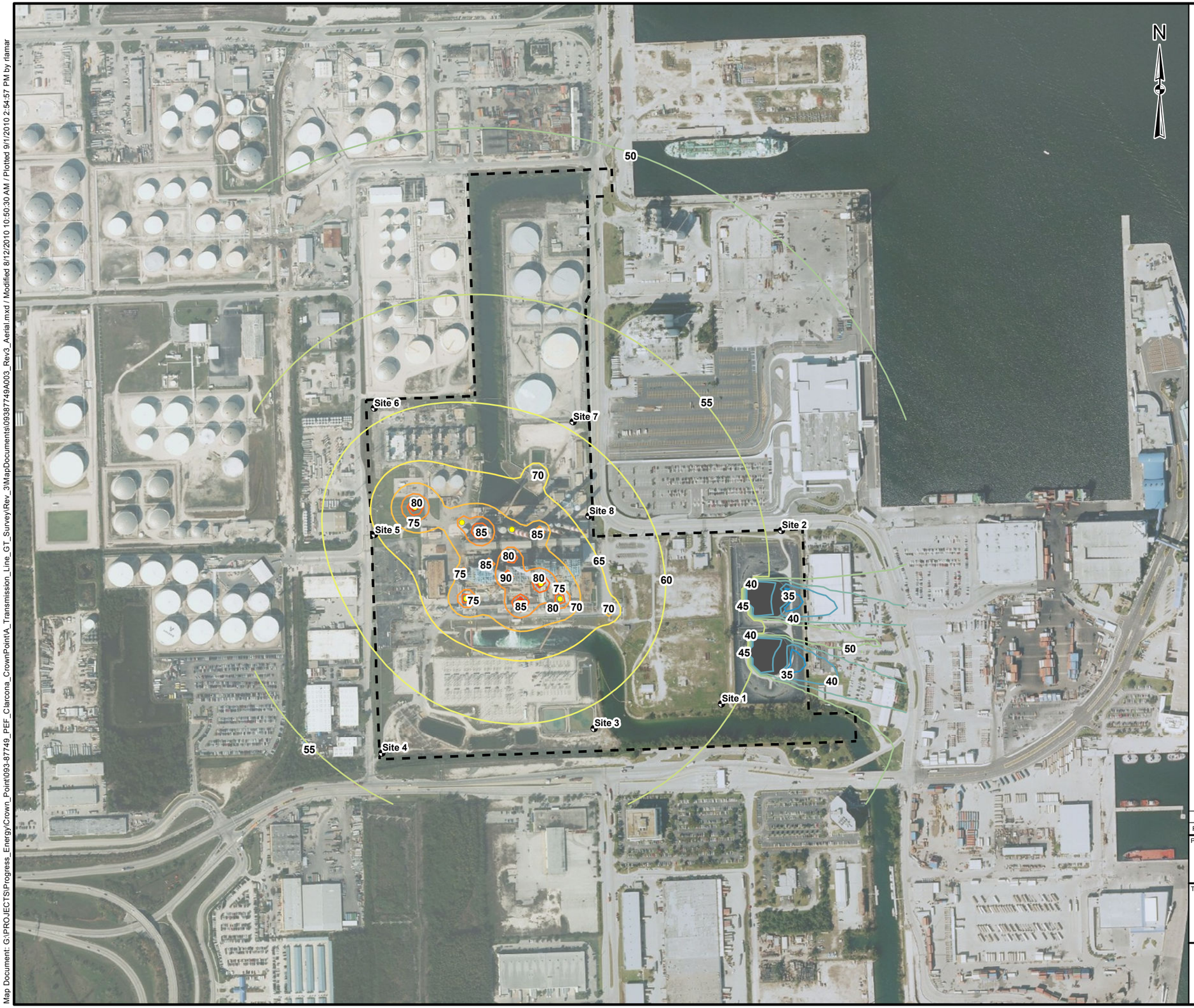
TABLE 5.7.5-2

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.



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

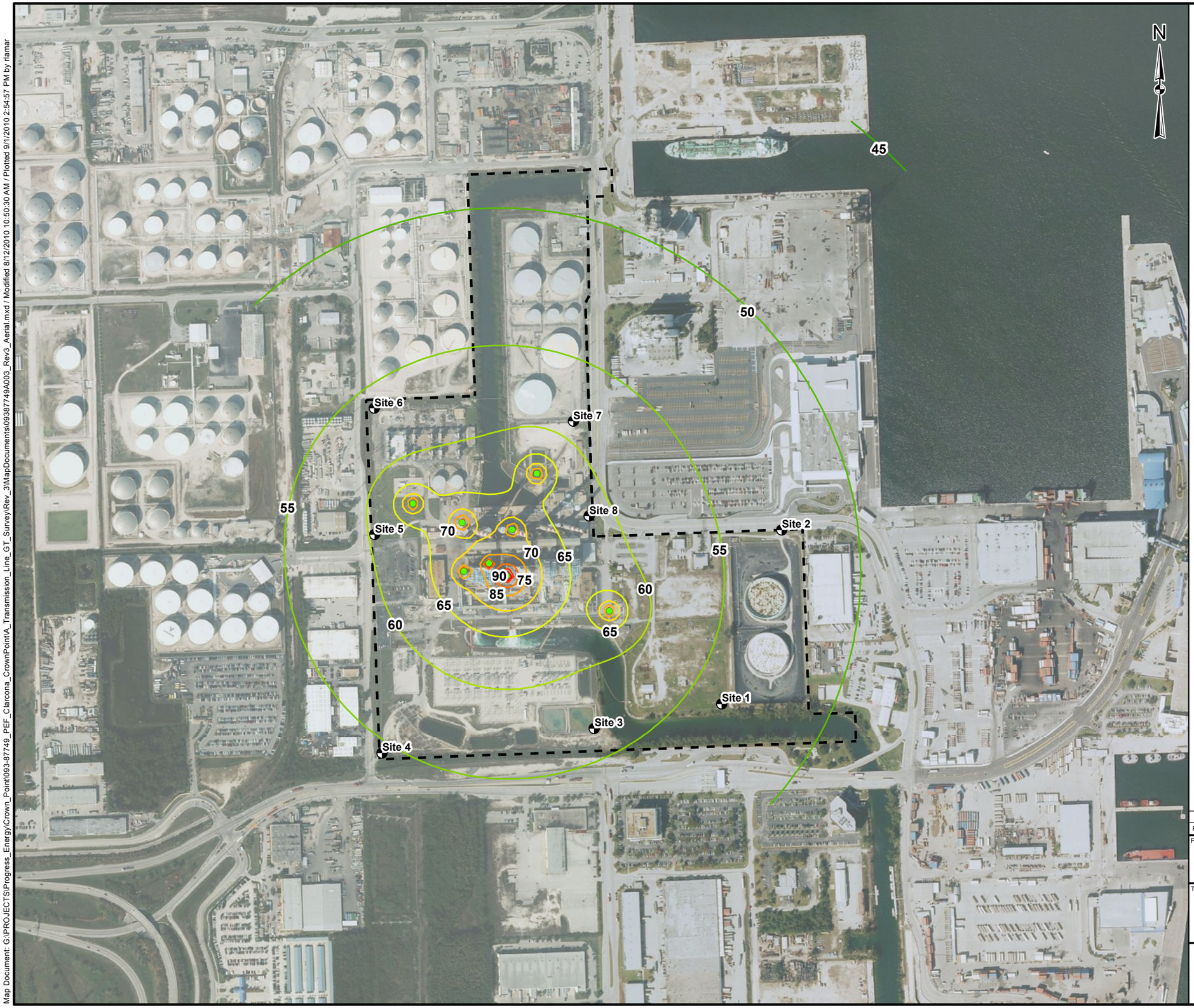
FPL
PORT EVERGLADES ENERGY CENTER

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			
CHECK					
REVIEW					

FIGURE 5.7.5-1



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					

FIGURE 5.7.5-2

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