

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

This chapter addresses the environmental effects of site preparation and construction of the Project. Impacts of construction of on-Site facilities and associated non-linear facilities on land, surface water, groundwater, ecology, air quality, solid waste, human populations, landmarks and sensitive areas, and archaeological and historic sites are presented.

Construction activities for the Project are expected to begin in the third quarter of 2011. The first phase of construction will involve access roads development and site preparation activities. Construction of the nuclear generating units will commence after receipt of the combined license, with construction activities scheduled over approximately 48 months. For each unit, a six-month period for fuel load and startup will follow construction. Construction of the associated non-linear facilities for the Project will occur over this period. Units 6 & 7 are scheduled to begin commercial operation in 2018 and 2020, respectively.

5.1 Land Impacts

5.1.1 General Construction Impacts

The portions of the Turkey Point plant property that will be affected by the construction of the Project are shown on Figure 5.1-1. A total of about 600 acres within the approximately 11,000 acre plant property will be utilized during construction. ~~In addition, an approximately 300-acre FPL-owned fill source will be excavated as shown in Figure 3.1.2-1.~~ No explosives or blasting will be used during construction of on-Site or of associated non-linear facilities.

Site

The Site is located south of existing nuclear Units 3 and 4 and includes the Units 6 & 7 plant area and a laydown area to the west. The plant area will occupy approximately 218 acres, all of which will be impacted by construction activities for the power blocks, makeup water reservoir, circulating water cooling towers, Clear Sky substation, deep injection wells, and other support facilities (see Figure 5.1-1). The laydown areas will occupy approximately 52 acres, all of which will be impacted by construction activities. The Site will be cleared of vegetation and backfilled, as described below.

Laydown and parking areas, which may be heavily traveled, will be stabilized with shell or rock. More lightly traveled areas will be seeded with grass to prevent erosion.

Significant earthwork is required to establish finish grades at the Units 6 & 7 plant area, especially to raise the power block to its required finished-floor elevation of 26.0 ft NAVD 88. Approximately 7.8 million cubic yards of backfill will be required to raise the existing grade elevation of approximately -1.0 ft NAVD 88 to the finished grade elevation adjacent to the power block of 25.5 ft NAVD 88. Also, backfilling around the major power block embedded structures will require approximately 130,000 cubic yards of engineered structural backfill.

It is expected that stabilization of the plant area perimeter will be required to protect the industrial wastewater facility during excavation and removal of unsuitable material and placement of fill materials will generally progress in the following manner:

- To minimize potential impact on the cooling canals, the Units 6 & 7 plant area will first be isolated from industrial wastewater facility by installation of temporary sheet piling. The sheet piling will be installed into the Miami Limestone Formation around the perimeter of the plant area with the top of the sheet piling extending somewhat above the adjacent existing grade elevation. After the area behind the sheet piling is backfilled, the sheet piling will be removed and re-used as this process moves around the perimeter of the plant area. Eventually additional erosion protection such as riprap will be installed along the perimeter of the plant area adjacent to the canals.
- After stabilizing the perimeter of the Units 6 & 7 plant area with sheet piles, the approximately 5-ft thick layer of the organic soil material, or "muck", will be removed from the plant area and replaced with general area backfill to raise the surface above the maximum water levels expected in the industrial wastewater facility. An estimated 1.8 million cubic yards of muck to be removed (demucked), starting with a small area (approximately 20 ft wide) adjacent to (and inside of) the entire plant area perimeter. Demucking will continue until the Miami Limestone Formation is exposed along the interior face of the sheet piling and replaced with backfill. Demucking and placement of backfill will be carefully coordinated to minimize inflow of groundwater. The backfill will be placed and compacted to an approximate elevation of 0 ft NAVD 88 to create a working base for a mechanically stabilized earth (MSE) wall. This wall will be constructed around the perimeter of the Units 6 & 7 plant area, excluding the south side of the plant area where the makeup water reservoir will provide the plant area exterior wall. The MSE wall will be designed to retain the interior soil mass while also resisting wave forces resulting from the probable maximum hurricane. The MSE wall will extend from its base at approximately 0.0 ft NAVD 88 to a height that will range from elevation 20.0 ft to 21.5 ft NAVD 88.

- To establish a dry construction working surface at an approximate elevation of 0.0 ft NAVD 88, the remaining portions of the Unit 6 & 7 plant area will be demucked and backfill placed and compacted in a manner similar to the perimeter. This process will proceed simultaneously in multiple areas across the plant area, sequenced to facilitate subsequent excavation activities and will continue until the entire layer of muck is excavated and the plant area is backfilled to elevation 0.0 ft NAVD 88, except for the designated makeup water reservoir area which will not be backfilled. Backfill will be obtained from ~~a combination of an FPL owned fill source located on a 300-acre plot located near Homestead Air Reserve Base approximately 4.5 miles from the plant area or other regional sources.~~ Reused material excavated from the plant area will be used as structural backfill. ~~Figure 1.4-2 depicts the location of the FPL owned fill source.~~
- The muck removed during excavation will be transferred to designated spoils storage areas, as depicted on Figure 5.1-1. Material removed from the deeper excavations and evaluated as acceptable for reuse will be stored for common or structural backfill. The bridge to the spoils area along the southern berm may need to be upgraded to allow truck traffic.

Earthwork – Units 6 & 7 Power Block

The power block footprint encompasses the nuclear and turbine island building areas, which include the following major buildings for each unit:

- Containment building
- Auxiliary building
- Annex building
- Turbine building
- Radwaste building

Site preparation, excavation and foundation preparation for the Units 6 & 7 power block areas will generally include the following:

- A temporary dewatering system will be required for the two power block area deep excavations. Drainage sumps will be installed at the bottom of the excavations from which surface drainage and/or accumulated groundwater will be pumped to the cooling canals of the industrial wastewater facility.
- The two excavations for the containment and auxiliary buildings will extend to an approximate elevation of -35.0 ft NAVD 88 or to the top of competent rock in the Key Largo Formation. To permit construction of the deep

foundations and to hydraulically isolate this excavation from horizontal groundwater flow, a permanent reinforced concrete diaphragm “cutoff” wall will be constructed. It is anticipated that the diaphragm wall will be installed into the Key Largo Formation to a depth of approximately –65.0 ft NAVD 88 or just below a semi-confining layer in the Biscayne Aquifer. Top of the diaphragm wall will be at elevation 2.0 ft NAVD 88 or two ft above the construction working surface elevation of 0.0 ft NAVD 88.

- Once construction of the diaphragm wall is completed around the planned deep foundation area, excavation of the existing material within its interior will commence using conventional methods (use of explosives will not be required). Excavated material not suitable for reuse will be transferred to the designated spoils storage areas, as depicted on Figure 5.1-1. Material removed from the excavation and evaluated as acceptable, will be stored on the plant area and used later as common or structural backfill.
- Lean concrete fill will be placed between the excavated surface of the Key Largo Limestone Formation at approximately –35.0 ft NAVD 88 and an approximate elevation of –16.0 ft NAVD. At this elevation, additional lean concrete fill, mud mat(s) and a waterproof membrane will provide an interface at –14.0 ft NAVD for construction of the containment and auxiliary building reinforced concrete foundations. Structural fill will then be placed to prescribed compaction requirements in the annular space between the power block structures and the diaphragm wall. The structural fill will extend to the top of the wall and fill will be placed over common fill at a 1.5:1 horizontal to vertical slope past the diaphragm wall perimeter.

Once the power block area has been backfilled to the top of diaphragm wall, backfill of the remaining plant area will be completed in a sequence defined by the construction schedule. Finished grade of the plant area will slope up from an approximate elevation of 19.0 ft NAVD 88 (adjacent to the perimeter retaining wall) to elevation 25.5 ft NAVD 88 at the power block area near the center of the plant area. The slope of the finished grade will be approximately 0.5 percent from the exterior walls to the power block areas with contours and swales to allow drainage into the surrounding canals.

Makeup Water Reservoir, Cooling Towers, and Makeup Water Supply Pipelines

The makeup water reservoir (a reinforced concrete structure with a footprint of approximately 37 acres) will be located in the south end of the plant area. Six mechanical draft cooling towers (three per unit) will be installed over the reservoir to maximize size of the reservoir. Site preparation, excavation and construction of the reservoir will generally include the following:

- The south perimeter of the plant area will be stabilized similar to the remainder of the plant area perimeter by driving sheet piles into the Miami Limestone Formation. In addition to restraining the return canals, this sheet

piling will function as sacrificial formwork when the reservoir exterior wall is poured and only the exposed portion above approximate elevation 0.0 NAVD 88 will be removed.

- After stabilizing the canals, the muck behind the sheet piles will be excavated to the top of the Miami Limestone Formation and placed in the designated spoils areas.
- General area dewatering will not be required as the surface of the excavated area will be sealed by tremie concrete (if required) to minimize in-leakage of ground water. Local dewatering in the area of the deeper cooling tower foundations will be required and pressure grouting might be required to facilitate this dewatering.
- Concrete will be placed over the excavated area to form the reservoir base slab. The top of base slab will be at elevation -2.0 ft NAVD 88. Reinforced concrete walls will then be constructed with the top elevation at 24.0 ft NAVD 88.

The circulating water system piping will be routed from the discharge of the circulating water pumps located on the north side of the makeup water reservoir, to the condenser in the turbine building and from the condenser to the cooling towers. The section of the circulating water piping extending beneath the condenser will require a deep excavation and local dewatering. The remaining sections of the circulating water piping will be above the Miami Limestone and will be installed as the plant area is backfilled and will not require dewatering. Completion of the circulating water system piping installation will coincide with the turbine building pedestal basemat placement.

Blowdown piping will be routed from the circulating water discharge header to the blowdown sump on the east side of the plant area. These lines will be installed above the Miami Limestone as the plant area is backfilled.

Associated Non-Linear Facilities

The associated non-linear facilities to be constructed include the nuclear administration building, training building and parking area; an FPL reclaimed water treatment facility and treated reclaimed water delivery pipelines; radial collector wells and delivery pipelines; and the equipment barge unloading area; ~~and the FPL owned fill source.~~

The nuclear administration building, training building and parking area are located north of the Site inside the perimeter canals of the industrial wastewater facility. The nuclear administration building and training building will occupy approximately nine acres, and the parking area will occupy

approximately 23 acres. The area for the nuclear administration building and training building will be cleared of vegetation, demucked and backfilled to a finished grade of 14 ft NAVD 88. Removed muck will be transported to designated spoils areas as shown in Figure 5.1-1.

The FPL reclaimed water treatment facility will be located northwest of the Site, as depicted on Figure 5.1-1. The area for the FPL reclaimed water treatment facility will be demucked and backfilled to an elevation of 14 ft NAVD 88. Removed muck will be transported to designated spoils areas as shown in Figure 5.1-1. Considering the additional area required for laydown, parking, and other supporting facilities, the total disturbed area is estimated to be approximately 44 acres (see Figure 4.2-5). The treated reclaimed water delivery pipelines will be routed from the FPL reclaimed water treatment facility to the west side of the makeup water reservoir. Excavation will be required between the FPL reclaimed water treatment facility and the plant area. Approximately two acres will be disturbed during construction of the delivery pipeline from the FPL reclaimed water treatment facility to the plant area.

Radial collector wells will be constructed to supply approximately 86,400 gpm of makeup water to the circulating water system cooling towers. As shown on Figure 5.1-1, the wells will be located on the Turkey Point peninsula, east of the existing units. Each radial collector well will consist of a central reinforced concrete caisson extending below the ground level with laterals projecting from the caisson. The well laterals will be at a depth of approximately 40 ft and will be advanced from within the caissons horizontally a distance of up to 900 ft beneath Biscayne Bay. The design for a typical radial collector well is illustrated in Figure 4.5-2. The wells will be designed and located to induce recharge from Biscayne Bay. The radial collector well area is shown in Figure 4.5-3. The delivery pipelines from the radial collector wells will require excavation on the Turkey Point peninsula and the existing berm east of the plant area. Approximately 14 acres will be temporarily disturbed during the construction of the wells and the delivery pipelines, including an area for laydown. Areas involving dewatering may be isolated using sheet pile technology or equivalent.

The existing equipment barge unloading area, located on the north side of the turning basin, will be extended landward to approximately 60 ft by 100 ft and 9 ft deep to facilitate heavy component unloading for construction of Units 6 & 7 as shown in Figure 5.1-2. The area impacted by construction is estimated to be approximately 0.15 acres. Removed muck will be transported to a designated spoils area as shown in Figure 5.1-1.

Local dewatering for some of the associated non-linear facilities may be required and pressure grouting might be required to facilitate this dewatering. Water produced during dewatering will be managed local to each facility or released to the industrial wastewater facility.

~~Clean backfill will be obtained from a combination of regional sources, and an FPL-owned fill source located on approximately 300 acres near Homestead Air Reserve Base. The FPL-owned fill source is proposed as a potential water management feature that will be designed to complement and enhance regional wetland rehydration projects. Spoils material from the FPL-owned fill source will be reused at the property, taken away for other suitable use, or properly disposed.~~

The spoils areas comprise approximately 200 acres along the existing berms of the industrial wastewater facility (see Figure 5.1-1). These areas will be elevated to approximately six ft based on the amount of muck that may have to be excavated.

FPL will prepare and submit an earthwork and materials disposal plan prior to the start of construction. This plan will be developed in accordance with applicable Miami-Dade County regulations. The plan will include the various types of earthwork, characterization of disposal material, and potential for disposal sites both on and off the Turkey Point plant property.

5.1.2 Roads

The peak employment is expected to occur in 2016 and will be approximately 3,650 construction workers, operations staff, and management. Construction vehicle traffic access to the Site and associated non-linear facilities will be from SW 359th to the plant access road which enters the plant property at its western boundary. These roads, along with other roadway improvements, are necessary to accommodate the workforce and truck traffic during the construction period. Roadway improvements are associated linear facilities and are discussed in Section R9.0. Subsection 5.7.2 and Appendix 10.7.4 present the traffic analysis supporting the need for the roadway improvements.

The existing heavy haul roads originating at the existing barge turning basin northeast of the Site will be improved. The roads will have a total length of approximately two miles from the equipment barge unloading area to the Units 6 & 7 plant area, or approximately four acres. Improvements of these and other roadways will start at the barge turning basin and extend generally west between Unit 5 and Units 1 & 2. The roadways will then extend generally south and cross over two new heavy haul bridges, one at the discharge canal and the other at the main cooling return canal. The

heavy haul roads will then terminate at three locations on the Site to allow for large component delivery and placement. The existing heavy haul roads will not have to be widened, but will require resurfacing to accommodate transports and/or trucks. There will be no increase in impervious surfaces as a result of the minor upgrades. Culverts will be installed under the heavy haul roads where required to maintain drainage patterns.

Spoils material resulting from the heavy haul road improvements will be reused when possible or transported to the spoils areas.

5.1.3 Flood Zones

The entire Site, as determined by the Federal Emergency Management Agency (FEMA), is outside the 100-year floodplain (see Figure 3.1.6-1). The plant area will be raised to a finished grade elevation of approximately 19 to 25.5 ft NAVD 88. The finished grade elevation of the containment and other key facilities in the power block will be above the maximum water surface elevation for the probable maximum hurricane plus wave run-up (24.8 ft NAVD 88). Construction at the Site will not adversely impact adjacent surface water flood elevation or flows, due to the industrial wastewater facility that surrounds the Site; will not cause any adverse adjacent surface water flood elevations or flows; and will not cause any adverse flooding or related impacts to off-Site property.

The FPL reclaimed water treatment facility lies within the 100-year floodplain and will be elevated to 14 ft NAVD 88, above the 100-year floodplain. The nuclear administration building, training building and parking area are outside the 100-year floodplain.

5.1.4 Topography and Soils

Current topographic features at the Site reflect both existing undisturbed conditions as well as past and present power-plant related activities. The existing grade is generally flat, approximately sea level, and is periodically inundated by water in the industrial wastewater facility.

No adverse impact is anticipated to soil stability or bearing strength since major power plant structures will be founded on competent rock. Structural backfill will be placed under other plant structures as the plant area is filled to the final grade elevation of approximately 19 to 25.5 ft NAVD 88.

Most of the areas designated for construction activities will require filling. Construction-related changes to Site topography (19 to 25.5 ft NAVD 88) may have an effect on local aesthetics or view shed. This change in topography may be observable from Biscayne Bay, located east of the Site. The nuclear administration building, training building, and FPL reclaimed water treatment facility will be elevated to 14 ft NAVD 88. The change in topography of these facilities and location of these associated non-linear facilities within the Turkey Point plant property will not likely be observable from areas outside the plant property. The topography of the areas for the radial collector wells, ~~FPL-owned fill source~~ and equipment barge unloading area will not change from the existing conditions. The delivery pipelines for the treated reclaimed water and saltwater will be under existing ground level and therefore not cause a change in topography.

5.2 Impact on Surface Water Bodies and Uses

5.2.1 Impact Assessment

5.2.1.1 Construction Water Use

The peak construction water demand for the Project is estimated to be 555 gpm. The estimated construction water uses include the following amounts (site preparation / construction):

- 6 / 100 gpm for personnel (3,647 people at peak $\times$ 33 gpd / 20-hr day);
- 0 / 60 gpm for concrete production (5,000 cubic yards at 145 lbs/cubic yard / 8.33 lbs/gal/24 hrs);
- 399 / 155 gpm for Site fill processing [23,940 gallons per hour (gph) max];
- 110 / 75 gpm for fugitive dust control (6,600 gph max);
- 40 / 25 gpm for cleaning, vehicle washdown, and lubrication (2,400 gph max); and
- 0 / 140 gpm for hydrostatic testing and flushing (8,400 gph max).

These flow rates will not be continuous but will vary as construction activities demand. For example, water for fugitive dust control would only be used as necessary to minimize emissions.

The source of construction water will be potable water from MDWASD from the existing Turkey Point Plant potable supply or new potable water pipelines for Units 6 & 7. Potable water for construction may also be provided by tanker trucks. In addition, construction water for dust control may also be obtained from stormwater and dewatering water collected on-Site or from the beneficial reuse of freshwater from the operating plants.

Potable water for human consumption during construction will be obtained from the existing potable water system for the Site through temporary piping connections or from bottled water. Potable water for emergency eyewash and shower stations will be obtained initially from temporary systems and subsequently connected to the potable water systems.

Portable chemical toilets, holding tanks and/or existing facilities will be available for sanitary wastes. 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. No surface or groundwater discharge will occur from portable toilets or holding tanks.

Water is required for concrete production and evaporate by the solidification of concrete. Wastewater from concrete production (cleaning, washing and stormwater) will be released to the industrial wastewater facility or the deep injection wells. Water for control of fugitive dust is used to increase the moisture content of soils and will be part of the matrix or will evaporate. Water for backfill operations will be contained within the plant area with no releases to any surface waters of the state.

Water associated with hydrostatic testing and flushing will be obtained from the existing, temporary and/or new water systems and will be contained or released to the industrial wastewater facility or deep injection wells. This water may contain low levels of ammonia for pH control, and is only used for hydrostatic testing and flushing of systems after they are installed. Other chemical cleaning of the steam piping system will be performed to remove accumulated weld splatter, slag, filings, and other debris. This process water may contain the aforementioned debris, along with rust, grease, and other fabrication and construction residues. The process water will be treated, if necessary, and released to the industrial wastewater facility or the deep injection wells.

Water used for cleaning, vehicle washdown, and lubrication will be directed to a lined holding basin. These wastewaters may be collected in tanks and disposed of off-site by contractors in accordance with local regulations using appropriate permits. The deep injection wells may be used during construction to dispose of these wastes, if the system is available for use.

5.2.1.2 Impact Assessment

Turkey Point Plant Property

Figure 5.1-1 presents the land areas that will be impacted by the construction of Units 6 & 7 and the associated non-linear facilities. All activities on the plant area are contained within the perimeter canal of the industrial wastewater facility and will not impact adjacent surface bodies.

Surface waters in the vicinity of the Site and associated non-linear facilities to be located on Turkey Point plant property are: portions of Biscayne Bay, the mangrove wetlands within and outside of the areas adjacent to the FPL reclaimed water treatment facility and the caissons for the radial collector wells. Other surface water features in proximity to the Site and non-linear facilities include tidal mangroves associated with the 13,000-acre EMB. The focus of this impact evaluation is on potential discharges from these land areas to those surface water systems.

The Site is located entirely within the existing industrial wastewater facility permitted by the FDEP. No surface waters of the state or the United States will be impacted by construction activities at the Site since it is entirely within the industrial wastewater facility. Biscayne Bay is located east of the Site, but is separated from the Site by one of the main return cooling canals and associated berms. Adverse impacts to Biscayne Bay from on-Site construction are not anticipated because there is a berm between Biscayne Bay and the eastern portion of the cooling canals. Concrete batch plant wastewater, dewatering effluent, hydrostatic testing wastewater and construction stormwater will be released to the industrial wastewater facility or the deep injection well.

An area north of the Site will be developed for parking during construction and ultimately, for the nuclear administration building, training building and parking area. This area is also surrounded by the canals of the existing industrial wastewater facility, with no connection to surface waters of the state or the U.S.

The FPL reclaimed water treatment facility will occupy approximately 44 acres between the L-31E Canal and the main entrance road to the Turkey Point Plant as shown in Figure 5.1-1. This area is within wetland areas isolated from tidal marshes by the existing Turkey Point Plant access road. The potential impacts during construction will be minimized by initially isolating the surrounding surface water bodies from those areas that must be dredged and filled. This would be done by first enclosing the area requiring site preparation with sedimentation barriers (e.g., screens). A non-porous barrier (e.g., Fabriform, soil/cement bags, or sheet pile) will then be constructed outlining those areas where

structures or construction areas are required. Filling will be performed starting at one corner and working along the sides toward the middle of the construction area. The non-porous barriers will be left in place when filling is complete. The surface water runoff from the FPL reclaimed water treatment facility at the existing condition flows to the surrounding area. In addition to the temporary erosion and sedimentation control measures discussed above, retention or detention ponds will be installed to capture runoff during construction. Temporary sediment basins will be installed to detain sediment-laden runoff from the disturbed areas. Once this area is filled, off-site impacts will be controlled and minimized through proper design and placement of runoff control features (see Subsection 4.8), in accordance with applicable regulations.

Surface water flow patterns will be altered in the short-term by the construction of the radial collector wells and the delivery pipelines. Unused excavated material will be placed in designated spoils areas. Sedimentation barriers or other appropriate methods will be installed to limit potential impacts to surface water bodies. Temporary traps with a controlled stormwater release structure will be installed as necessary to detain sediment-laden runoff from disturbed areas. When construction activities are complete, the drainage will be restored to preconstruction conditions.

A portion of the existing equipment barge unloading area will be expanded to accommodate unloading of large components and modules. Construction in this area will be performed in such a manner as to isolate the equipment barge unloading area from the turning basin. Material dredged from this area will be stockpiled on existing berms located within the industrial wastewater facility. The use of sheet piles will not impact the surface water flow since the construction area will be isolated from the remaining portions of the turning basin.

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

Runoff from the laydown and parking areas will drain to holding basins, then will be released to the existing industrial wastewater facility after oil/water separation.

Construction activities will alter runoff in the Site and associated non-linear facilities; however, no adverse effects are anticipated from this alteration. Surface water runoff from the power block,

construction parking, associated facilities, and laydown areas will be directed to the existing industrial wastewater facility during construction. In addition to the temporary erosion and sedimentation control measures discussed above, retention or detention ponds will be installed to capture runoff during construction. Temporary sediment basins will be installed to detain sediment-laden runoff from the disturbed areas. Surface water runoff from associated non-linear facilities will be directed to an oil/water separator, as necessary, before release to surface water bodies. Adverse impacts to surface waters are anticipated to be negligible, based on the limited quantity of discharge and the application of best management practices (BMPs) for runoff to surface water bodies during construction of associated non-linear facilities.

Construction stormwater discharges released into waters of the state from associated non-linear facilities will be addressed through compliance with Rule 62-621.300(4) [General Permit for Stormwater from Large and Small Construction Activities].

Dewatering will be required for the construction of deep foundations and structures in the power block. The water quality of the dewatering effluent will be essentially the same as the groundwater and will be routed to the existing industrial wastewater facility or retained on-Site and allowed to percolate and/or evaporate.

All chemicals and petroleum products used for Project construction will be handled in a manner as to prevent a release to the environment due to a spill. Used oil from construction vehicles and equipment may be collected in appropriate containers and transported to an approved facility for recycling.

Construction contractors will be required to implement environmental control practices (e.g., designating specific areas for fueling and maintenance) to minimize any spills. These areas will be positioned so that any spills, if they do occur, will not be adjacent to any surface waters. Should any spills occur, immediate cleanup will be performed, with ultimate disposal of the material in an approved facility. When appropriate, such materials will be handled as described in FPL's existing SPCC plan and the Turkey Point Plant hazardous waste management plan. In addition, construction-specific procedures will be developed and implemented by individual contractors based on FPL directions/criteria.

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

FPL-Owned Fill Source

~~The FPL-owned fill source that will provide fill material for the Project is located about four miles northwest of the Site. The property, which is approximately 300 acres, is located northwest of the intersection of SW 107th Avenue and SW 312th Street. The land is currently used for agriculture (predominately tree nurseries). The land surface elevation in this area is about 3 to 4 ft NGVD. The land is almost flat, with a very small slope (one to two ft per mile) to the east. The wet season (October) and dry season (May) water levels in this area are about 2.0 ft NGVD and 1.0 ft NGVD, respectively. The upper 4 to 5 ft of soil is a mixture of marl, peat, and fills. Rock (Miami Limestone) is generally encountered 4 to 5 ft below land surface. The Fort Thompson Formation and Key Largo Limestone (interbedded) are found between 9 and 74 ft below land surface. Surface drainage in the area is currently through swales and roadside ditches to the Military or Mowry Canals, then east toward Biscayne Bay.~~

~~Spoils material from the FPL-owned fill source will be reused at the property, taken away for other suitable use, or properly disposed. Extraction of aggregate will be conducted following applicable state and local regulations and in a manner to minimize off-site impacts to surface waters. Perimeter berms will be constructed around the source. Buffer areas will be maintained between the top of berm and adjacent property boundaries and rights-of-way. Before construction of the berm is started, sedimentation barriers will be installed to limit potential impacts to off-site areas and surface water bodies. After the berms are constructed, all rainfall runoff from the area will be retained on site and allowed to evaporate or percolate. Aggregate extraction operations conducted below the water table will be done without dewatering the formation. Aggregate extracted from the source will be stockpiled inside the perimeter berm and allowed to drain before it is transported. While the extraction is underway, the water within the excavation may become turbid due to suspension of solids. There will be no surface water discharge of water or stormwater runoff from the excavation area during construction. Consequently, this turbidity is not expected to impact surface water quality away from the property. The turbidity within the excavation area will be temporary and water clarity will improve after excavation operations cease.~~

~~The water management feature will be created from the excavation activities and will be designed to complement and enhance regional wetland rehydration projects. The final depth of the excavation in the deep cut areas will be based on all applicable regulations. FPL has conducted test drilling and salinity profiling of the aquifer in this area. The depth criterion will be established to ensure that the activity does not induce saltwater intrusion. Based on all the considerations discussed above, no significant impacts to surface water resources are expected from the extraction or construction of the water management feature.~~

5.2.2 Measuring and Monitoring Programs

Release of stormwater associated with construction activities to the industrial wastewater facility or to jurisdictional surface waters will be monitored as required under applicable regulations as identified in Subsection 3.8.

5.3 Groundwater Impacts

5.3.1 Impact Assessment

Turkey Point Plant Property

Activities associated with site preparation and construction are not expected to produce any significant changes to groundwater quality, quantity, or levels in the vicinity of the Site and associated non-linear facilities. General area dewatering activities will be confined to areas associated with construction within the power block and the effluent released to the existing industrial wastewater facility. Localized dewatering activities may occur during the construction of some associated non-linear facilities. Water produced during dewatering will be managed local to each facility or released to the industrial wastewater facility. The dewatering systems will be designed using BMPs to control turbidity of the effluent.

A geo-hydrologic model (Visual MODFLOW) was used to simulate impacts to the surficial aquifer from these dewatering activities. The maximum rate of groundwater production required to maintain a “dry” level of -35 ft NAVD 88 in each excavation simultaneously is estimated to be approximately 18,000 gpm or 26 MGD. This was considered the worst case, or bounding scenario. The groundwater elevation during dewatering would exist in the upper part of the Fort Thompson formation. Based on the simulation, approximately 50 percent (9,000 or 13 MGD) of the dewatering flow would come from Biscayne Bay, while the remaining flow would come from the discharge side of the industrial wastewater facility and inland areas west of the plant area.

The circulating water flow rate in the industrial wastewater facility for Turkey Point Units 1 through 4 is 4,250 cubic ft per second or 2,747 MGD. The extracted groundwater from dewatering would be less than one percent of the circulating water flow rate, assuming all 12.96 MGD (9,000 gpm) comes from the discharge canal. The water withdrawn from the excavations will be released into the industrial wastewater facility. Consequently, this water will be recirculated within the industrial wastewater facility.

When the power block for Unit 7 is dewatered, the geohydrologic model results show that most of the groundwater will originate from the industrial wastewater facility. Consequently, the water quality for the dewatering effluent will be of similar quality as that in the adjacent industrial wastewater facility. When the power block for Unit 6 is dewatered, the geohydrologic model results indicate that a portion of the groundwater will originate from under the bay. When this occurs, the water quality of the dewatering effluent will be a mixture of bay water and water from the industrial wastewater facility. Because water from under the bay is less saline than the water in the industrial wastewater facility, the dewatering effluent will temporarily reduce hypersaline conditions in the industrial wastewater facility.

Groundwater levels on-Site will be temporarily altered during construction activities, due to the dewatering necessary for the deep foundations. However, these temporary alterations will be mitigated in part by the hydraulic isolation of the Site with regard to local surface water and the interconnection between the industrial wastewater facility and the shallow aquifer. Slight changes in percolation rates will have negligible impacts on water levels, because the surface infiltration affects only a localized area within the Site. In addition, the surficial aquifer in the area is tidally influenced and unsuitable for potable uses.

Based on the location of dewatering areas within the power block, no off-site impacts to groundwater are anticipated. There will be no impacts to the underlying deep aquifers because excavation and dewatering activities will be limited to the surficial aquifer system. Once the detailed design is completed, a dewatering plan will be developed prior to commencing dewatering activities.

Material removed from the excavation and evaluated as acceptable for re-use will be sorted for common or structural backfill and/or stockpiled for future use within the industrial wastewater facility. There have been no other industrial activities in the Site from which these soils will be

excavated. Therefore, no adverse impacts to groundwater will occur as a result of this construction activity.

Groundwater flow will be influenced by construction dewatering activities for the radial collector well caissons and laterals and the associated delivery pipelines. Construction dewatering for the caissons and pipelines is not expected to have an adverse impact on nearby wetland areas. Areas involving dewatering may be isolated using sheet pile technology or equivalent. Water from the dewatering activities for the construction of radial collector wells and delivery pipelines will be released to the industrial wastewater facility.

As discussed in Subsection 5.2.1.1, water for construction personnel will come from either the potable supply system or bottled water. Portable chemical toilets and the new sanitary system will be used to insure no discharge to groundwater. Water used for backfill operations and fugitive dust control will either become part of the soil matrix or evaporate. Since these activities will primarily occur within the industrial wastewater facility, there will be no adverse impacts to groundwater given the volume of these waters compared to the volume and quality of water in the industrial wastewater facility. Water associated with cleaning and vehicle washdown will be directed to lined holding basins. Hydrostatic testing and flushing water will be released to the industrial wastewater facility or the deep injection wells in accordance with applicable permits. Wastewater from the concrete batch plant operation will be routed to the industrial wastewater facility or to the deep injection wells.

As discussed in Subsection 5.2.1.2, construction contractors will be required to implement practices to minimize spills. Maintenance and refueling will be performed only in designated areas. Any spills will be cleaned up immediately and wastes disposed of properly.

As discussed in Subsections 4.6 and 4.7, and presented in Tables 4.6.0-1 and 4.7.0-1, BMPs will be used to mitigate potential impacts to groundwater. As shown in Table 4.6.0-1, construction wastewaters will be characterized as non-hazardous prior to release to the industrial wastewater facility or the deep injection wells, based on process knowledge or testing results.

~~FPL-Owned Fill Source~~

~~The aggregate extraction operation at the FPL-owned fill source will be conducted in a manner to minimize impacts to groundwater and will follow applicable regulations. Extraction operations conducted below the water table will be done without dewatering the formation. Extracted aggregate~~

~~will be stockpiled inside the perimeter berm and allowed to drain before it is transported. While the extraction is underway, the water may become turbid due to the suspension of solids. This turbidity is expected to be confined to the property.~~

~~The final depth of the water body will be based on all applicable regulations. FPL has conducted test drilling and salinity profiling of the aquifer in this area. Criteria will be established to ensure that the extraction is done in the freshwater portion of the aquifer and that it does not induce saltwater intrusion into the aquifer or the water body. Therefore, no significant impacts to groundwater resources are expected from the fill extraction or construction of the water management feature.~~

~~Construction workers at the FPL-owned fill source will use bottled water and portable chemical toilets.~~

5.3.2 Measuring and Monitoring Program

During construction dewatering, applicable measuring and monitoring programs will be conducted in accordance with FDEP, SFWMD and Miami-Dade County non-procedural requirements.

5.4 Ecological Impacts

5.4.1 Impact Assessment

Construction on the Site and associated non-linear facilities will impact both terrestrial (upland) and aquatic (wetland) systems. Some features may impact only terrestrial or aquatic systems, while others may impact both. The ecological impacts of each feature are discussed below.

5.4.1.1 Terrestrial Systems

The following subsections include descriptions of potential ecological impacts on terrestrial systems resulting from Project construction activities at the Site and for the associated non-linear facilities. Existing land use/land cover of the Site and the associated facilities is shown in Figures 3.3.5-1 through ~~3.3.5-3~~ and 3.3.5-2.

Terrestrial Systems – Site

The Site comprises approximately 300 acres, of which approximately 28 acres of uplands will be used for the construction of Units 6 & 7 and the laydown area to the west. The 28 acres of altered terrestrial systems on-Site (see Subsection 3.3.6, Pre-Existing Stress, Terrestrial Systems) include

upland spoils areas and previously cleared and filled areas developed in connection with the existing Turkey Point Plant, which are paved or filled with limerock and used as access roads, parking areas, and the land utilization building. These areas do not contain unique wildlife species and are not considered important wildlife habitats because of their disturbed nature. No significant adverse impacts to wildlife resources will occur as a result of construction in these areas.

No adverse impacts upon federal- or state-listed terrestrial plants and animals are expected, due to the existing developed nature of the terrestrial habitat within the Site. The existing paved and/or limerock-covered parking and storage areas in the western portion of the Site do not provide suitable habitat for listed plants or animals.

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

Noise from construction activities is not anticipated to significantly affect wildlife surrounding the Site. Presently, the area experiences noise associated with operation of the existing Plant facilities, and wildlife that occurs in the vicinity of the area, such as wading birds, is acclimated to such activities. No noise-sensitive wildlife is known to occur in the Site or in the vicinity of the Site.

Terrestrial Systems – Nuclear Administration Building, Training Building, and Parking Area

Impacts to terrestrial systems associated with the nuclear administration building, training building and parking area to be located north of the Site are limited to previously-disturbed areas of the existing Turkey Point Plant. These areas include approximately five acres of previously filled areas and roadways, which do not contain unique wildlife species and are not considered important wildlife habitats because of their disturbed nature. No significant adverse impacts to wildlife resources in the areas will occur as a result of laydown in these areas.

Terrestrial Systems - Radial Collector Wells

Terrestrial systems within the radial collector wells area, laydown area and associated delivery pipelines are limited to previously-filled limerock aggregate uplands. These areas do not contain unique wildlife species and are not considered important wildlife habitats because of their disturbed nature. No significant adverse impacts to terrestrial wildlife resources in these areas are expected as a result of construction of the radial collector wells and installation of the associated delivery pipelines.

Terrestrial Systems – Equipment Barge Unloading Area

Terrestrial systems within the equipment barge unloading area are limited to the existing plant facilities, including an adjacent boat ramp and fuel oil tanks. The expansion of the equipment barge unloading area will encroach upon previously filled areas of the Turkey Point Plant adjacent to the existing boat ramp. Construction in this area will not impact any significant areas of terrestrial wildlife habitat and is not anticipated to result in any adverse impacts to terrestrial ecological resources.

~~Terrestrial Systems – FPL Owned Fill source~~

~~The proposed FPL owned fill source location is dominated by commercial palm tree nurseries, which comprise approximately 244 acres of the approximately 300 acre area. As described in Subsection 3.3.6, these highly managed agricultural areas do not provide suitable native habitat for wildlife or listed species. Due to the altered condition of the fill source, lack of native vegetative communities, and prevalence of similar habitat within the surrounding region, no significant adverse impacts to terrestrial environmental resources are anticipated as a result of utilization of the fill source.~~

Terrestrial Systems – Spoils Areas

Terrestrial systems associated with areas for spoils placement will include approximately 200 acres of existing upland berms within the industrial wastewater facility, located on the east and west sides of the Grand Canal and along the southern boundary of the industrial wastewater facility. These areas were created through deposition of dredged material associated with excavation of the cooling canals, and currently are sparsely vegetated with exotic species, as described in Subsection 3.3.5. Access roads are located upon the berms adjacent to the Grand Canal and along the southern boundary of the industrial wastewater facility, which will provide access for placement of spoils material.

The spoils areas were specifically selected due to their lack of suitable nesting substrate conditions for the American crocodile. No crocodile nesting has been historically recorded within any of the spoils areas. The spoils areas do not contain any areas of freshwater refugia necessary for juvenile crocodile development. The addition of spoils material to these areas will not significantly change the current condition of existing habitat following completion of construction. Based upon the significantly disturbed nature of the berms proposed for spoils, lack of suitable crocodile nesting habitat or juvenile refugia, and sparse vegetative cover comprised of exotic species, no significant adverse impacts to wildlife resources in the area are anticipated as a result of spoils placement upon the berms.

5.4.1.2 Aquatic Systems/Wetlands

Construction at the Site and associated non-linear facilities will result in dredge/fill impacts to approximately ~~379~~³²⁷ acres of wetlands, of which 250 acres are located within the existing permitted industrial wastewater treatment facility. Wetland impacts resulting from construction of associated linear facilities are addressed in Section 9.0.

The Project design reflects an effort to avoid and minimize wetland impacts to the greatest extent practicable. The Site is contained within the permitted industrial wastewater treatment facility. Typically, industrial wastewater facilities are not considered waters of the state or waters of the U.S. The use of the Site will change as a result of the addition of Turkey Point Units 6 & 7 and ancillary facilities at this location. Therefore, wetlands on the Site are treated in this application as jurisdictional for purposes of quantifying wetland impacts and mitigation planning. The Project has been designed with a minimal footprint to reduce the wetland acreage impacted by construction where possible.

Erosion, sedimentation, and runoff control measures will mitigate the potential for water quality degradation; therefore, associated impacts to adjacent aquatic biological communities are not expected to be significant.

Project construction impacts to aquatic systems within the Site and associated non-linear facilities are described in the following sections. Additional information regarding wetland impacts of the Project and proposed mitigation are provided in Appendix 10.4, Environmental Resource Permit application.

Aquatic Systems – Site

Impacts to aquatic systems associated with construction at the Site include development of approximately 188 acres of isolated mud flats surrounded by active cooling canals, two man-made remnant cooling canals comprising approximately eight acres that cross the mud flat area, approximately nine acres of wetland spoil areas associated with remnant and active cooling canals, and approximately 12 acres of scattered mangrove heads, as described in Subsection 3.3.6. Construction of the western laydown area will impact approximately 17 acres of dwarf mangroves, 12 acres of open water/discharge canal, and four acres of man-made canal. All of the wetland systems associated with the Site are contained within the perimeter of the industrial wastewater facility. These areas exhibit severely altered hydrology, temperature, and salinity regimes resulting from their location within the industrial wastewater facility.

Aquatic Systems – Nuclear Administration Building, Training Building and Parking Area

Impacts to aquatic systems associated with the construction of the parking area north of the Site, and with the subsequent construction of the nuclear administration building, training building and parking area include development of 26 acres of isolated wetlands surrounded by existing parking areas and roadways. These include 18.5 acres of mangroves and 7.6 acres of mangrove/willow wetlands, as described in Subsection 3.3.6. These mangrove and mangrove/willow wetlands are significantly impacted by the surrounding development, which greatly reduces their function as wildlife habitat.

Aquatic Systems – FPL Reclaimed Water Treatment facility

Construction of the proposed FPL reclaimed water treatment facility will impact approximately 44 acres of dwarf mangroves and sawgrass southwest of the existing Turkey Point access road. The location was selected to avoid impacting an historical tidal creek in that area as well as to avoid impacting the freshwater test cooling canals north of the industrial wastewater facility.

Aquatic Systems - Radial Collector Wells and Delivery Pipelines

No impacts to aquatic systems are expected as a result of construction of the radial collector well caissons on the Turkey Point peninsula. The caisson locations have been designed to maximize utilization of existing upland fill areas and roadways and to avoid encroaching into adjacent areas of mangrove wetlands. Construction of the delivery pipelines from the radial collector wells to the Site will result in temporary impact to approximately three acres of mangrove wetlands during pipeline installation. Following installation, the delivery pipeline trench will be backfilled with native wetland soil to original topographic grade and the area allowed to naturally re-vegetate. Construction of the radial collector wells is not expected to result in any impacts to adjacent surface waters through utilization of BMPs to isolate the construction area with turbidity curtains, silt screens, or other erosion and turbidity control measures.

Aquatic Systems – Equipment Barge Unloading Area

Impacts to aquatic systems associated with enlargement of the equipment barge unloading area are anticipated to be minimal. In order to facilitate equipment barge unloading, a portion of the existing barge turning basin will be expanded, requiring excavation of adjacent uplands classified as electric power facilities. Approximately 0.1 acre of the existing turning basin will be dredged in association with the construction of the equipment barge unloading area. Expansion of the equipment barge unloading area is not expected to result in any impacts to adjacent surface waters through utilization

of BMPs to isolate the construction area with turbidity curtains, silt screens, or other erosion and turbidity control measures.

~~Aquatic Systems – FPL Owned Fill Source~~

~~Utilization of the FPL owned fill source for the Project will result in dredging impacts to approximately 52 acres of low quality wetlands, primarily in the form of ditches, exotic wetland hardwoods, wetland scrub, and freshwater marsh systems. These wetlands occur in association with active tree nurseries and are severely impacted through altered hydrology, proliferation of nuisance/exotic species of vegetation, and active agricultural operations in the immediate vicinity.~~

5.4.1.3 Wetland Mitigation

In accordance with regulatory guidelines of the FDEP and U.S. Army Corps of Engineers (USACE), as well as Miami-Dade County, FPL proposes that the loss of wetland habitat be mitigated for through a combination of wetland restoration, hydrologic enhancement, and preservation consistent with the regional restoration goals of the CERP, as well as use of the FDEP- and USACE-approved EMB and Hole in the Donut (HID) Mitigation Bank.

The calculation of mitigation requirements typically involves use of a wetland functional assessment value multiplied by the acreage of impact to determine the required number of mitigation credits. Wetland functional assessments typically involve ranking the subject wetland relative to several variables, such as vegetation, wildlife utilization, hydrology, and surrounding landscape conditions. The goal of the functional assessment is to determine the ecological value of the wetland prior to disturbance, to ensure that mitigation is designed to replace the wetland's ecological functions rather than merely the acreage of fill. Using this rationale, a two-acre wetland dominated by exotic vegetation with altered hydrology and little wildlife utilization would have a lower functional value and, thus, require fewer mitigation credits than a two-acre wetland supporting a diverse assemblage of native flora and fauna and unaltered hydrologic regime. Alternatively, some mitigation banks use mitigation ratios to calculate the number of credits required to offset wetland impacts, in accordance with the SFWMD *Basis of Review for Environmental Resource Permits*.

The functional assessment methodology, acreage of impact, resulting mitigation credits required to offset the loss of wetlands within the Site and associated non-linear facilities, and a description of FPL's proposed wetland mitigation plan are described below. More detailed information regarding

wetland impacts and proposed mitigation is provided in Appendix 10.4, Environmental Resource Permit application.

Wetland Functional Assessment Methodology

Information was collected to prepare wetland functional assessments utilizing two methodologies, where applicable, the FDEP's Uniform Mitigation Assessment Method (UMAM) and the EMB's Wetland Assessment Technique for Environmental Review (W.A.T.E.R.). The UMAM is used to quantify the units of functional loss associated with impacts, as well as to calculate the amount of functional lift (number of mitigation credits) generated through wetland restoration, preservation, creation, or enhancement activities. When an applicant proposes use of a mitigation bank permitted prior to adoption of the UMAM rule, such as the EMB, the applicant must use the functional assessment methodology approved for the particular mitigation bank when determining the amount of functional loss, as pursuant to Rule 62-345.100 (6), F.A.C.

UMAM – FDEP's UMAM quantifies wetland quality or health through the evaluation of several variables, including location and landscape support, water environment, and community structure. The variables are defined in Rule 62-345, F.A.C., and are summarized in the following sections.

Location and Landscape Support – The value of functions provided by an assessment area to fish and wildlife are influenced by the landscape position of the assessment area and its relationship with surrounding areas. Many species that nest, feed, or find cover in a specific habitat or habitat type are also dependent in varying degrees upon other habitats, including upland, wetland, and other surface waters that are present in the regional landscape. The location of the assessment area shall be considered to the extent that fish and wildlife utilizing the area have the opportunity to access other habitats necessary to fulfill their life history requirements. The availability, connectivity, and quality of off-site habitats and off-site land uses that might adversely impact fish and wildlife utilizing these habitats are factors to be considered in evaluating the location of the assessment area. The location of the assessment area shall be considered relative to off-site and upstream hydrologic contributing areas and to downstream and other connected waters to the extent that the diversity and abundance of fish and wildlife and their habitats is affected in these areas. The opportunity for the assessment area to provide off-site water quantity and quality benefits to fish and wildlife and their habitats downstream and in connected waters is assessed based on the degree of hydrologic connectivity between these habitats and the extent to which off-site habitats are affected by discharges from the assessment area.

Water Environment – The quantity of water in an assessment area, including the timing, frequency, depth, and duration of inundation or saturation, flow characteristics, and the quality of that water may facilitate or preclude its ability to perform certain functions and may benefit or adversely impact its capacity to support certain wildlife. Hydrologic requirements and tolerance to hydrologic alterations and water quality variations vary by ecosystem type and the wildlife utilizing the ecosystem. Hydrologic conditions within an assessment area, including water quantity and quality, must be evaluated to determine the effect of these conditions on the functions performed by area and the extent to which these conditions benefit or adversely affect wildlife. Water quality within wetlands and other surface waters is affected by inputs from surrounding and upstream areas and the ability of the wetland or surface water system to assimilate those inputs.

Community Structure (Vegetation and Structural Habitat) – The presence, abundance, health, condition, appropriateness, and distribution of plant communities in surface waters, wetlands, and uplands can be used as indicators to determine the degree to which the functions of the community type identified are provided. Vegetation is the base of the food web in any community and provides many additional structural habitat benefits to fish and wildlife. Overall condition of a plant community can often be evaluated by observing indicators such as dead or dying vegetation, regeneration and recruitment, size and age distribution of trees and shrubs, fruit production, chlorotic or spindly plant growth, structure of the vegetation strata, and the presence, coverage, and distribution of inappropriate plant species. Human activities such as mowing, grazing, off-road vehicle activity, boat traffic, and fire suppression constitute more direct and easily observable impacts affecting the condition of plant communities. Although short-term environmental factors such as excessive rainfall, drought, and fire can have temporary impacts, human activities such as flooding, drainage via groundwater withdrawal and conveyance canals, or construction of permanent structures such as seawalls in an aquatic system, can permanently damage these systems. The plant community should be evaluated to consider whether natural successional patterns for the community type are permanently altered. Inappropriate plants, including invasive exotic species, other invasive species, or other species atypical of the community type being evaluated, do not support the functions attributable to that community type and can out-compete and replace native species. Native upland and wetland vegetation, such as wax myrtle, pines, and willow, which are not typically considered as invasive, can occur in numbers and coverage not appropriate for the community type and can serve as indicators of disturbance. The relative degree of coverage by inappropriate species, inappropriate vegetation strata, condition of vegetation, and both biotic and abiotic structure all provide an

indication of the degree to which the functions anticipated for the community type identified are being provided.

W.A.T.E.R. – The EMB functional assessment protocol, W.A.T.E.R., is similar to the FDEP's UMAM, but was designed to be directly applicable to the conditions present in southeast Florida.

The W.A.T.E.R. functional evaluation matrix includes four main categories: fish and wildlife; vegetation; landscape/hydrology; and salinity. These main categories are further subdivided to represent most of the important ecological components and factors of the Everglades and coastal ecosystems of southeast Florida. Variables within the four main categories are scored from 0 to 3, with half-point increments allowed. For each wetland assessment area, the sum of all variable scores is then divided by the total possible score to derive a W.A.T.E.R. score ranging between 0 and 1. Parameters that cannot be attributed to direct wetland function are termed site suitability parameters, which are used to calculate a site suitability multiplier. The site suitability multiplier assesses a wetland based upon how it contributes to the functional attributes of other wetlands, addressing the anthropogenic importance and/or socioeconomic value of the wetland. The site suitability multiplier is multiplied by the acreage of impact and functional assessment score to determine the total number of EMB mitigation credits required to offset wetland impacts.

Functional Assessment Results

UMAM and W.A.T.E.R. functional assessment methodologies were used to quantify the relative quality of wetland habitats impacted by the Project. Within the Site, the W.A.T.E.R. functional assessment methodology was used to quantify the amount of EMB credits required to replace the loss of wetland functions associated with unavoidable wetland impacts. UMAM was used to calculate the functional assessment scores and resulting number of mitigation credits required to replace the loss of wetland functions associated with unavoidable wetland habitat impacts within the areas proposed for location of the associated non-linear facilities (nuclear administration building, training building, parking area, reclaimed water treatment facility, and radial collector well delivery pipelines, ~~and fill source~~). A detailed description of the individual scores for each parameter and UMAM calculations for wetland habitat types within the areas of the non-linear associated facilities are included in Appendix 10.4. Similarly, detailed scores for the Site wetlands utilizing the W.A.T.E.R. functional assessment methodology are included in Appendix 10.4. A general description of the wetland functional assessment within the Site and the associated non-linear facilities is provided below; a summary of functional assessment scores follows.

Wetlands within the Site are reduced in functional value due to their utilization as part of the existing industrial wastewater facility. The altered hydrology, soils, salinity, and temperature of the system reduce the functional value of mangrove systems when compared to undisturbed tidal mangroves of Biscayne Bay. Wetland functional value is influenced by the surrounding landscape characteristics, specifically the existing power generation facility, extensive canal system, and lack of natural tidal inundation. The cooling canal system drastically alters the timing, frequency, and duration of inundation of wetlands within the Site when compared to the historical tidal hydroperiod. Although nuisance and/or exotic species such as Australian pine, Brazilian pepper, and half-flower occur within the Site, these species are not widespread and primarily restricted to upland areas or along the transitional upland-wetland ecotone. However, hydrologic alteration is prevalent throughout the Site, which severely impacts wetland functions. Vegetative communities are stressed, evidenced through decreased growth rates and high mortality. The hypersaline conditions and altered hydrology have resulted in vegetative communities with reduced capability to recover from natural environmental impacts such as freezing temperatures or storm events.

Wetlands within the area proposed for the nuclear administration building, training building and parking area are also reduced in functional value due to their isolation within the Turkey Point facility, surrounding paved parking areas, and access roads, encroachment of exotic/nuisance species of vegetation, lack of upland vegetative buffers, and hydrologic alteration.

Dwarf mangrove and sawgrass wetlands that will be impacted by construction of the reclaimed water treatment facility and pipelines are somewhat reduced in functional value due to hydrologic alteration and presence of exotic species of vegetation, although they are considered high-quality wildlife habitat. These areas are isolated from Biscayne Bay due to the historical construction of the existing access road and contain some areas of encroachment by the exotic species Australian pine and Brazilian pepper.

Mangrove wetlands that will be temporarily impacted by construction of the radial collector well delivery pipelines are high-quality systems connected to Biscayne Bay. They are slightly reduced in functional value due to the existing fill and roadways located on the Turkey Point peninsula, but exhibit minimal amounts of nuisance/exotic species, experience a relatively unaltered hydrologic regime, and provide significant wildlife habitat.

~~The FPL owned fill source contains low quality wetlands associated with commercial active tree nurseries. These wetland systems are impacted through the prevalence of nuisance/exotic vegetation, primarily Brazilian pepper, cattail, and napier grass. Hydrologic alteration is evident throughout the area, and the wetlands are further reduced in quality as wildlife habitat due to the surrounding active agricultural operations.~~

Both UMAM and W.A.T.E.R. functional assessment results are summarized in Tables 5.4-1 and 5.4-2; details are provided in Appendix 10.4.

The Project will result in dredge/fill impacts associated with construction at the Site and associated facilities, resulting in a loss of wetland functional values. Wetland impacts resulting from construction of transmission lines and other associated linear facilities are addressed in Chapter 9.0. A summary of the impacted acreage by wetland type, current functional value of each wetland type, and corresponding number of mitigation credits required to offset the loss of wetland functions quantified in accordance with the UMAM and W.A.T.E.R. protocols is provided in Appendix 10.4. A total of approximately 250 acres of wetlands will be impacted during construction at the Site. The approximate number of mitigation credits required to offset this loss of functional values is 128, calculated via the UMAM functional assessment method, or 148 as calculated via the W.A.T.E.R. functional assessment method. Construction of the non-linear associated facilities will result in approximately ~~123~~ 70 acres of permanent and ~~6~~ 6.4 acres of temporary wetland impact, requiring approximately ~~52.5~~ 78 mitigation credits as calculated via UMAM. FPL proposes to offset the loss of wetlands through a combination of wetland restoration, hydrologic enhancement, and preservation designed to further the goals of regional ecosystem restoration, as well as purchase of mitigation credits from the EMB and the HID. Details of FPL's mitigation proposal are presented in Appendix 10.4.

5.4.1.4 Endangered and Threatened Species

Threatened and endangered species or species of special concern that have a probability of occurrence within the Site or associated non-linear facilities are identified and discussed in Subsection 3.3.6. Construction at the Site and associated non-linear facilities is not likely to affect the wood stork, wading birds classified by the FFWCC as species of special concern, or the endangered Florida manatee (*Trichechus manatus latirostris*). Due to the lack of nesting colonies, roosting areas, and significant feeding areas within the Site, no adverse impacts to wood storks are anticipated. Listed species of birds observed within the Site and associated facility areas (Subsection 3.3.6) are highly

mobile and locally common, are able to access similar habitat in the surrounding vicinity, and are not dependent upon the Site for nesting or foraging. Construction at the Site will not jeopardize the continued existence of these species in the region.

The manatee is known to occur in Biscayne Bay. The Site is surrounded by the industrial wastewater facility which does not connect to Biscayne Bay. The Turkey Point Plant utilizes the closed-loop canal system for cooling and wastewater treatment, and does not contribute any thermal discharge into Biscayne Bay that would attract manatees during winter months. The FPL reclaimed water treatment facility is isolated from Biscayne Bay by the existing plant access road. Radial collector well caissons will be constructed in upland areas of the Turkey Point peninsula.

Construction of the equipment barge unloading area will be performed from upland areas and isolated from the turning basin to mitigate water quality impacts. The FPL Turkey Point Units 6 & 7 Manatee Protection Plan is included in the Equipment Barge Unloading and Delivery Plan in Appendix 10.7.1.2. Project construction activities will be performed in accordance with the CERP Interagency Manatee Task Force Manatee Conservation Plan, as applicable.

Construction at the Site will result in the loss of approximately 250 acres of disturbed wetlands within the industrial wastewater facility that are potentially utilized by the American crocodile for foraging, basking, and travel. Due to the lack of suitable substrate, no crocodile nesting activity occurs within the Site or within the spoils areas. FPL's Threatened and Endangered Species Evaluation and Management Plan for the Turkey Point Plant has been updated to minimize potential adverse impacts as a result of the Project (Appendix 10.7.1.3). The updated Plan involves the continuation of the existing crocodile management program and the incorporation of specific actions for pre-construction, during construction, and post-construction for the Project.

Project construction will not jeopardize the continued existence of the crocodile population on the plant property, and no reduction in the size or health of the crocodile population is anticipated.

The creation of additional freshwater refugia on select cooling canal berms, which is currently practiced as part of the crocodile management plan, will directly benefit juvenile crocodiles. Continued enhancement of berms through vegetative maintenance and substrate amendments will increase the acreage of suitable nesting habitat within the industrial wastewater facility.

5.4.2 Measuring and Monitoring Programs

5.4.2.1 Terrestrial Systems

No monitoring programs will be undertaken because no important terrestrial systems will be affected by construction activities proposed for the Site or associated non-linear facilities.

5.4.2.2 Aquatic Systems/Wetlands

Wetland impacts will be mitigated through a combination of wetland restoration, hydrologic enhancement, and preservation consistent with the regional restoration goals of the CERP, as well as purchase of mitigation credits from the nearby EMB and HID. Details of the proposed mitigation plan are included in Appendix 10.4.

To assess the success of the restoration and enhancement of wetlands under FPL's proposed mitigation plan, monitoring will be performed to document the vegetative and hydrologic conditions within the mitigation areas.

In the case of the EMB and HID, the Banks are ultimately responsible for the successful management of wetland functional values, as required by the USACE and FDEP. A portion of the cost of each mitigation credit is used to fund required vegetative monitoring, exotic species removal, planting of desirable species, hydrologic improvements, and/or other activities to ensure that the mitigation bank is maintained as a functioning wetland ecosystem.

Measuring and monitoring plans associated with the American crocodile are discussed in the Turkey Point Threatened and Endangered Species Evaluation and Management Plan, Appendix 10.7.1.3. Monitoring plans associated with the manatee are discussed in the Turkey Point Unit 6 & 7 Barge Delivery Plan, Appendix 10.7.1.2.

5.5 Air Impacts

5.5.1 Air Emissions

Project construction activities will result in the generation of fugitive PM emissions, and vehicle and equipment exhaust emissions. Fugitive PM emissions will result primarily from excavation of muck from the Site, filling of the Site, grading and compacting, concrete batching, and vehicular travel over paved and unpaved roads. Emissions will also result from land-clearing operations that include open burning. Vehicle traffic will include heavy-equipment traffic and traffic due to construction workers

entering and leaving the Turkey Point plant property. Construction personnel and equipment will access the Site over paved roadways. Exposed land areas may also generate fugitive dust due to wind erosion. Table 5.5.1-1 presents the estimated air emissions for construction at the Site and at the locations proposed for associated non-linear facilities using several applicable EPA AP-42 emission factors, EPA fugitive dust background documents, and EPA Tier 3 emission standards. As required by FDEP Rule 62-296.320(4)(c)3, F.A.C., reasonable precautions to prevent fugitive particulate emissions were included in the calculations based on the type of operation. Appendix 10.7.5 contains the basis for the emission estimates including reasonable precautions to be used during construction.

Site preparation will occur over 18 months. Site preparation includes activities such as excavation, demucking, transferring muck to the spoils area, filling, and placing and compacting fill. The muck removed from the Site will be deposited in the designated spoils areas upon existing berms of the industrial wastewater facility as shown in Figure 5.1-1. Areas used for laydown and parking have vegetation that will be cleared. Open burning associated with site preparation activities will be conducted as necessary, after notification to the Florida Division of Forestry and in accordance with the requirements of Rule 62-256.700(3), F.A.C.

Both EPA and FDEP have promulgated AAQS for PM_{10} . During the construction period, fugitive PM_{10} emissions will result from site preparation by removing organic material and placing the material on the industrial wastewater facility spoils areas. The PM_{10} emissions for this activity are estimated to be approximately 0.5 ton for muck removal and approximately 47.5 tons for transport of material along canal berms. Chemical dust suppressants or equivalent (e.g., operating water trucks) are proposed to minimize fugitive emissions to reduce emissions by 90 percent (EPA, 1992).

The delivery of limestone will generate fugitive emissions over paved roads entering the Turkey Point plant property to the Site. This will generate approximately 33.9 tons of fugitive PM_{10} . Filling the Site areas will generate approximately 2.3 tons for limestone placement, which includes approximately 2.3 tons for fill obtained off the Site, and approximately 0.04 ton for fill removed from the makeup water reservoir.

Moving fill within the Site will generate approximately 0.8 tons of fugitive emissions. For movement of material, grading, and compacting, fugitive emissions are estimated to be approximately 9.7 tons. Chemical dust suppressants or equivalents are proposed for fugitive dust control. These activities will

generally not occur simultaneously and will occur over an 18-month period during the site preparation activities.

The foundations and other structures for Turkey Point Units 6 & 7 will require a large volume of concrete. A temporary concrete batch plant will be installed on the Site. Emissions from the concrete batch plant are expected to be controlled using fabric filters for cement loading. PM₁₀ emissions from the concrete batch plant, including transport of concrete for placement in foundations and structures, are estimated to be approximately 5.7 tons during the construction period. The use of an on-Site concrete batch plant will require the concrete processing materials (i.e., cement, aggregate, etc.) to be transported to the Site in bulk shipments. This will reduce the air emissions from heavy equipment traffic (i.e., cement mixing trucks) entering and leaving the Site.

Fugitive PM₁₀ emissions may also occur from wind erosion from open areas. The primary area subject to wind erosion during construction will be the approximate 300-acre Site. Fugitive PM₁₀ emissions from wind erosion have been estimated to be 4.4 TPY over the site preparation period assuming 1/3 of the Site will be open to wind erosion at any given time. These fugitive air emissions would occur during site preparation activities when open areas are exposed. As the Site is developed, these fugitive emissions will be eliminated. Watering or equivalent will be used to minimize fugitive emissions in this area.

Fugitive PM₁₀ emissions will also result from construction workers entering and leaving the Turkey Point plant property. The number of construction workers will average approximately 2,430 per month over the construction period. Construction workers will enter the plant property and travel to the construction parking area(s) near or on the Site. Based on the average construction workforce, average PM₁₀ emissions from paved roads have been estimated to be approximately 1.6 TPY. Reasonable precautions will be made to limit the amount of fugitive emissions from paved roads (e.g., watering as necessary).

Emissions will also result from exhaust of construction equipment, including cranes, trucks, compressors, and two temporary construction boilers. Construction equipment will produce emissions of CO, NO_x, VOC, PM₁₀, and SO₂. Estimated exhaust emissions were based on EPA emission factors for non-road diesel engines. Based on the EPA emission factors and the estimated maximum number of vehicles, the CO, NO_x, VOC, PM₁₀, and SO₂ emissions during site preparation are estimated to be 54.6, 56.7, 6.3, 3.2, and 0.1 tons, respectively, over the initial 18-month period

when site preparation activities will occur. CO, NO_x and VOC emissions were estimated using EPA Tier-3 non-road emission standards (40 CFR Part 89). EPA's Tier-3 emission standards phase-in from 2006 to 2008 and apply to engines from 11 to 750 horsepower. 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 by approximately 90 percent and the requirement to use ultra-low sulfur diesel fuel. Some of the construction equipment will likely include engines meeting EPA Tier 4 emissions standards. EPA non-road engine rules will require the use of ultra-low sulfur diesel fuel in non-road engines starting in 2010 (EPA, 2008b). The use of ultra-low sulfur diesel fuel starting after 2010 will minimize SO₂ and PM₁₀ emissions from any Tier 3 engines.

~~Air emissions for the excavation of fill from the FPL-owned fill source are also presented in Table 5.5.1-1. Fugitive PM₁₀ emissions will be generated from the muck removal and excavation of limestone fill. Approximately 2.3 tons of PM₁₀ emissions are estimated from handling the muck and limestone and 15.3 tons of PM₁₀ emissions are estimated for trucks transporting limestone out of the FPL-owned fill source. The emissions from diesel engines operating during the excavation are estimated to be approximately 46.4, 48.2, 5.4, 2.7, and 0.1 tons for CO, NO_x, VOC, PM₁₀ and SO₂ respectively. These emissions would occur over the 18-month site preparation period.~~

During the construction of Units 6 & 7 (laying foundations and installation of equipment), the CO, NO_x, VOC, PM₁₀, and SO₂ emissions are estimated to be 34.6, 37.7, 4.0, 2.0, and 0.08 TPY, respectively. The EPA Tier 3 emission standards were used to estimate these emissions, which is the same assumption as for site preparation. These construction activities will begin later, starting in 2014 and continue through 2020. During the later stages of construction, the construction equipment will likely include more engines meeting EPA's Tier 4 non-road emission standards. Accordingly, the emission estimates shown in Table 5.5.1-1 for diesel engines are conservative.

Temporary construction boilers may be required for steam cleaning of steam piping and tubing. The temporary construction boilers would be rated at approximately 110 MMBtu/hr and would be brought on-Site for use only during construction. The boilers would be fired with either propane or ultra low sulfur diesel fuel and will operate for no more than 2,500 hours per year per boiler. These boilers will be permanently shut down and removed once Units 6 & 7 commences commercial operation. The estimated annual emissions of CO, NO_x, VOC, PM₁₀, and SO₂ are presented in Table 5.5.1-1 and are estimated to be approximately 22.5, 39.1, 2.4, 6.7 and 0.5 TPY, respectively.

These levels of fugitive PM₁₀ emissions shown in Table 5.5.1-1, as well as the emissions of CO, NO_x, VOC, PM₁₀, and SO₂, will occur over many years and will be dispersed in several locations on the 11,000-acre Turkey Point plant property ~~and within the approximately 300-acre FPL-owned fill source~~. Due to the long time period and dispersed nature of the Project construction emissions, it is concluded that the emissions will not cause significant impacts to air quality in the vicinity of the Site and will not cause or contribute to exceedance of any AAQS.

5.5.2 Control Measures

A number of control measures will be implemented during construction to minimize air emissions and potential impacts. After filling and grading, the untraveled or lightly traveled areas will be vegetated to minimize fugitive PM emissions and wind erosion. Heavily traveled unpaved laydown areas and unpaved roads will be stabilized with material such as lime rock. Watering on an as-needed basis will control fugitive dust from highly traveled areas, including paved roads. The access roads will be paved, which will minimize dust emissions from vehicles entering the Site. The concrete batch plant will use a fabric filter or equivalent to minimize emissions from loading and mixing.

5.6 Solid Wastes

Solid waste materials generated during construction will be managed and disposed of in accordance with all applicable federal, state (Chapter 62-730, F.A.C.), and local rules and regulations. Construction wastes, such as scrap wood and metal, will be transferred to a special storage area on the Site where they will be separated and stockpiled for salvage and recycling (see Chapter 62-701, F.A.C.). General waste (i.e., typical of municipal solid waste) will be collected in appropriate waste collection containers for disposal at an approved off-site location. General waste materials (i.e., typical of municipal solid wastes) will be collected in appropriate waste collection containers for disposal at an approved off-site location.

As described in Subsection 4.6 and listed in Table 4.6-1 there are a variety of potential wastestreams resulting from the construction and operation. Solvent rags will be separated and either laundered or disposed of appropriately. If aerosol cans are punctured prior to disposal, the residual will be collected and managed as hazardous waste. Paint waste, 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 on-Site 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 4.7-1, 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 off-site 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 off-site 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. Chapter 7.0 of this SCA provides information on income, employment, tax revenue, and service needs associated with the construction workforce. This section is, therefore, limited to a discussion of workforce requirements and the impacts of Project-related traffic, housing, education, and noise.

5.7.1 Construction Workforce

The maximum workforce during construction of the Project is estimated to be approximately 3,650. The current maximum workforce at the Turkey Point Plant is approximately 1,467 FPL employees and contractors. Project construction is anticipated to begin in the third quarter of 2011 and conclude in 2020. Peak construction employment for the Project is estimated for 2016. The construction workforce trade categories (by percentage) for the Project will be approximately as shown in the Table 5.7.1-1.

FPL continues to strongly emphasize to all of its construction partners the importance of hiring from within the local workforce. FPL will promote employment of local workers by distributing Project information that includes the benefits to the community, information on the types of jobs and skills

required, and local training opportunities. Notice of potential employment opportunities will appear in local media and FPL will encourage contractor participation in regional job fairs.

5.7.2 Transportation

The Turkey Point Plant currently has a maximum of approximately 1,467 employees including operation, maintenance, and engineering personnel. During outages, where operational staff are combined with contractors associated with refueling/maintenance activities for Units 3 and 4, the workforce has historically exceeded 2,000 employees per day. Over the entire construction period for the Project, a total of approximately 3,650 workers will be employed on a temporary basis, in addition to the existing employees and contractors who work at the plant.

The magnitude of the traffic impacts due to Project construction will be directly related to the number of construction workers anticipated for the Project, since current conditions are already included in the existing operational traffic patterns. A traffic analysis was completed to identify the impact of the Project and is presented in Appendix 10.7.4.

5.7.2.1 Trip Generation

The trip generation associated with the construction workforce (peak of approximately 3,650 construction employees) and truck traffic (maximum of 36 trucks per hour) associated with the Project is based on the following assumptions regarding construction workforce trip generation:

- Conservative vehicle occupancy of one worker per vehicle.
- Two shifts for the construction workforce:
 - Shift 1 scheduled from 6:00 A.M. to 4:30 P.M., accounting for 70 percent of the construction workforce. The morning peak hour is projected to occur between 5:00 and 6:00 A.M. with one-half the construction traffic assumed to arrive in the first 30 minutes and the remaining half during the second 30 minutes. The afternoon peak hour is projected to occur between 4:30 and 5:30 P.M., with a similar assumption about distribution in outbound traffic between the two 30-minute periods.
 - Shift 2 scheduled from 5:00 P.M. to 3:00 A.M., accounting for 30 percent of the construction workforce. Hence, the inbound peak for the second shift is projected to occur between 4:00 and 5:00 P.M., and the outbound peak from 3:00 to 4:00 A.M. Similar to Shift 1, the inbound and outbound construction-related traffic is assumed to evenly distribute between two 30-minute periods.

Based on these assumptions, the morning peak hour (between 5:00 and 6:00 A.M.) is projected at approximately 2,555 construction-related vehicles (e.g., 2,555 inbound and zero outbound). The evening peak hour is projected to occur from 4:30 to 5:30 P.M., with approximately 3,103 construction-related vehicles (e.g., 548 inbound and 2,555 outbound). Trip generation calculations established in determining the morning and evening peak hour trips are provided in Appendix 10.7.4.1.

Based on traffic counts conducted near the entrance gate of the plant, the peak morning arrival period of current employees is between 6:00 and 7:00 A.M.; the construction workforce is assumed to arrive at the Site no later than 6:00 A.M. in order to avoid the morning peak arrival period of the plant's operational workforce.

Truck Traffic Trip Generation

It is expected that a maximum of 36 trucks per hour will enter and exit the Site during Project construction. For purposes of the traffic study, 36 trucks were assumed to enter and exit the Site (total of 72 trips) during the morning peak hour (5:00 to 6:00 A.M.) and the evening peak hour (4:30 to 5:30 P.M.).

5.7.2.2 Trip Distribution

The trip distribution and traffic assignment for the construction traffic were based on existing traffic patterns associated with current FPL employees (and contractors) assigned to the Plant. Based on current travel patterns, the majority of the construction traffic is anticipated to arrive/depart via SW 137th Avenue/Tallahassee Road from the north. The second-most traveled route is projected to be SW 344th Street/Palm Drive to/from U.S. Highway 1. The least utilized roadway is anticipated to be SW 328th Street/North Canal Drive from the west. The percent construction traffic assignment, for both the workforce and truck traffic, is further discussed in Appendix 10.7.4.1.

The trip distribution associated with the truck traffic was based on the following assumptions:

- Fifty percent of the trucks (e.g., 18 trucks) will use a fill source northwest of the Site and, therefore, will access the construction site via SW 117th Avenue and the plant access road; and
- The remaining 18 trucks will use a fill source located southwest of the Site, and, therefore, will access the construction site via U.S. Highway 1, SW 344th Street/Palm Drive, SW 137th Avenue/Tallahassee Road, and the plant access road.

Based on these assumptions, a future traffic conditions analysis and an intersection analysis (for the peak construction workforce) were conducted for the Project.

Future Traffic Conditions

Future traffic conditions, with the traffic generated during the peak Project construction period added to the available traffic concurrency, are shown in Table 5.7.2-1. The results indicate that the Project construction traffic will meet the Miami-Dade County's Traffic Concurrency Standards. The transportation network in the vicinity of the Turkey Point Plant has sufficient capacity to absorb the traffic generated throughout Project construction, including during the peak construction period.

Intersection Analysis

The six most affected intersections (within five miles of the Site) were evaluated during the peak Project construction period. The intersection analyses were undertaken following the capacity/level of service procedures outlined in the Highway Capacity Manual (HCS+ Version 5.2). Based on the results of the capacity analyses, Table 5.7.2-2, the six intersections are projected to operate adequately with roadway improvements.

The roadway improvements identified to provide acceptable levels of service at the six intersections are discussed below.

SW 328th Street/North Canal Drive and SW 137th Avenue/Tallahassee Road:

- Signalization or police control for A.M. and P.M. peak hours;
- Construct one additional southbound left-turn lane;
- Construct one additional westbound through lane; and
- Construct two westbound right-turn lanes.

SW 328th Street/North Canal Drive and SW 117th Avenue:

- Signalization or police control for A.M. and P.M. peak hours;
- Construct two northbound left-turn lanes;
- Construct one eastbound right-turn lane; and
- Restripe the eastbound through lane to a shared through/right-turn lane.

SW 344th Street/Palm Drive and SW 137th Avenue/Tallahassee Road (West):

- Signalization or police control for P.M. peak hour;
- Construct one separate eastbound through lane; and
- Construct one additional westbound left-turn lane.

SW 344th Street/Palm Drive and SW 137th Avenue/Tallahassee Road (East) – New Intersection:

- Signalization or police control for P.M. Peak Hour only;
- Construct two eastbound right-turn lanes; and
- Construct two northbound approach lanes (one striped as an exclusive left-turn lane and the other as a shared left-turn/right-turn lane).

SW 344th Street/Palm Drive and SW 117th Avenue:

- Signalization or police control for A.M. and P.M. peak hours;
- Construct one eastbound left-turn lane;
- Construct one eastbound right-turn lane;
- Construct one westbound right-turn lane;
- Construct one northbound left-turn lane;
- Construct two northbound through lanes (outside lane will function as a shared through/right-turn lane);
- Construct one southbound left-turn lane; and
- Construct one southbound through lane (outside lane will function as a shared through/right-turn lane).

SW 359th Street and SW 117th Avenue – New Intersection:

- Signalization or police control for A.M. and P.M. peak hours;
- Construct two eastbound approach lanes (prohibit eastbound left-turns);
- Construct one westbound through lane;
- Construct one westbound right-turn lane; and
- Construct two southbound approach lanes (one striped as an exclusive left-turn lane and the other as a shared left-turn/right-turn lane).

SW 137th Avenue/Tallahassee Road at SW 359th Street – New Curve

- Construct a curve linking SW 137th Avenue/Tallahassee Road with SW 359th Street. This curve will be designed so that it integrates appropriately with the existing FPL transmission lines.

In addition to the intersection improvements described above, improvements to the roadway segments listed below are necessary to provide acceptable operating conditions¹ within the study area:

SW 328th Street/North Canal Drive (SW 137th Avenue/Tallahassee Road to SW 117th Avenue):

- Widen from two to four lanes.

SW 344th Street/Palm Drive [SW 137th Avenue/Tallahassee Road (West) to SW 137th Avenue/Tallahassee Road (East)]:

- Widen from two to four lanes.

SW 117th Avenue (SW 328th Street/North Canal Drive to SW 344th Street/Palm Drive):

- Widen from two to four lanes.

SW 359th Street (SW 137th Avenue/Tallahassee Road to SW 117th Avenue):

- Improve to three lanes (two eastbound and one westbound).

SW 359th Street (SW 117th Avenue to Construction Site):

- Improve to four lanes (two eastbound and two westbound).

SW 137th Avenue/Tallahassee Road (SW 344th Street/Palm Drive to SW 359th Street):

- Improve to three lanes (two southbound and one northbound).

SW 117th Avenue (SW 344th Street/Palm Drive to SW 359th Street):

- Improve to four lanes (two northbound and two southbound).

Figure 5.7.2-1 illustrates the roadway improvements necessary to provide an adequate level of service at the six study intersections and the affected roadway segments located within the study area. Appendix 10.7.4.1 contains the construction traffic analysis for the Project. The roadway improvements are uniquely required to support the safe and efficient construction of the facility, but are not necessary post-construction. This application identifies and offers mitigation for the impacts of the construction period roadway improvements. FPL will work with appropriate agencies and stakeholders to determine and create the optimal disposition of the improved public rights-of-way.

¹ Using a link capacity of 1,100 vehicles per hour per lane based on FDOT's Generalized Capacity Tables.

5.7.3 Housing and Education

5.7.3.1 Housing

Impacts on housing from the Project construction workforce and the operations workers employed during construction depend on the number of workers that would relocate and the type of housing workers would desire. The number of construction employees will average approximately 2,430. Over the Project construction period, the peak number of construction employees will be approximately 3,650 workers. There is a significant labor pool of construction workers in Miami-Dade County and surrounding and adjacent counties. As a result, some Project construction workers will be from Miami-Dade County and neighboring counties. A portion of the construction labor will come from areas outside the immediate area and could relocate to the area during the construction period. Conservatively assuming that 50 percent of the Project construction and operations workers relocate to Miami-Dade County, a maximum of approximately 1,800 workers would migrate during the peak construction period and require housing.

Some of the workers will choose to purchase housing and others will elect to rent housing. Still others will 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.

Accommodations for construction workers electing to relocate to Miami-Dade County are abundant. This includes residential housing and public lodging units. There were an estimated 192,236 public lodging units as of July 2007 (UF/BEHR, 2008). Public lodging includes apartment buildings, rooming houses, condominiums, resort dwellings, transient apartment buildings (rentals for six months or less), hotels, and motels. There are approximately 330,000 renter-occupied units in Miami-Dade County (U.S. Census Bureau, 2006). The number of construction workers that may relocate to Miami-Dade County is a small percentage of the available housing units.

Miami-Dade County could accommodate the entire construction workforce based on the vacancy of housing units of all types. The entire in-migrating workforce could be accommodated in vacant permanent housing units, vacant rental units, and/or in hotels or motels.

5.7.3.2 Education

It is estimated that approximately 1,033 school-aged (5 to 18 years old) children would be part of the in-migration during the construction period. This is based on an estimated in-migrating construction workforce with families of 1,292 workers. Each in-migrating worker with a family was assumed to

have 0.8 school-age children. It was assumed that all of the school-aged children would reside in Miami-Dade County and attend public schools. The Miami-Dade County Public School District enrolled 347,774 students in 2007-2008. New and expanded public primary and secondary facilities will provide capacity for an additional 12,826 students by 2012-2013. The additional 1,033 students represent 0.3 percent of the 2007–2008 enrollment in the Miami-Dade County Public School District and about eight percent of the additional capacity expected to be available by 2012-2013 (Miami-Dade County School District, 2007). The expected additional capacity is far greater than the estimated number of in-migrating students; the education system within the County could accommodate all students that would accompany workers during the construction period. Therefore, no significant adverse effects on local elementary, middle, or high schools are anticipated as a result of Project construction.

5.7.4 Noise

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

Construction of the Project will require site preparation and installation of foundations and erection of major components of each unit. The use of construction equipment, such as dump trucks, pile drivers, 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 construction period noise predictions for the Project were developed using the CadnaA (Computer Aided Noise Abatement) computer model, a computerized software program for calculation, presentation, assessment and prediction of environmental noise (DataKustik, 2006 et seq.).

CadnaA is an environmental noise propagation and attenuation computer program that was developed to assist with complex noise propagation calculations for major noise sources and projects. Noise

sources are entered as octave band sound power levels, L_{ws} . Locations of the noise sources, buildings, and receptors are input directly on the base map and can be edited throughout the modeling process. All noise sources are assumed to be a point, line, area, or vertical area source, and can be specified by the user. Sound propagation is calculated by accounting for hemispherical spreading and three other user-identified attenuation options: atmospheric attenuation, path-specific attenuation, and barrier attenuation. Atmospheric attenuation is calculated using International Organization for Standards, ISO 9613-1: “Acoustics – Attenuation of sound during propagation outdoors – Part 1: Calculation of the absorption of sound by the atmosphere.” 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 sound pressure levels (SPLs) are calculated

The noise impacts from the construction of the Project were evaluated using the L_{ws} for the various types of equipment associated with site preparation and construction of permanent features, such as foundations, buildings, cooling towers and other components of each unit. The modeling was performed to account for these phases of construction, which involve distinctly different activities. The construction phases evaluated were site preparation and permanent facilities construction/installation. Site preparation activities included noise sources associated with earthwork such as excavation, filling, and compaction will be performed using heavy ground-based equipment (bulldozers, pan scrapers, and trucks). Permanent facility construction/installation includes the operation of the concrete batch plant, trucks, cranes, welders, compressors, and hammers.

Tables 5.7.4-1 and 5.7.4-2 list the major types of equipment expected to be used during the construction of the Project and the associated noise characteristics during site preparation and construction of permanent features, respectively. Noise sources were located on the Site, the FPL reclaimed water treatment facility, the radial collector wells area, and the FPL-owned fill source. [NOTE: The FPL-owned fill source is no longer an associated facility of the Turkey Point Units 6 & 7 Project.] Since the operations of construction noise sources are variable, sufficient noise sources were added in each simulation to represent a conservative estimate of maximum noise levels during each phase and location. In addition, all of the equipment was conservatively assumed to be operating continuously and simultaneously at peak power to produce peak sound power levels.

The noise levels resulting from these combinations of equipment were input as multiple sources to the model. Octave bands were estimated from *Noise from Construction Equipment and Operations*,

Building Equipment, and Home Appliances (EPA, 1971). It is unlikely that all the equipment would be operating simultaneously and continuously; therefore, this impact assessment is conservative. Background SPL values were incorporated into the model to calculate impacts at the Site boundary and the residential community closest to the Site. The atmospheric and ground attenuation options were enabled during the noise modeling runs.

The location of each noise source was based on its location in the computerized site plan and imported into the CadnaA model for the noise analysis. Sources were distributed consistent with the activities associated with each phase and all sources were input as point sources. The atmospheric attenuation was set at the CadnaA default value, which is 10 degrees Celsius (50 ° F) and 70 percent relative humidity. For southern Florida, the default value would produce conservative results. The ground attenuation for the area was set to be equivalent to porous soil. No vegetation or other buildings that can act as barriers were considered in the model.

Figures 5.7.4-1 and 5.7.4-2 present the predicted noise levels in the vicinity of the Site and associated non-linear facilities for Turkey Point Units 6 & 7 site preparation. These figures show noise contours in the proximity of the construction areas. Figures 5.7.4-3 and 5.7.4-4 show noise contours for construction of permanent features in relationship to the Site and associated non-linear facilities. Figures 5.7.4-2 and 5.7.4-4 also show the noise contours with the noise monitoring locations. [Note: The FPL-owned fill source is no longer an associated facility of the Turkey Point Units 6 & Project.] The closest current permanent private residence to the Site is located approximately four miles northwest of the Project.

The maximum predicted noise levels shown in the figures as contours do not include background, which can be variable depending upon the activities in the area. The background noise levels are presented in Subsection 3.3.8 and Appendix 10.7.3. The background noise levels used in the analysis included both average SPLs (i.e., the equivalent steady-state SPL (L_{eq})) that represent the average SPL for all noise sources, including transient noise sources, and the L_{90} , the sound level exceeded 90 percent of the time during the monitoring period. The latter excludes the majority of the transient noise sources, such as traffic, that can influence the L_{eq} or the average SPL. When there are a number of transient sounds observed during a monitoring period, the difference between the L_{90} and the predicted impact is a more representative comparison of the noise impact from a continuously operating noise source such as a power plant. The background noise levels for the Project were obtained over a two-day period that included both daytime and nighttime measurements. The

background noise levels used in the analysis represented the average sound energy of the two daytime and nighttime measurements.

Because site preparation and construction noise will be added to the noise generated by Turkey Point Units 1 through 5, the background noise levels while Turkey Point Units 1 through 5 were operating were added to the SPLs predicted from the Project construction activities. Table 5.7.4-3 presents predicted SPLs due to site preparation and the daytime and nighttime background L_{90} and L_{eq} used in the analysis. Table 5.7.4-4 presents the maximum predicted impacts at the monitoring locations and the maximum predicted impacts combined with background noise levels. Table 5.7.4-4 also shows the SPLs difference in dBA between the predicted SPLs for site preparation with background and the observed background SPLs. The predicted noise levels at the nearest permanent private residence receptor (Site 8) is predicted to be 38.0 dBA. During the daytime, the calculated SPLs would range from 41.0 to 64.4 dBA with background L_{90} and L_{eq} SPLs. The calculated difference between the predicted SPLs for site preparation with background L_{90} and L_{eq} SPLs and observed background SPLs, range between 3.1 dBA (from L_{90} background) and 0.0 dBA (from L_{eq} background). During nighttime, the calculated SPLs would range from 47.2 to 54.2 dBA with background L_{90} and L_{eq} SPLs. The calculated difference between the predicted SPLs for site preparation with background L_{90} and L_{eq} SPLs, and observed background SPLs, is 0.6 dBA (from L_{90} background) and 0.1 dBA (from L_{eq} background).

The noise level during site preparation at the nearest public receptor (Homestead Bayfront Park, S7) is predicted to be 38.4 dBA. During the daytime, the calculated SPLs would range from 41.4 to 49.7 dBA with background L_{90} and L_{eq} SPLs. The calculated difference between the maximum predicted SPLs with background L_{90} and L_{eq} SPLs, and observed background SPLs, ranges between 3.1 dBA (from L_{90} background) and 0.3 dBA (from L_{eq} background). During the nighttime, the calculated SPLs would range from 42.4 to 47.8 dBA with background L_{90} and L_{eq} SPLs. The calculated difference between the predicted SPLs for site preparation with background L_{90} and L_{eq} SPLs, and observed background SPLs, ranges between 2.2 dBA (from L_{90} background) and 0.5 dBA (from L_{eq} background).

Table 5.7.4-5 presents predicted noise impacts due to construction of permanent features and the daytime and nighttime background L_{90} and L_{eq} used in the analysis. Table 5.7.4-6 presents the maximum predicted impacts at the monitoring locations and the maximum impacts combined with background noise levels. The noise level from facility construction at the nearest permanent private

residential receptor (Site 8) is predicted to be 26.7 dBA. During the daytime, the calculated SPLs would range from 38.2 to 64.4 dBA with background L_{90} and L_{eq} SPLs. The calculated difference between the predicted SPLs for facility construction with background L_{90} and L_{eq} SPLs, and observed background SPLs, ranges between 0.3 dBA (from L_{90} background) and 0.0 dBA (from L_{eq} background). During nighttime, the calculated SPLs would range from 46.7 to 54.1 dBA with background L_{90} and L_{eq} SPLs. The calculated difference between the predicted SPLs for facility construction with background L_{90} and L_{eq} SPLs, and observed background SPLs, is 0.0 dBA (from L_{90} and L_{eq} background).

The predicted noise level of facility construction at the nearest public receptor (Homestead Bayfront Park, S7) is predicted to be 34.0 dBA. During the daytime, the calculated SPLs would range from 39.7 to 49.5 dBA with background L_{90} and L_{eq} SPLs. The calculated difference between the maximum predicted levels with background L_{90} and L_{eq} SPLs, and observed background SPLs, ranges between 1.4 dBA (from L_{90} background) and 0.1 dBA (from L_{eq} background). During nighttime, the calculated SPLs would range from 41.2 to 47.4 dBA with background L_{90} and L_{eq} SPLs. The calculated difference between the predicted SPLs for facility construction with background L_{90} and L_{eq} SPLs, and observed background SPLs, ranges between 0.9 dBA (from L_{90} background) and 0.2 dBA (from L_{eq} background).

The difference between the predicted noise levels with background L_{90} and L_{eq} , and background L_{90} and L_{eq} at monitoring locations beyond the FPL Turkey Point Plant property, is approximately 3 dBA or less during the daytime and less than 1.5 dBA during the nighttime. A 1.5-dBA difference 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.

There are no State of Florida noise regulations that are applicable for the construction or operation of the Project. There is a “nuisance” noise ordinance for Miami-Dade County. Section 21-28, “Noises; unnecessary and excessive prohibited” states: “It shall be unlawful for any person to make, continue, or cause to be made or continued any unreasonably loud, excessive, unnecessary or unusual noise (Code of Miami-Dade County, Part III Code of Ordinances; Article IV Miscellaneous).

The two closest municipalities to the Turkey Point Plant are the City of Homestead and Florida City. The City of Homestead has a nuisance ordinance while Florida City has an ordinance that establishes

quantitative limits. The Florida City noise ordinance, while not applicable to the Project, is used for illustrative purposes.

Florida City's quantitative noise ordinance specifies maximum noise levels for receiving land uses. The Florida City noise ordinance is illustrative of quantitative noise regulations and similar to other noise ordinances established by municipalities (e.g. City of Miami, Chapter 36). This regulation is codified in the Florida City Code of Ordinances, Part II, Chapter 30 Environment, Article II, Noise. The ordinance limits the maximum noise from the source to Residential and Multifamily zoning districts from adjoining property to 60 dBA during the daytime (7 A.M. to 10 P.M.) and 55 dBA during the nighttime (10 P.M. to 7 A.M.). For Commercial, Institutional, Community Facilities, Government, Recreational and Public Facilities zoning districts, noise from an adjoining property is limited to 65 dBA during the daytime and 60 dBA during the nighttime from the source of the sound or noise. For Light Industrial zoning districts, noise from an adjoining property is limited to 70 dBA during the daytime and 65 dBA during the nighttime from the source of the sound or noise. The noise limitation for Heavy Industrial zoning districts is 75 dBA.

The Florida City noise ordinance is not applicable to construction activities associated the Project is useful in putting the predicted quantitative noise impacts for Project construction in perspective. As shown in Tables 5.6.4-4 and 5.6.4-6, the predicted noise impacts of either site preparation or construction of permanent features combined with background L_{eq} at the nearest public receptor are less than 50 dBA during the daytime and the nighttime. A noise level of 50 dBA is much lower than the Florida City noise ordinance for Recreational and Public Facilities of 65 dBA during the daytime and 60 dBA during the nighttime. Moreover, the contribution due to construction activities is less than 0.2 dBA of the overall predicted L_{eqs} .

At the nearest permanent private residence, the predicted noise levels with background L_{eq} are 64.4 dBA during the daytime and 54.1 dBA during the nighttime. As shown in Tables 5.7.4-4 and 5.7.4-6, construction activities are predicted to add less than 1 dBA above background levels. As previously discussed, the L_{eq} includes all noise sources including transient sounds such as traffic that influence observations. Although the Florida City noise ordinance is not applicable to the Project, a comparison of the Project's predicted impacts, including background, with the quantitative noise standards in the ordinance suggests that the noise impacts of construction are very low compared to typical municipal numerical standards.

Based on the results of the noise impact analysis, the maximum predicted noise levels from the construction of the Project will not produce any unreasonably loud, excessive, unnecessary or unusual noise and will comply with the applicable Miami-Dade County noise ordinance.

5.8 Impact on Landmarks and Sensitive Areas

Impacts of construction on landmarks and sensitive areas will be minor and will not result in any changes to accessibility or use. The closest sensitive areas within a five-mile radius of the Site (refer to Subsection 3.2.5) are the BNP, Biscayne Bay Aquatic Preserve (less than one mile), and the Homestead Bayfront Park. These areas will not experience any significant changes in air quality, noise levels, water quality, or visual characteristics perceptible to their users as a result of construction on the Site and associated non-linear facilities.

No adverse impacts on landmarks and sensitive areas are expected due to construction air emissions. As described in Subsection 4.5, the magnitude of construction period air emissions is considerably less than major source thresholds (i.e., 100 tons/year) for all air pollutants and in many cases less than the levels designating insignificant activities for any emission unit (i.e., 5 tons/year of any regulated air pollutant; Rule 62-210.300(3)(b) F.A.C.). Air emissions of PM resulting from site preparation and construction will be mitigated through BMPs. Emissions from construction equipment will be widely dispersed over the approximately 300-acre Site, the 11,000-acre Turkey Point plant property, ~~and the 300-acre FPL-owned fill source.~~

Occasional construction noise may be heard near the Site and associated non-linear facilities during construction. Construction noise that may be observed beyond the Turkey Point plant property boundary is anticipated to be infrequent and of short duration. Predicted noise levels with construction activities are similar to baseline levels in the vicinity of the existing Turkey Point Units 1 through 5 (see Subsection 5.6.4).

Commercial and recreational boating traffic in southern Biscayne Bay may have views of construction activities. However, the views of the construction activities, including construction cranes, will blend with the industrial nature of the existing Turkey Point Units 1 through 5. As a result, visual impacts will be minor.

5.9 Impact on Archaeological and Historic Sites

The CRAs conducted for the Project are described in more detail in Subsection 3.2.6. Results of the CRAs concluded that there are no previously recorded archeological sites or historic structures on or adjacent to the Site or associated non-linear facilities. This finding is consistent with previous archaeological investigations.

Information on the Site and associated non-linear facilities is contained in Appendix 10.7.2.1. The State Historic Preservation Officer (SHPO) of the Division of Historical Resources (DHR) will review the cultural resource assessment of the Site and associated non-linear facilities. If requested by DHR, FPL will conduct a field survey using procedures identified by the DHR. If the survey reveals any significant sites, the sites will be avoided if possible during construction. If avoidance is not possible, a salvage excavation plan will be developed by a professional archaeologist. The survey and any salvage excavation plan recommendations will be submitted to DHR for review and approval. Upon DHR concurrence with any recommendations for excavations, the sites will be excavated, findings analyzed, and a report submitted to DHR.

FPL is currently preparing work plans for the Project, and will consult with the SHPO regarding these plans. The work plans will contain recommendations for development of an Unanticipated Finds Plan and a Contractor Training Program. The plan will outline procedures and identify responsible personnel to be contacted if significant archaeological materials or human remains are encountered during construction. The plan will be included in a contractor training program prior to construction. The goal of the training will be to inform construction personnel, inspectors, and managers of the possibility for human remains and archaeological materials in a given area, and to develop clear understanding of what procedures should be followed if human remains or archaeological materials are identified during earth-disturbing activities.

5.10 Special Features

There will be no unusual products, raw materials, garbage disposal services, incinerator effluents, or residues produced during construction that may have an influence on the environment or ecological systems of the Site and associated non-linear facilities or adjacent areas. Construction will involve products and materials typically used in nuclear power plant construction, such as limestone fill,

concrete, steel and component parts for the generating units and transmission systems. No on-site incinerators will be used for solid waste disposal.

5.11 Benefits from Construction

Construction would contribute both short- and long-term economic benefits to the surrounding region. Construction benefits will include construction employment that will average approximately 2,430 workers during the 108-month construction period. The construction workforce will increase the demand for goods and services in the region. Direct purchases of construction materials will have both direct and indirect economic benefits. Construction activities will increase tax revenues to the county and state governments due to sales taxes from the purchase of equipment and material to support construction activities. This includes the construction materials (e.g., concrete and steel for foundations), rental equipment (e.g., construction cranes, pumps), food, and transportation obtained from sources within Miami-Dade County and the State of Florida. These economic benefits, as well as the Project's significant environmental benefits, are presented in more detail in Chapter 7.0.

5.12 Variances

No variances from applicable regulatory standards due to the construction of the Project are being sought as part of this SCA.

TABLE 5.4-1 (Rev. 1)
UMAM FUNCTIONAL ASSESSMENT SUMMARY

FLUCFCS Code	Wetland Type	UMAM Score ^a				Approximate Impact Acreage	Mitigation Credits Required
		Location/ Landscape	Water Environment	Community Structure	TOTAL		
Site							
510	Active Canals	6	5	4	(15/30) = 0.50	4.1	2.05
511	Remnant Canals	6	6	7	(19/30) = 0.63	8.4	5.29
531	Open Water/ Discharge Canal 1	6	5	4	(15/30) = 0.50	12	6.00
612-A	Mangrove Heads	6	6	7	(19/30) = 0.63	12.2	7.69
612-B	Dwarf Mangroves	6	5	5	(16/30) = 0.55	16.9	8.96
650	Mud Flats	6	5	4	(15/30) = 0.50	187.5	93.75
743-Wet	Wetland Spoil Areas	6	4	5	(15/30) = 0.50	9.1	4.55
Nuclear Administration Building, Training Building, and Parking Area							
612	Mangrove Swamps	6	7	7	(20/30) = 0.67	18.5	12.39
612/618	Mangrove/Willow	6	7	6	(19/30) = 0.63	7.6	4.79
Radial Collector Well Pipelines							
612	Mangrove Swamps	8	9	9	(26/30) = 0.87	3 ^b	N/A
FPL Reclaimed Water Treatment Facility							
612-B/641	Dwarf Mangroves	7	8	8	(23/30) = 0.77	44	35.27 ^c
Equipment Barge Unloading Area							
510	Barge Basin	6	5	4	(15/30) = 0.50	0.1 ^b	N/A
FPL-Owned Fill Source							
511	Ditches	5	5	5	(15/30) = 0.50	5.2	2.60
619	Exotic Wetland Hardwoods	5	5	4	(14/30) = 0.47	33.7	15.84
631	Wetland Scrub	5	5	6	(16/30) = 0.53	4.4	2.33
641	Freshwater Marshes	5	5	6	(16/30) = 0.53	8.8	4.66
Treated Water Delivery Pipeline							
612-B	Dwarf Mangroves	7	8	8	(23/30) = 0.77	3.1 ^b	N/A
617	Mixed Wetland Hardwoods	7	7	7	(21/30) = 0.70	0.3 ^b	N/A
TOTAL						379	206

^aRefer to Appendix 10.4 for more details on the UMAM scoring system.

^bLoss of functional value for temporary impact associated with pipeline installation mitigated through in-situ restoration. Temporary impact associated with barge unloading area dredging will not result in wetland functional loss.

^cIncludes 1.39 credits for 3 acres of secondary impact surrounding FPL reclaimed water treatment facility.

TABLE 5.4-2
W.A.T.E.R. FUNCTIONAL ASSESSMENT SUMMARY

FLUCFCS Code	Wetland Type	W.A.T.E.R. Score ^a					Approximate Impact Acreage	Site Suitability Multiplier	Mitigation Credits Required
		Fish and Wildlife	Vegetation	Hydrology	Salinity	TOTAL			
	Site								
510	Active Canals	9	10	7.5	2	(28.5/51) = 0.56	4.1	1.05	2.32
511	Remnant Canals	7.5	13	7.5	2	(30/51) = 0.59	8.4	1.05	5.20
531	Open Water/ Discharge Canal 1	9	10	7.5	2	(28.5/51) = 0.56	12	1.05	6.80
612-A	Mangrove Heads	12	12.5	9	2	(35.5/51)= 0.70	12.2	1.05	8.97
612-B	Dwarf Mangroves	11	11	9	2	(33/51) = 0.65	16.9	1.05	11.53
650	Mud Flats	9	9	8	2	(28/51) = 0.55	187.5	1.05	108.28
743-Wet	Wetland Spoil Areas	9	9	8	2	(28/51) = 0.55	9.1	1.05	5.26
TOTAL							250.2		148.4

^aRefer to Appendix 10.4 for more details on the W.A.T.E.R. scoring system.

TABLE 5.5.1-1 (Rev. 1)
ESTIMATED AIR EMISSIONS DURING SITE PREPARATION AND CONSTRUCTION OF TURKEY POINT UNITS 6 & 7

<u>Note: The FPL-owned fill source is no longer an associated facility of the FPL Turkey Point Units 6 & 7 Project.</u>						
Construction Activity	Type Operation	Amount	Units	Pollutant	Emissions	Controls
Site Preparation						
Muck Removal	Batch Drop	5,680,000 tons		PM ₁₀	0.53 tons	High moisture material
Muck Soil Transport	Unpaved Roads	873,846 VMT		PM ₁₀	47.53 tons	Chemical dust suppressant
Off-site Fill Delivery	Paved Roads	5,916,113 VMT		PM ₁₀	33.87 tons	Watering/Sweeping as necessary
Off-site Fill Placement	Batch Drop	13,850,000 tons		PM ₁₀	2.29 tons	High moisture material
On-Site Fill Placement	Batch Drop	130,000 tons		PM ₁₀	0.04 tons	High moisture material
On-Site Fill Movement	Unpaved Roads	3,409 VMT		PM ₁₀	0.77 tons	Watering as necessary
Grading	Unpaved Roads	196,510 VMT		PM ₁₀	9.74 tons	Chemical dust suppressant
Equipment Emissions	Diesel Engines	1,007,982 gallons		PM ₁₀	3.15 tons	EPA Non-Road Tier 3
				NO _x	56.67 tons	EPA Non-Road Tier 3
				SO ₂	0.11 tons	EPA Non-Road Tier 3
				CO	54.57 tons	EPA Non-Road Tier 3
				VOC	6.30 tons	EPA Non-Road Tier 3
Open Areas	Wind Erosion	100 acres		PM ₁₀	4.35 tons/yr	Watering as necessary
Construction Worker On-site Traffic	Paved Roads	7,080,509 VMT/yr		PM ₁₀	1.62 tons/yr	Watering/Sweeping as necessary
Concrete Batch Plant	Concrete Batching	310,653 tons		PM ₁₀	3.59 tons	Fabric Filter, watering
	Unpaved Roads	9,750 VMT		PM ₁₀	2.16 tons	Watering as necessary
Facilities Construction	Diesel Engines	707,200 gallons/yr		PM ₁₀	2.02 tons/yr	EPA Non-Road Tier 3
				NO _x	37.70 tons/yr	EPA Non-Road Tier 3
				SO ₂	0.08 tons/yr	EPA Non-Road Tier 3
				CO	34.60 tons/yr	EPA Non-Road Tier 3
				VOC	3.97 tons/yr	EPA Non-Road Tier 3
Temporary Construction Boilers	Construction steam (2,500 hours/yr)	110 MMBtu/hr		PM ₁₀	6.72 tons/yr	Good combustion practices
				NO _x	39.07 tons/yr	Good combustion practices
				SO ₂	0.48 tons/yr	Good combustion practices
				CO	22.54 tons/yr	Good combustion practices
				VOC	2.40 tons/yr	Good combustion practices
FPL-Owned Fill Source	Batch Drop	24,860,000 tons		PM₁₀	2.33 tons	High moisture material
	Unpaved Roads	271,635 VMT		PM₁₀	15.33 tons	Watering as necessary
	Diesel Engines	856,456 gallons		PM₁₀	2.67 tons	EPA Non-Road Tier 3
				NO_x	48.15 tons	EPA Non-Road Tier 3
				SO₂	0.09 tons	EPA Non-Road Tier 3
				CO	46.36 tons	EPA Non-Road Tier 3
				VOC	5.35 tons	EPA Non-Road Tier 3

Note: VMT = vehicle miles traveled; acres based on open areas at any one time.

The following EPA emission factors were used to estimate emissions. Appendix 10.7.5 contains the emission calculations.

USEPA, 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.

USEPA, 2006a; AP-42, Section 13.2.1 Paved Roads.

USEPA, 2006b; AP-42, Section 13.2.2 Unpaved Roads.

USEPA, 2006c; AP-42, Section 13.2.4 for Aggregate Handling and Storage Piles.

USEPA, 2006d; AP-42, Section 11.12 Concrete Batching.

USEPA, 2006e; AP-42, Section 13.2.5 Industrial Wind Erosion.

USEPA, 2008; 40 CFR Part 89 Control of Emissions of New and In-use Compression Engines.

TABLE 5.7.1-1
ANTICIPATED LABOR CATEGORY
OF CONSTRUCTION WORKFORCE

Category	Percent	Category	Percent
Mechanical	3 to 4	Piping & Instrumentation	14 to 20
Electrical	10 to 12	Site Support	25 to 30
Concrete	10 to 15	Specialty Labor	7 to 13
Structural Steel	2 to 4	Non-Manual	25 to 30
Civil (other)	2 to 5		

TABLE 5.7.2-1**TRAFFIC GENERATION FUTURE CONDITIONS
(DURING PEAK CONSTRUCTION PERIOD OF TURKEY POINT UNITS 6 & 7 PROJECT)**

Station No.	Location	Previous Peak Hour Capacity	Construction New Trips	Available Peak Hour Capacity
9956	SW 344 th Street/Palm Drive west of SW 137 th Avenue	2,799	1,124	1,675
9952	SW 328 th Street/North Canal Drive west of SW 137 th Avenue	2,346	447	1,899
9944	SW 312 th Street east of Homestead Extension of Florida's Turnpike	1,289	784	505

TABLE 5.7.4-1 (Rev. 1)

SOUND POWER LEVELS FOR NOISE SOURCES ASSOCIATED WITH SITE PREPARATION FOR TURKEY POINT UNITS 6 & 7

Note: The FPL-owned fill source is no longer an associated facility of the Turkey Point Units 6 & 7 Project.

Sources: Site	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	
Bulldozer	Point	15	2	0.0	106.6	103.6	101.6	102.6	99.6	96.6	94.6	96.6	105.3
Pan	Point	12	2	0.0	106.6	103.6	101.6	102.6	99.6	96.6	94.6	96.6	105.3
Truck	Point	20	2	0.0	0.0	118.6	116.1	113.1	109.6	106.1	102.1	0.0	115.3
Frontend Loader	Point	6	2	0.0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	115.6
Backhoe	Point	3	2	0.0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	115.6
Crane	Point	4	2	0.0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	115.6

Sources: Reclaimed Water Treatment Facility	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	
Bulldozer	Point	3	2	0.0	106.6	103.6	101.6	102.6	99.6	96.6	94.6	96.6	105.3
Pan	Point	2	2	0.0	106.6	103.6	101.6	102.6	99.6	96.6	94.6	96.6	105.3
Truck	Point	4	2	0.0	0.0	118.6	116.1	113.1	109.6	106.1	102.1	0.0	115.3
Frontend Loader	Point	1	2	0.0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	115.6
Backhoe	Point	1	2	0.0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	115.6

Sources: FPL-owned Fill 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	
Excavator	Point	1	2	65.7	80.1	91.4	100.2	105.6	108.8	113.1	116.0	113.9	120.2
Truck	Point	20	2	0.0	0.0	118.6	116.1	113.1	109.6	106.1	102.1	0.0	115.3

TABLE 5.7.4-2
SOUND POWER LEVELS FOR NOISE SOURCES ASSOCIATED WITH CONSTRUCTION
OF PERMANENT FEATURES FOR TURKEY POINT UNITS 6 & 7

Sources: Site				Sound Power Level (dB) for Octave Band Center Frequency (Hz)									Overall Sound Power Level (dBA)
Source Type	Number of Sources	Source Height (m)		31.5	63	125	250	500	1000	2000	4000	8000	
Concrete Batch Plant	Point	1	4	109.5	106.5	104.5	105.5	106.5	101.5	98.5	96.5	98.5	107.9
Crane	Point	8	2	0.0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	115.6
Truck	Point	15	2	0.0	0.0	118.6	116.1	113.1	109.6	106.1	102.1	0.0	115.3
Welder	Point	16	2	0.0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6
Air Compressor	Point	10	2	31.6	107.6	101.6	99.6	101.6	103.6	101.6	96.6	90.6	107.6
Impact Wrench	Point	8	2	31.6	101.6	106.6	107.6	109.6	114.6	119.6	117.6	114.6	124.0
Grinder	Point	13	2	8.0	83.0	68.0	70.0	83.0	83.0	93.0	93.0	78.0	97.4
Chipping Hammer	Point	11	2	8.0	83.0	68.0	70.0	83.0	83.0	93.0	93.0	78.0	97.4

Sources: Reclaimed Water Treatment Facility				Sound Power Level (dB) for Octave Band Center Frequency (Hz)									Overall Sound Power Level (dBA)
Source Type	Number of Sources	Source Height (m)		31.5	63	125	250	500	1000	2000	4000	8000	
Crane	Point	2	2	0.0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	115.6
Truck	Point	3	2	0.0	0.0	118.6	116.1	113.1	109.6	106.1	102.1	0.0	115.3
Welder	Point	3	2	0.0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6
Air Compressor	Point	2	2	31.6	107.6	101.6	99.6	101.6	103.6	101.6	96.6	90.6	107.6
Impact Wrench	Point	2	2	31.6	101.6	106.6	107.6	109.6	114.6	119.6	117.6	114.6	124.0
Grinder	Point	3	2	8.0	83.0	68.0	70.0	83.0	83.0	93.0	93.0	78.0	97.4
Chipping Hammer	Point	2	2	8.0	83.0	68.0	70.0	83.0	83.0	93.0	93.0	78.0	97.4

Sources: Radial Collector Wells				Sound Power Level (dB) for Octave Band Center Frequency (Hz)									Overall Sound Power Level (dBA)
Source Type	Number of Sources	Source Height (m)		31.5	63	125	250	500	1000	2000	4000	8000	
Drill Rig	Point	1	2	28.0	109.0	109.0	106.0	104.0	102.0	100.0	96.0	91.0	107.4
Truck	Point	2	2	0.0	0.0	118.6	116.1	113.1	109.6	106.1	102.1	0.0	115.3
Welder	Point	3	2	0.0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6
Air Compressor	Point	3	2	31.6	107.6	101.6	99.6	101.6	103.6	101.6	96.6	90.6	107.6

TABLE 5.7.4-3
PREDICTED SOUND PRESSURE LEVELS (SPLs) FOR SITE PREPARATION AND BACKGROUND SPLs FROM
MONITORING FOR TURKEY POINT UNITS 6&7

Site	Location	Predicted SPLs (dBA)	Background SPLs (dBA)			
			Daytime L ₉₀	Daytime L _{eq}	Nighttime L ₉₀	Nighttime L _{eq}
S1	Homestead Racetrack	27.7	34.7	53.9	46.7	54.5
S2	FPL T-line NW TP 5	51.6	58.8	60.6	59.3	60.6
S3	FPL T-line W TP 5	51.0	66.1	67.2	65.7	66.9
S4	FPL TP Main Entrance	50.6	43.1	60.2	48.1	57.4
S5	FPL Northern Boundary	48.2	42.1	44.1	46.9	47.9
S6	FPL Daycare Center	44.9	42.5	48.6	46.2	49.0
S7	Homestead Bayfront Park	38.4	38.3	49.4	40.2	47.2
S8	Nearest Permanent Private Residence	38.0	37.9	64.4	46.7	54.1

Legend: TP = Turkey Point; TP 5 = Turkey Point Unit 5

TABLE 5.7.4-4
PREDICTED SOUND PRESSURE LEVELS (SPLs) FOR SITE PREPARATION INCLUDING
BACKGROUND SPLs AND PREDICTED SPLs FOR TURKEY POINT UNITS 6&7

Site	Location	Predicted SPLs (dBA)	TP 6&7 SPLs with Background (dBA)				Difference Between TP 6&7 and Background (dBA)			
			Daytime	Daytime	Nighttime	Nighttime	Daytime	Daytime	Nighttime	Nighttime
			L ₉₀	L _{eq}	L ₉₀	L _{eq}	L ₉₀	L _{eq}	L ₉₀	L _{eq}
S1	Homestead Racetrack	27.7	35.5	53.9	46.7	54.5	0.8	0.0	0.1	0.0
S2	FPL T-line NW TP 5	51.6	59.6	61.1	60.0	61.1	0.8	0.5	0.7	0.5
S3	FPL T-line W TP 5	51.0	66.3	67.3	65.8	67.0	0.1	0.1	0.1	0.1
S4	FPL TP Main Entrance	50.6	51.3	60.7	52.5	58.2	8.2	0.5	4.5	0.8
S5	FPL Northern Boundary	48.2	49.2	49.6	50.6	51.1	7.1	5.5	3.7	3.1
S6	FPL Daycare Center	44.9	46.9	50.2	48.6	50.4	4.4	1.5	2.4	1.4
S7	Homestead Bayfront Park	38.4	41.4	49.7	42.4	47.8	3.1	0.3	2.2	0.5
S8	Nearest Permanent Private Residence	38.0	41.0	64.4	47.2	54.2	3.1	0.0	0.6	0.1

Legend: TP = Turkey Point; TP 5 = Turkey Point Unit 5

TABLE 5.7.4-5
PREDICTED SOUND PRESSURE LEVELS (SPLs)
FOR CONSTRUCTION OF PERMANENT FEATURES AND BACKGROUND SPLs
FROM MONITORING AT TURKEY POINT UNITS 6 & 7

Site	Location	Predicted SPLs (dBA)	Background SPLs (dBA)			
			Daytime L ₉₀	Daytime L _{eq}	Nighttime L ₉₀	Nighttime L _{eq}
S1	Homestead Racetrack	24.4	34.7	53.9	46.7	54.5
S2	FPL T-line NW TP 5	50.0	58.8	60.6	59.3	60.6
S3	FPL T-line W TP 5	50.8	66.1	67.2	65.7	66.9
S4	FPL TP Main Entrance	41.7	43.1	60.2	48.1	57.4
S5	FPL Northern Boundary	42.5	42.1	44.1	46.9	47.9
S6	FPL Daycare Center	39.9	42.5	48.6	46.2	49.0
S7	Homestead Bayfront Park	34.0	38.3	49.4	40.2	47.2
S8	Nearest Permanent Private Residence	26.7	37.9	64.4	46.7	54.1

Legend: TP = Turkey Point; TP 5 = Turkey Point Unit 5

TABLE 5.7.4-6
PREDICTED SOUND PRESSURE LEVELS (SPLS) FOR CONSTRUCTION OF PERMANENT FEATURES INCLUDING BACKGROUND SPLS AND PREDICTED
SPLS FOR TURKEY POINT UNITS 6 & 7

Site	Location	Predicted SPLs (dBA)	SPLs with Background (dBA)				Difference Between TP 6&7 and Background			
			Daytime	Daytime	Nighttime	Nighttime	Daytime	Daytime	Nighttime	Nighttime
			L ₉₀	L _{eq}	L ₉₀	L _{eq}	L ₉₀	L _{eq}	L ₉₀	L _{eq}
S1	Homestead Racetrack	24.4	35.1	53.9	46.7	54.5	0.4	0.0	0.0	0.0
S2	FPL T-line NW TP 5	50.0	59.3	60.9	59.8	60.9	0.5	0.4	0.5	0.4
S3	FPL T-line W TP 5	50.8	66.2	67.3	65.8	67.0	0.1	0.1	0.1	0.1
S4	FPL TP Main Entrance	41.7	45.5	60.3	49.0	57.5	2.4	0.1	0.9	0.1
S5	FPL Northern Boundary	42.5	45.3	46.4	48.2	49.0	3.2	2.3	1.4	1.1
S6	FPL Daycare Center	39.9	44.4	49.2	47.1	49.5	1.9	0.5	0.9	0.5
S7	Homestead Bayfront Park	34.0	39.7	49.5	41.2	47.4	1.4	0.1	0.9	0.2
S8	Nearest Permanent Private Residence	26.7	38.2	64.4	46.7	54.1	0.3	0.0	0.0	0.0

Legend: TP = Turkey Point; TP 5 = Turkey Point Unit 5

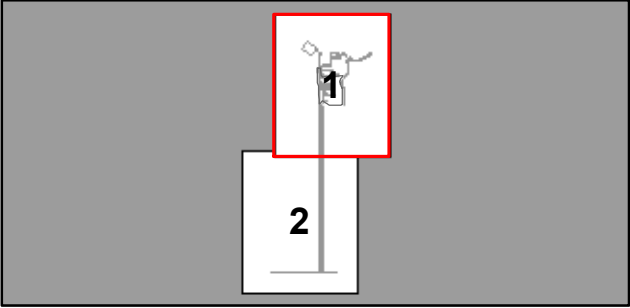


LEGEND

- Turkey Point Units 6 & 7 Site
- Associated Non-Linear Facilities
- Construction Areas / Facilities
- Spoil Areas

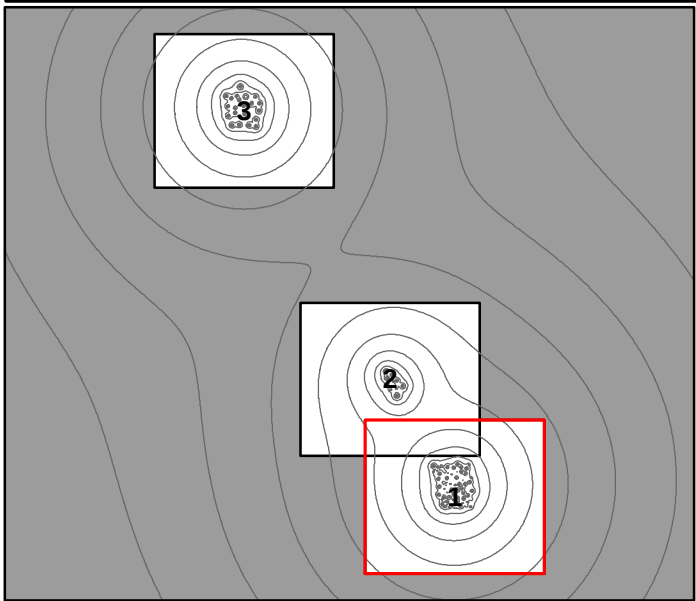
REFERENCES

1. Imagery, Miami-Dade County, 2007.





AREA MAP



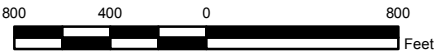
LEGEND

Turkey Point Units 6 & 7 Plant Area	> 45 dB
Turkey Point Plant Property	> 50 dB
FPL Reclaimed Water Treatment Facility	> 55 dB
FPL-Owned Fill Source	> 60 dB
Noise Sources	> 65 dB
Backhoe	> 70 dB
Bucket Crane	> 75 dB
Bulldozer	> 80 dB
Crane	
Excavator	
Front Loader	
Pan Scraper	
Truck	

REFERENCES

1. Imagery, Miami-Dade County, 2007.

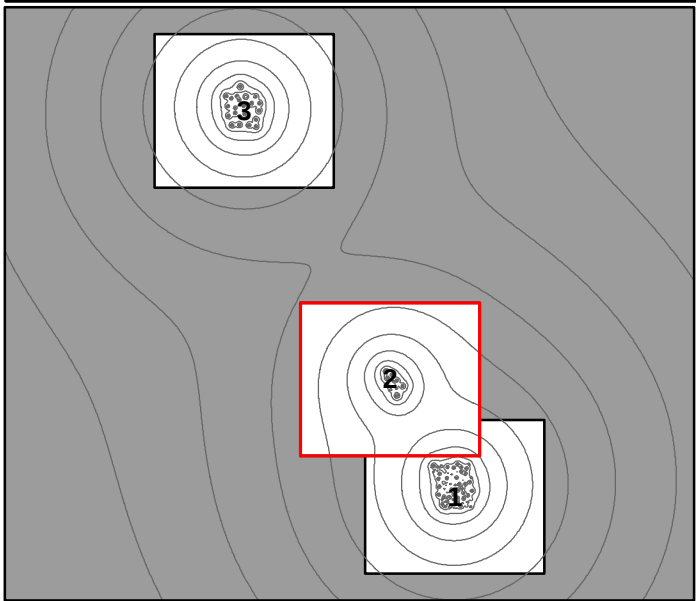
(Rev. 1 Note: The FPL-owned fill source is no longer an associated facility of the Turkey Point Units 6 & 7 Project. Sheet 3 of this figure is deleted.)



PROJECT	TURKEY POINT UNITS 6 & 7 PROJECT	
TITLE	SITE PREPARATION NOISE CONTOURS IN THE VICINITY OF THE SITE Sheet 1 of 3	
	FILE No. 08387584D003	FIGURE 5.7.4-1
	REV. 1	
	PLOT DATE 6/11/2009	



AREA MAP



LEGEND

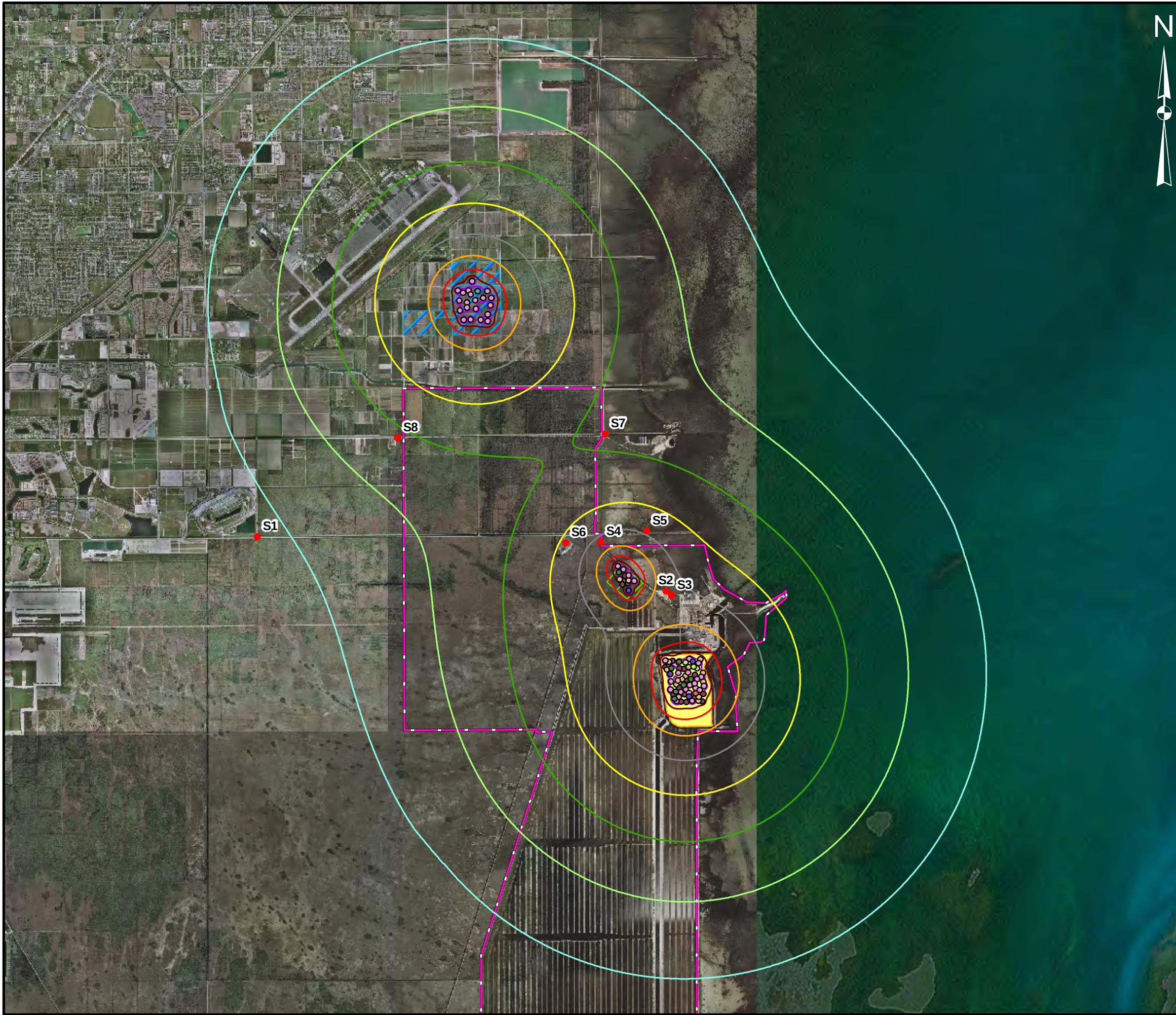
Turkey Point Units 6 & 7 Plant Area	> 45 dB
Turkey Point Plant Property	> 50 dB
FPL Reclaimed Water Treatment Facility	> 55 dB
FPL-Owned Fill Source	> 60 dB
Noise Sources	
Backhoe	> 65 dB
Bucket Crane	> 70 dB
Bulldozer	> 75 dB
Crane	> 80 dB
Excavator	
Front Loader	
Pan Scraper	
Truck	

REFERENCES

1. Imagery, Miami-Dade County, 2007.

(Rev. 1 Note: The FPL-owned fill source is no longer an associated facility of the Turkey Point Units 6 & 7 Project. Sheet 3 of this figure is deleted.)

PROJECT	TURKEY POINT UNITS 6 & 7 PROJECT	
TITLE	SITE PREPARATION NOISE CONTOURS IN THE VICINITY OF THE SITE Sheet 2 of 3	
	FILE No. 08387584D003	FIGURE 5.7.4-1
	REV. 1	
	PLOT DATE 6/11/2009	



LEGEND

Noise Sources

- Backhoe
- Bucket Crane
- Bulldozer
- Crane
- Excavator
- Front Loader
- Pan Scraper
- Truck
- Noise Monitoring Locations

Noise Impact Contours

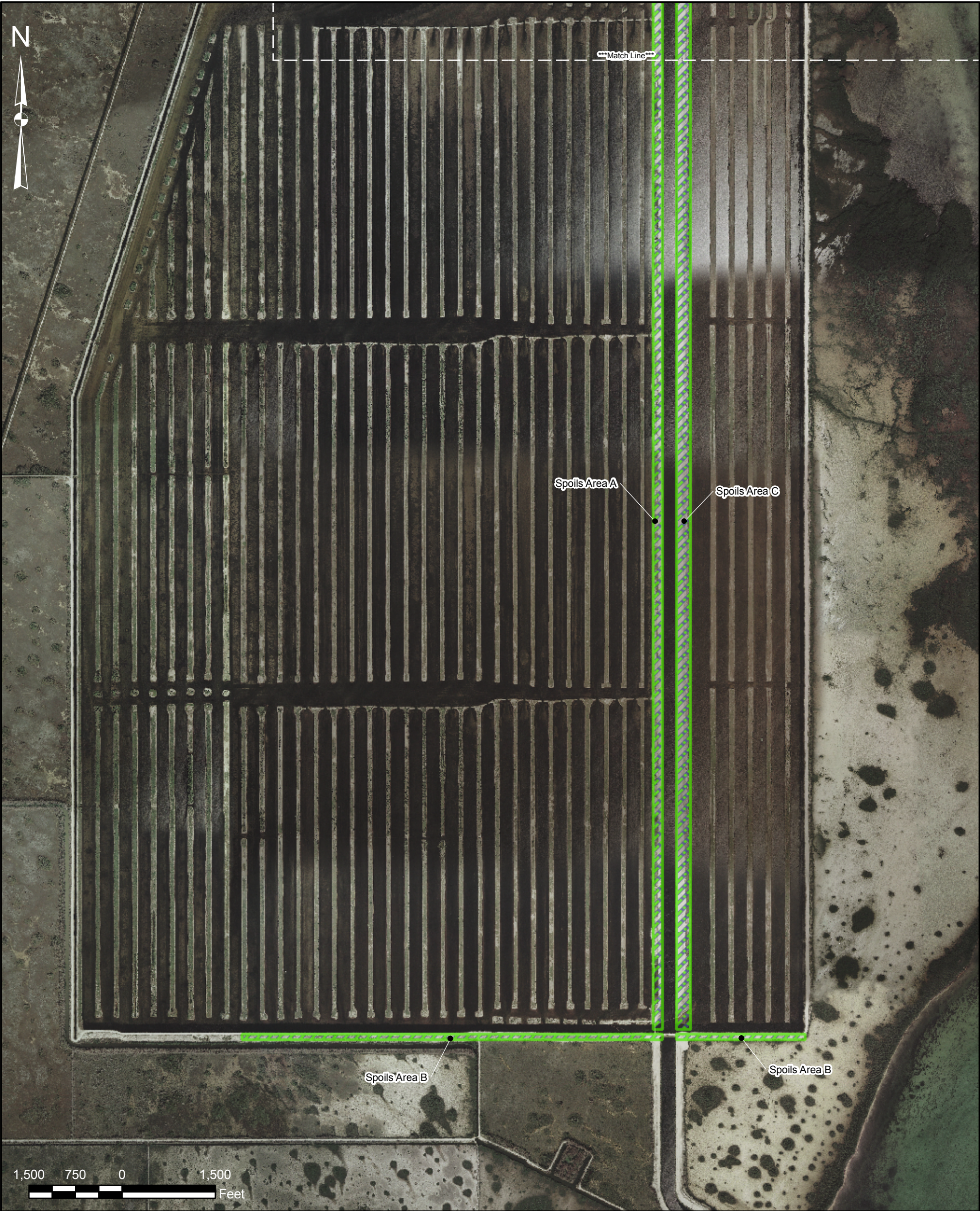
- > 30 dB
- > 35 dB
- > 40 dB
- > 45 dB
- > 50 dB
- > 55 dB
- > 60 dB
- > 65 dB
- > 70 dB
- > 75 dB
- > 80 dB
- Turkey Point Units 6 & 7 Plant Area
- FPL Reclaimed Water Treatment Facility
- FPL-Owned Fill Source
- Turkey Point Plant Property

REFERENCES

- Imagery, ESRI / Miami-Dade County, 2006 / 2007.
(Rev. 1 Note: The FPL-owned fill source is no longer an associated facility of the Turkey Point Units 6 & 7 Project.)



PROJECT	TURKEY POINT UNITS 6 & 7 PROJECT	
TITLE	SITE PREPARATION NOISE CONTOURS AND NOISE MONITORING LOCATIONS	
	FILE No. 08387584D004	FIGURE 5.7.4-2
	REV. 1	
	PLOT DATE 6/11/2009	



LEGEND

-  Turkey Point Units 6 & 7 Site
-  Associated Non-Linear Facilities
-  Construction Areas / Facilities
-  Spoil Areas

REFERENCES

1. Imagery, Miami-Dade County, 2007.

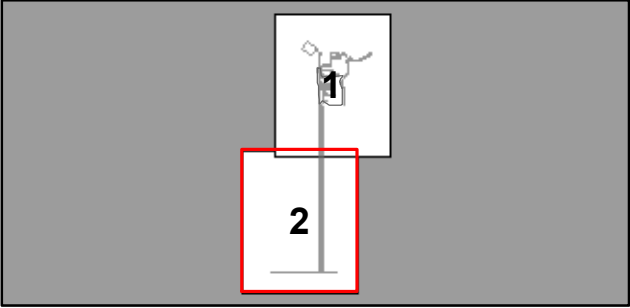


FIGURE 5.1-1	FILE No. 08387564D001	TITLE	PROJECT	 FPL®
	REV. 0	ASSOCIATED NON-LINEAR FACILITIES, CONSTRUCTION AREAS, SPOIL AREAS, SITE AND ADJACENT PROPERTIES	TURKEY POINT UNITS 6 & 7 PROJECT	
	PLOT DATE 6/11/2009			
		Sheet 2 of 2		

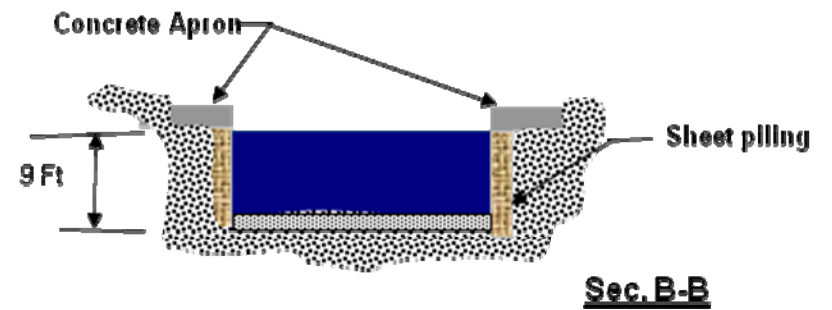
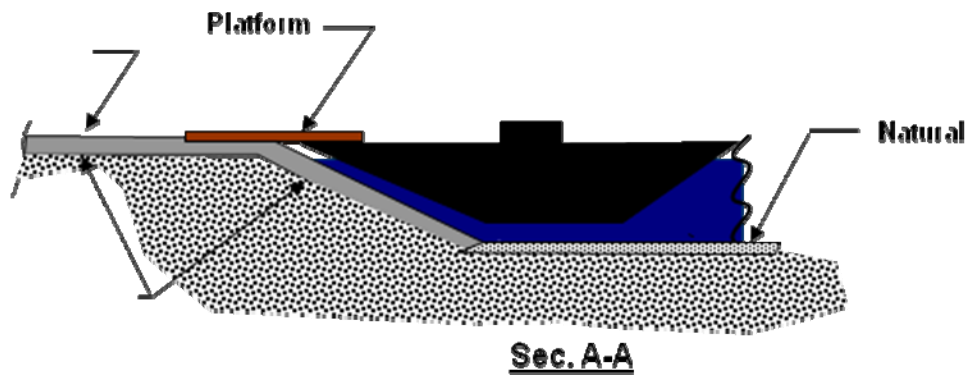
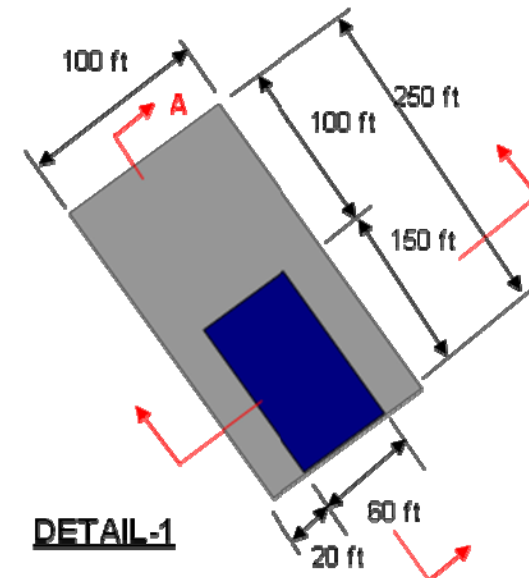
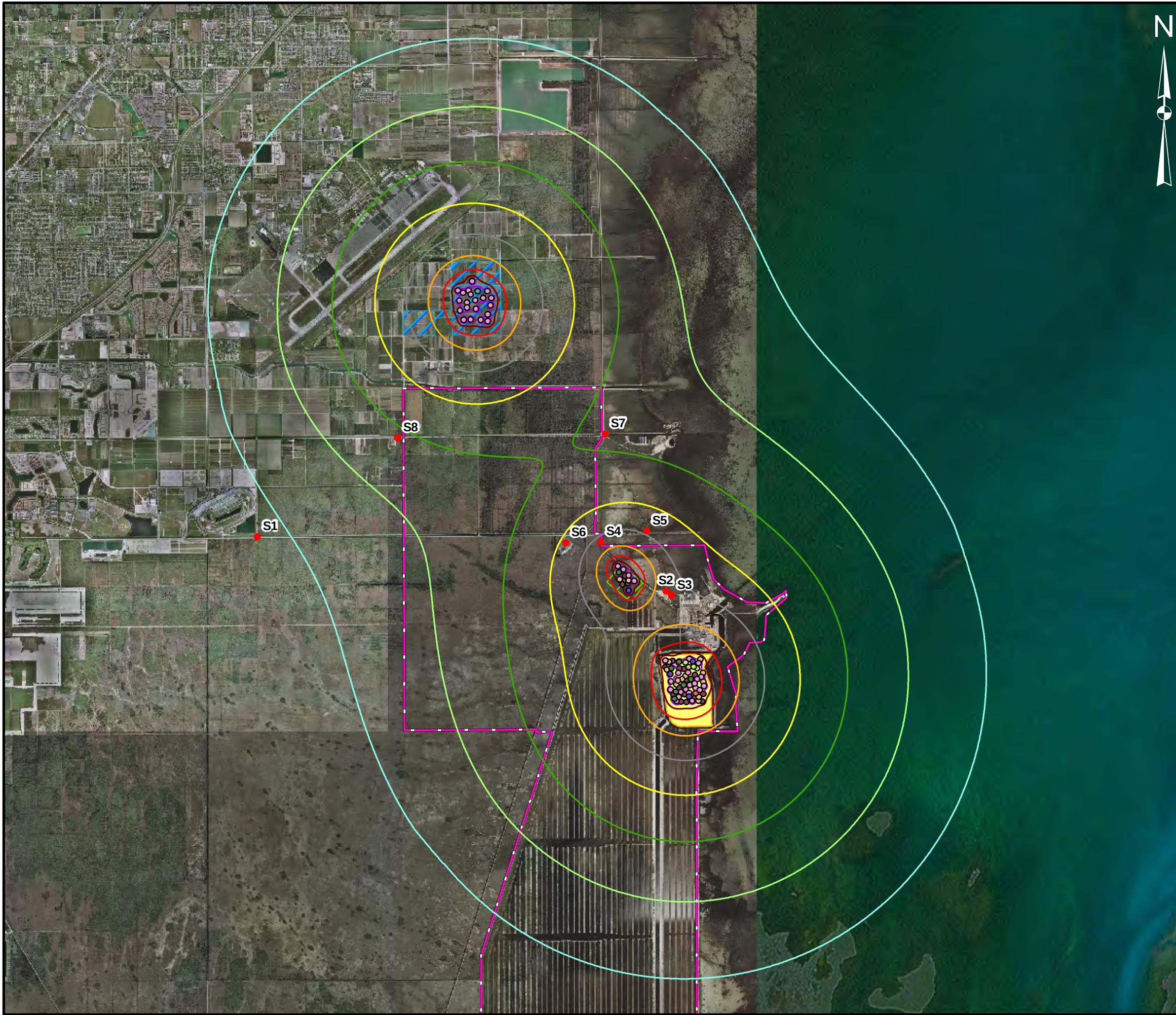


Figure 5.1-2
Equipment Barge Unloading Area

Rev. 0



LEGEND

Noise Sources

- Backhoe
- Bucket Crane
- Bulldozer
- Crane
- Excavator
- Front Loader
- Pan Scraper
- Truck
- Noise Monitoring Locations

Noise Impact Contours

- > 30 dB
- > 35 dB
- > 40 dB
- > 45 dB
- > 50 dB
- > 55 dB
- > 60 dB
- > 65 dB
- > 70 dB
- > 75 dB
- > 80 dB
- Turkey Point Units 6 & 7 Plant Area
- FPL Reclaimed Water Treatment Facility
- FPL-Owned Fill Source
- Turkey Point Plant Property

(Rev. 1 Note: The FPL-Owned Fill Source is not an associated facility of the Turkey Point Units 6 & 7 Project.)

REFERENCES

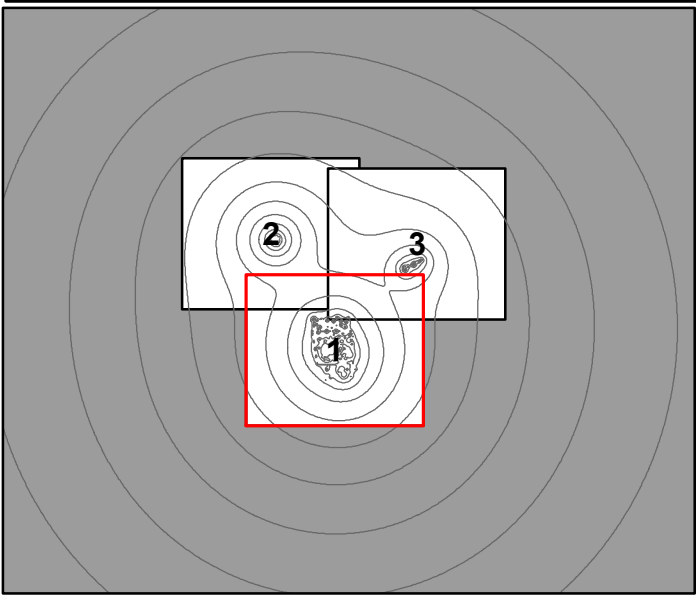
1. Imagery, ESRI / Miami-Dade County, 2006 / 2007.



PROJECT	TURKEY POINT UNITS 6 & 7 PROJECT	
TITLE	SITE PREPARATION NOISE CONTOURS AND NOISE MONITORING LOCATIONS	
	FILE No. 08387584D004	FIGURE 5.7.4-2
	REV. 1	
	PLOT DATE 6/11/2009	



AREA MAP

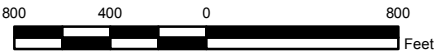


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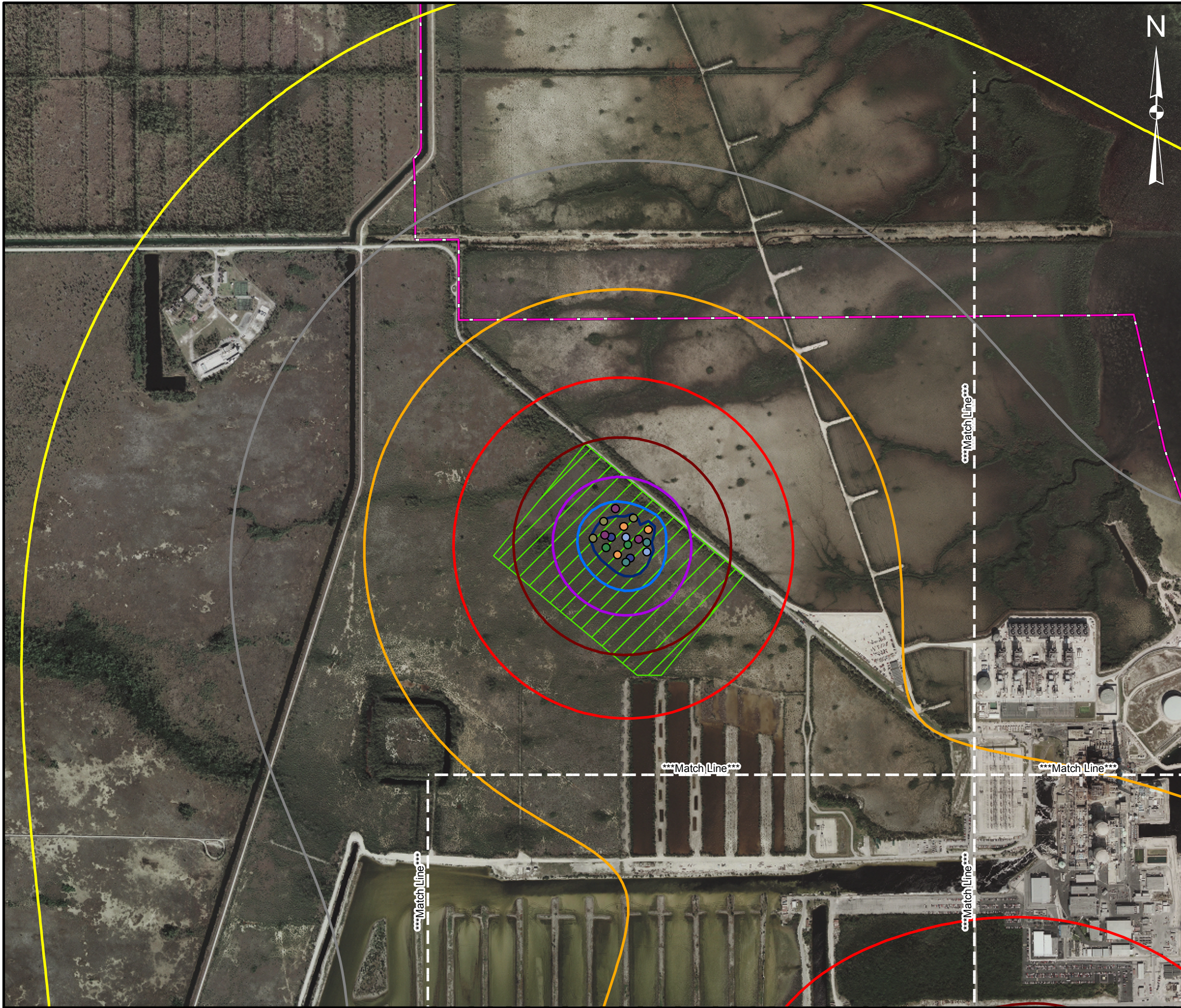
Noise Sources	Noise Impact Contours
● Air Compressor	— > 30 dB
● Backhoe	— > 35 dB
● Bucket Crane	— > 40 dB
● Bulldozer	— > 45 dB
● Chipping Hammer	— > 50 dB
● Concrete Batch Plant	— > 55 dB
● Crane	— > 60 dB
● Drill Rig	— > 65 dB
● Frontend Loader	— > 70 dB
● Grinder	— > 75 dB
● Impact Wrench	— > 80 dB
● Pan Scraper	■ FPL Reclaimed Water Treatment Facility
● Truck	■ Radial Collector Well Area
● Welder	■ Turkey Point Plant Property
	■ Turkey Point Units 6 & 7 Plant Area

REFERENCES

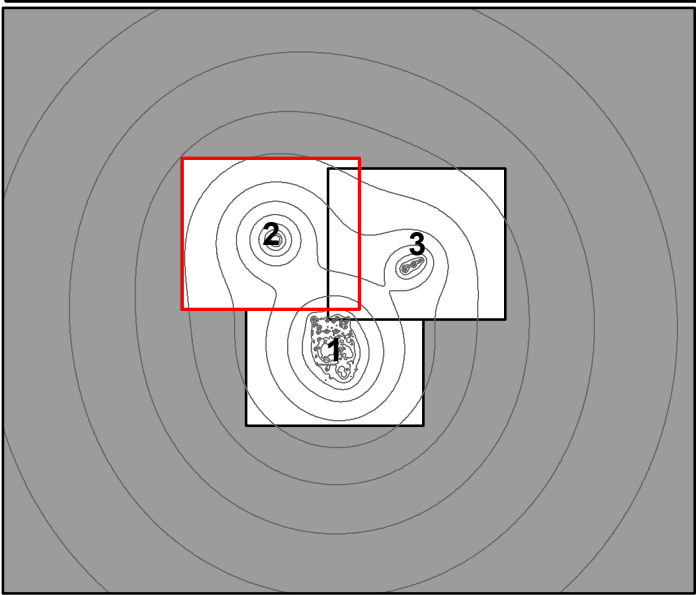
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PROJECT	TURKEY POINT UNITS 6 & 7 PROJECT	
TITLE	CONSTRUCTION (PERMANENT FEATURES) NOISE CONTOURS IN THE VICINITY OF THE SITE	
	Sheet 1 of 3	
	FILE No. 08387584D005	FIGURE 5.7.4-3
	REV. 0	
	PLOT DATE 6/11/2009	



AREA MAP

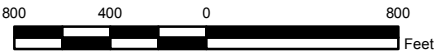


LEGEND

Noise Sources	Noise Impact Contours
● Air Compressor	— > 30 dB
● Backhoe	— > 35 dB
● Bucket Crane	— > 40 dB
● Bulldozer	— > 45 dB
● Chipping Hammer	— > 50 dB
● Concrete Batch Plant	— > 55 dB
● Crane	— > 60 dB
● Drill Rig	— > 65 dB
● Frontend Loader	— > 70 dB
● Grinder	— > 75 dB
● Impact Wrench	— > 80 dB
● Pan Scraper	■ FPL Reclaimed Water Treatment Facility
● Truck	■ Radial Collector Well Area
● Welder	■ Turkey Point Plant Property
	■ Turkey Point Units 6 & 7 Plant Area

REFERENCES

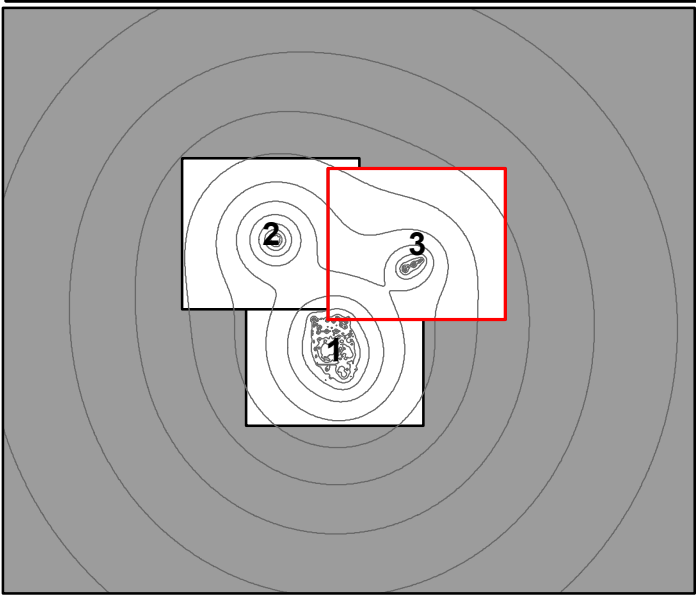
1. Imagery, ESRI / Miami-Dade County, 2006 / 2007.



PROJECT	TURKEY POINT UNITS 6 & 7 PROJECT	
TITLE	CONSTRUCTION (PERMANENT FEATURES) NOISE CONTOURS IN THE VICINITY OF THE SITE	
	Sheet 2 of 3	
	FILE No. 08387584D005	FIGURE 5.7.4-3
	REV. 0	
	PLOT DATE 6/11/2009	



AREA MAP

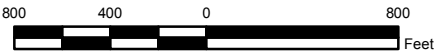


LEGEND

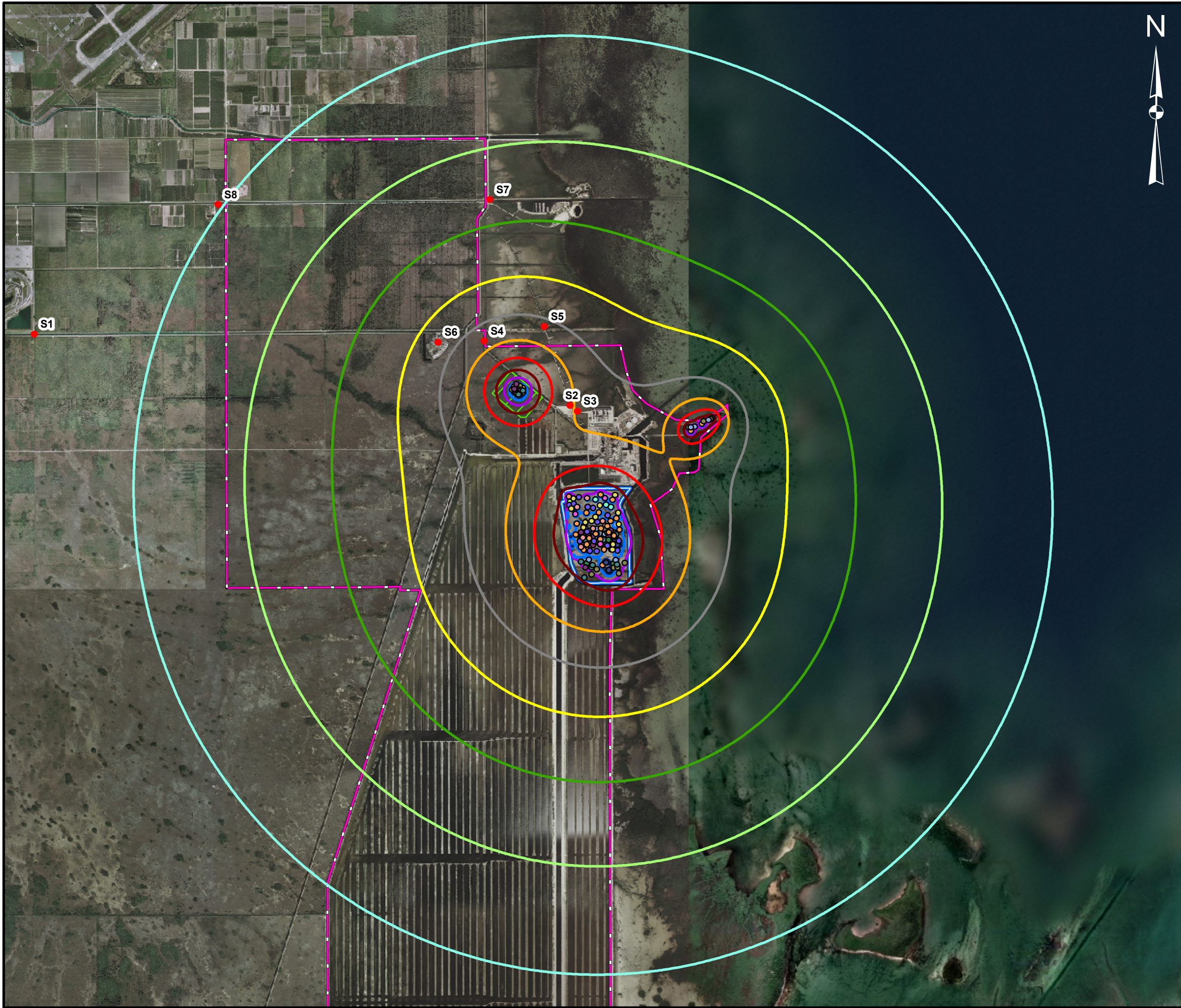
Noise Sources	Noise Impact Contours
Air Compressor	> 30 dB
Backhoe	> 35 dB
Bucket Crane	> 40 dB
Bulldozer	> 45 dB
Chipping Hammer	> 50 dB
Concrete Batch Plant	> 55 dB
Crane	> 60 dB
Drill Rig	> 65 dB
Frontend Loader	> 70 dB
Grinder	> 75 dB
Impact Wrench	> 80 dB
Pan Scraper	FPL Reclaimed Water Treatment Facility
Truck	Radial Collector Well Area
Welder	Turkey Point Plant Property
	Turkey Point Units 6 & 7 Plant Area

REFERENCES

1. Imagery, ESRI / Miami-Dade County, 2006 / 2007.



PROJECT	TURKEY POINT UNITS 6 & 7 PROJECT	
TITLE	CONSTRUCTION (PERMANENT FEATURES) NOISE CONTOURS IN THE VICINITY OF THE SITE Sheet 3 of 3	
	FILE No. 08387584D005	FIGURE 5.7.4-3
	REV. 0	
	PLOT DATE 6/11/2009	



LEGEND

- Noise Monitoring Locations
- ▭ Turkey Point Plant Property
- ▭ Turkey Point Units 6 & 7 Plant Area
- ▭ FPL Reclaimed Water Treatment Facility
- ▭ Radial Collector Well Area

Noise Sources

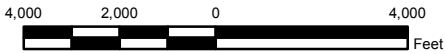
- Air Compressor
- Backhoe
- Bucket Crane
- Bulldozer
- Chipping Hammer
- Concrete Batch Plant
- Crane
- Drill Rig
- Frontend Loader
- Grinder
- Impact Wrench
- Pan Scraper
- Truck
- Welder

Noise Impact Contours

- > 30 dB
- > 35 dB
- > 40 dB
- > 45 dB
- > 50 dB
- > 55 dB
- > 60 dB
- > 65 dB
- > 70 dB
- > 75 dB
- > 80 dB

REFERENCES

1. Imagery, ESRI / Miami-Dade County, 2006 / 2007.



PROJECT	TURKEY POINT UNITS 6 & 7 PROJECT	
TITLE	CONSTRUCTION (PERMAMENT FEATURES) NOISE CONTOURS AND NOISE MONITORING LOCATIONS	
	FILE No. 08387584D006	FIGURE 5.7.4-4
	REV. 0	
	PLOT DATE 6/11/2009	