



September 14, 2016

Barbara Brown
Code Enforcement Officer II
Miami-Dade County Department of Regulatory and Economic Resources,
Division of Environmental Resources Management
701 NW 1st Court, 6th Floor
Miami, FL 33136-3912

RE: Turkey Point Remnant Canal Site Assessment Plan

Dear Ms. Brown:

Pursuant to Paragraph 34a., of the Consent Agreement between Miami-Dade County Department of Regulatory and Economic Resources, Division of Environmental Resources Management ("DERM"), and Florida Power & Light Company ("FPL") as amended on August 15, 2016, FPL is pleased to submit the requisite Site Assessment Plan (SAP) for DERM review and approval. The SAP has been developed to allow for the identification of the source(s) of the ammonia exceedances and the delineation of the vertical and horizontal extent of the subject ammonia exceedances to surface waters surrounding the Turkey Point facility, including, but not limited to, waters tidally connected to Biscayne Bay.

FPL appreciates your timely review and is prepared to implement the plan promptly upon receipt of DERM approval. Should you have any questions or request additional information, please contact Steve Scroggs at (561) 694-4496 or me at (561) 691-2808 at your convenience.

Sincerely,

A handwritten signature in blue ink that reads "Matthew J. Raffenberg".

Matthew J. Raffenberg
Senior Director of Environmental Licensing and Permitting

CC: Lee Hefty, MDC DERM
Wilbur Mayorga, MDC DERM

Attachments:

- 1) Site Assessment Plan for Ammonia in Surface Waters
- 2) Copy of August 31, 2016 administrative fee letter of transmittal

Attachment 1:
Turkey Point Site Assessment Plan



SITE ASSESSMENT PLAN

Ammonia in Surface Waters

Turkey Point Facility

September 14, 2016

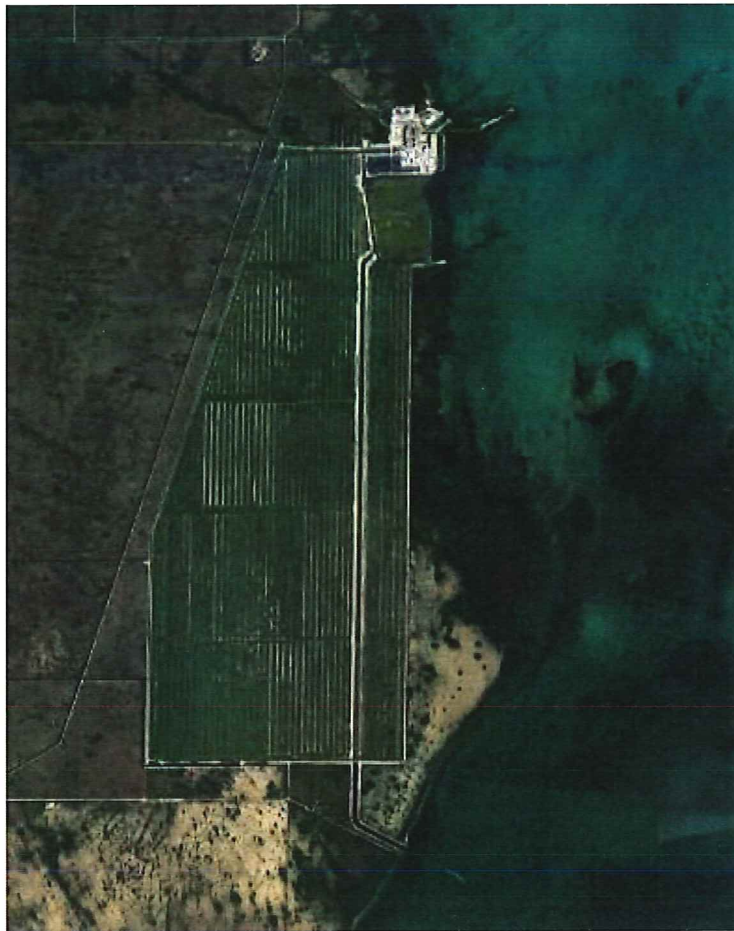




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TURKEY POINT BACKGROUND

Florida Power & Light Company (“FPL”) is pleased to submit this Site Assessment Plan (‘SAP’). This SAP has been prepared in accordance with the August 15, 2016 Addendum 1 to the October 7, 2015 Consent Agreement (CAA) entered into between the Miami-Dade County Department of Regulatory and Economic Resources, Division of Environmental Resources Management (DERM) and FPL.

In addition to complying with the requirements of the Consent Agreement Addendum 1 (‘CAA’), this SAP also provides information in response to a March 7, 2016 Memorandum titled “Report on Recent Biscayne Bay Water Quality Observations associated with FPL Turkey Point Cooling Canal System (CCS) Operations – Directive 152284” from Mayor Carlos A. Gimenez to the Miami-Dade County Board of County Commissioners (Report). The Report referenced sampling results obtained by DERM and FPL that showed surface water located near the CCS exhibited ammonia above 0.5 milligrams per liter (mg/L) during the period from September 2015 through January 2016. The Report summarized that further evaluation was needed to address the discovery of impacts to surface water tidally connected with Biscayne Bay. References to a number of information sources are provided herein.

In accordance with the CAA, this SAP will identify the source of the ammonia and it will delineate the vertical and horizontal extent of the ammonia within specified locations of nearby surface waters. The SAP will also address the ammonia impacts to the surface waters surrounding the Turkey Point facility, including, but not limited to, waters tidally connected to Biscayne Bay. This SAP does take into consideration the possibility that the source of ammonia within the four referenced areas can be attributed in some part to the natural degradation of plant and animal material. Research indicates that this may be more prevalent within hypoxic low flow areas, such as dead-end canals that are tidally connected to Biscayne Bay. There are many locations in southeast Florida that appear to possess these conditions.

Lastly, it is important to note that a review of available surface water quality data by FPL for Biscayne Bay indicates that ammonia concentrations have been recorded above the DERM criteria at many locations unrelated to Turkey Point. The data further indicates that exceedances can be temporal in nature, which is also reflected by the results of the ongoing sampling at Turkey Point. Other available information indicates that natural phenomenon can regularly cause exceedances of the ammonia criteria. It is recognized, however, that anthropogenic sources can also cause exceedances. The sources studied have included fertilizer use, the Miami-Dade County landfills and wastewater treatment located to the north of Turkey Point and numerous tidally connected canals discharging to Biscayne Bay.

TURKEY POINT OBJECTIVE

The purpose of the SAP is to identify the source of ammonia in surface waters and define the horizontal and vertical extent of ammonia over a specified time interval in four specific areas:

- Turning Basin
- Turtle Point
- Card Sound Canal
- S-20 Canal

The basis for specifying these four areas relates to the CAA, information provided in the Report and sampling results obtained by FPL and DERM.



TURKEY POINT SURFACE WATER SAMPLING PROGRAM

The surface water sampling program has been designed to help characterize ammonia concentrations in the Turning Basin and three remnant canals located at Turkey Point. Surface water samples will be collected over a two year period of time to establish ambient ammonia background water quality information. The Turning Basin and each of the three remnant canals have no direct surface water connection landward towards the FPL Turkey Point plant and are tidally connected to Biscayne Bay.

Turning Basin and Remnant Canals

- **Turning Basin:** The Turning Basin surface water monitoring network will consist of three existing monitoring stations (TPBBSW-6, TPBBSW-8 and TPBBSW-10) and two new stations (TPBBSW-PTB1 and TPBBSW-PTB2). Station locations were selected based on bathymetry soundings within the Turning Basin. The locations will allow for monitoring the interior surface water quality and also at locations just bayward of the Turning Basin entrance. The locations of the surface water sampling stations are depicted on **Figure 1**.
- **Turtle Point:** Four existing monitoring stations (TPBBSW-7B, TPBBSW-7M, TPBBSW-7T and TPBBSW-Tt) will comprise the Turtle Point surface water monitoring network. Locations are spatially distributed to help monitor water quality along the longitudinal-axis of the closed canal extending from the terminus to the mouth to approximately 500 feet bayward. The locations of the surface water sampling stations are depicted on **Figure 2**.
- **Card Sound and S-20 Canals:** Based on the proximity of each canal to the other, the Card Sound and S-20 canals will be monitored by a combined surface water monitoring network. As previously noted, the two canals have no direct surface water connection landward towards the FPL Turkey Point facility and both are open and tidally connected to Biscayne Bay.
- Two existing stations (TPBBCSC –B and TPBBCSC –M) and one new station (TPBBCSC-MID) will be used to monitor the Card Sound Canal. Three new stations (TPBBS-20B, TPBBS-20-MID and TPBBS-20-M) will be used to monitor the S-20 canal. Two existing stations (TPBBSW-4 and TPBBSW-14), which are located in Biscayne Bay near the mouths Card Sound Canal and S-20 Canal will be used to monitor both canals. The locations of the surface water sampling stations are depicted on **Figure 3**.
- **Cooling Canal System:** The CCS is a closed-loop system consisting of approximately 4,400 acres of surface water. FPL will monitor seven existing stations (TPSWCCS-1 through TPSWCCS-7) located within the CCS. Five of the stations are located on the side of the CCS where water discharges from the power plant. Two other stations are located on the side of the CCS where return water flows back to the power plant. The sampling stations are shown on **Figure 4**.



Surface Water Sampling Intervals

FPL proposes to collect water samples from three specific zones (i.e. depth intervals) at each of the sampling stations. These include:

1. Surface to one foot below the surface;
2. Mid-point between the surface and the bottom of the water column; and
3. Approximately one foot from the bottom of the water.

Sediment Samples: One initial round of sediment samples will be collected from the Turning Basin and three remnant closed canals at the proposed surface water sample station locations. Two additional sediment sample events have been proposed to provide the opportunity to collect additional information based on future physical or weather related conditions. Visual observations of the sediment will be made to help categorize general classes of organic matter. Laboratory analyses will include identification of animal and plant biota, which are a part of the nitrogen cycle associated with ammonification.

Sampling Program Duration and Frequency

A two year sampling program is proposed to help mitigate a temporally biased data-set. Eight quarterly sampling events are proposed. However, based on the first year of data, the sampling frequency may be modified for the second year. Up to four additional sampling events are being proposed. This will provide flexibility for data collection that may be associated with laboratory results, weather conditions or other variables that may be discovered.

LABORATORY ANALYSES

The proposed parameter list is attached as **Table 1**. This list was developed based on FPL and DERM data, discussions with subject experts, and research into potential sources of ammonia. The sampling will be performed in accordance with the applicable FDEP standard operating procedures (SOPs) set forth by FDEP Quality Assurance Rule, Chapter 62-160, Florida Administrative Code (FAC).

Analysis of all surface water/sediment samples will be performed by a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory. Laboratories previously employed will be used to provide analytical continuity. However, split sampling and use of specialty laboratories may be necessary.

REPORTING

FPL will implement the SAP within sixty days of approval from DERM. At least three days of advance notification will be provided to DERM prior to commencement of field activities. During the monitoring program, FPL will submit quarterly progress reports to DERM within thirty days of completion of each sampling event. The progress reports will include a summary of the sampling procedures and analytical data obtained during the previous quarter and a brief description of the water quality.

A complete Site Assessment Report (SAR) will be submitted within ninety days of completion of the final sampling event. The SAR will include a conceptual site model to provide a better understanding of the dynamic interaction of natural and anthropogenic factors in the areas studied during the sampling program. The information obtained will allow for the identification of the source of ammonia and the delineation of the vertical and horizontal extent within specified locations of nearby surface waters.



Based on the results obtained from the monitoring program, FPL may provide a recommendation for additional monitoring, a Corrective Action Plan or No Further Action.

In accordance with the milestones established in Paragraph 21 of the Consent Order between the Florida Department and Environmental Protection and FPL dated June 20, 2016 (OGC File No. 16-0241), FPL is currently preparing permit applications to commence the Barge Turning Basin and Turtle Point Canal restoration projects that are required to be completed within two (2) years of obtaining regulatory approval. FPL anticipates that, due to comprehensive regulatory reviews, it may be a year or longer before the restoration projects will receive regulatory authorization to proceed. Following approval of the SAP by DERM, water quality data will be obtained for a period of two (2) years. Evaluation of the data may indicate that corrective actions are not necessary within the Turning Basin, Turtle Point, Card Sound Canal, or the S-20 Canal. However, if fill operations in the Turning Basin and Turtle Point commence prior to the completion of SAP sampling, then certain modifications to the proposed sampling plan will be submitted to DERM for approval. These modifications, for example, may include modifying the surface water sampling depth intervals at those sample stations where restoration work may be taking place.

REFERENCES

Brown and Caldwell, NW 33rd Street Suite 100 Miami, Florida 33122; Report to Miami-Dade County Department of Solid Waste Management titled "*Biscayne Bay Shoreline Model Technical Memorandum; Old South Dade Landfill Closure Enhancement Miami-Dade County, Florida, December, 1999*".

Ecology and Environment, Inc., "*FPL Turkey Point Comprehensive Post-Uprate Monitoring Report for Units 3 & 4 Uprate Project – March 2016*"

Metro-Dade Department of Environmental Resources Management, Environmental Planning and Evaluation Section, Maxine Cheesman, December, 1990, Technical Report 90-12, 1987; "*Intensive Canal Study Evaluation of Water Quality in the L-31 N Canal*".

Miami-Dade County Memorandum dated March 7, 2016 from Mayor Carlos A. Gimenez to Honorable Chairman Jean Monestime and Members, Board of County Commissioners titled "*Report on Recent Biscayne Bay Water Quality Observations associated with Florida Power and Light Turkey Point Cooling Canal System Operations - Directive 152884*".

South Florida Water Management District, "*Biscayne Bay Water Quality Monitoring Network*", February, 2006. Points of Contact: Dave Rudnick, Trisha Stone, Teresa Coley, Braham Charkian.

South Florida Water Management District, DBHYDRO Database (SFWMD 2016).
http://www.sfwmd.gov/dbhydropls/sql/show_dbkey_info.main_menu

Southeast Environmental Research Center, Florida International University, Miami, FL 33199, John Meeder, Ph.D., Joseph N. Boyer, Ph.D., "*Total Ammonia Concentrations in Soil, Sediments, Surface Water, and Groundwater Along The Western Shoreline Of Biscayne Bay With The Focus On Black Point And A Reference Mangrove Site*", February 12, 2001.

State of Florida Department of Environmental Protection vs. Florida Light & Power Company (OGC File No. 16-0241) Consent Order executed June 20, 2016.

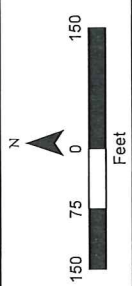
U.S. Geological Survey, Open-File Report 2004-1438, "*Quality of Ground Water in the Biscayne Aquifer in Miami-Dade, Broward, and Palm Beach Counties, Florida, 1996-1998, with Emphasis on Contaminants*"; Anne Bradner, Benjamin F. McPherson, Ronald L. Miller, George Kish, and Bruce Bernard.



Figures



Proposed Surface Water Sampling Station
Existing Surface Water Sampling Station



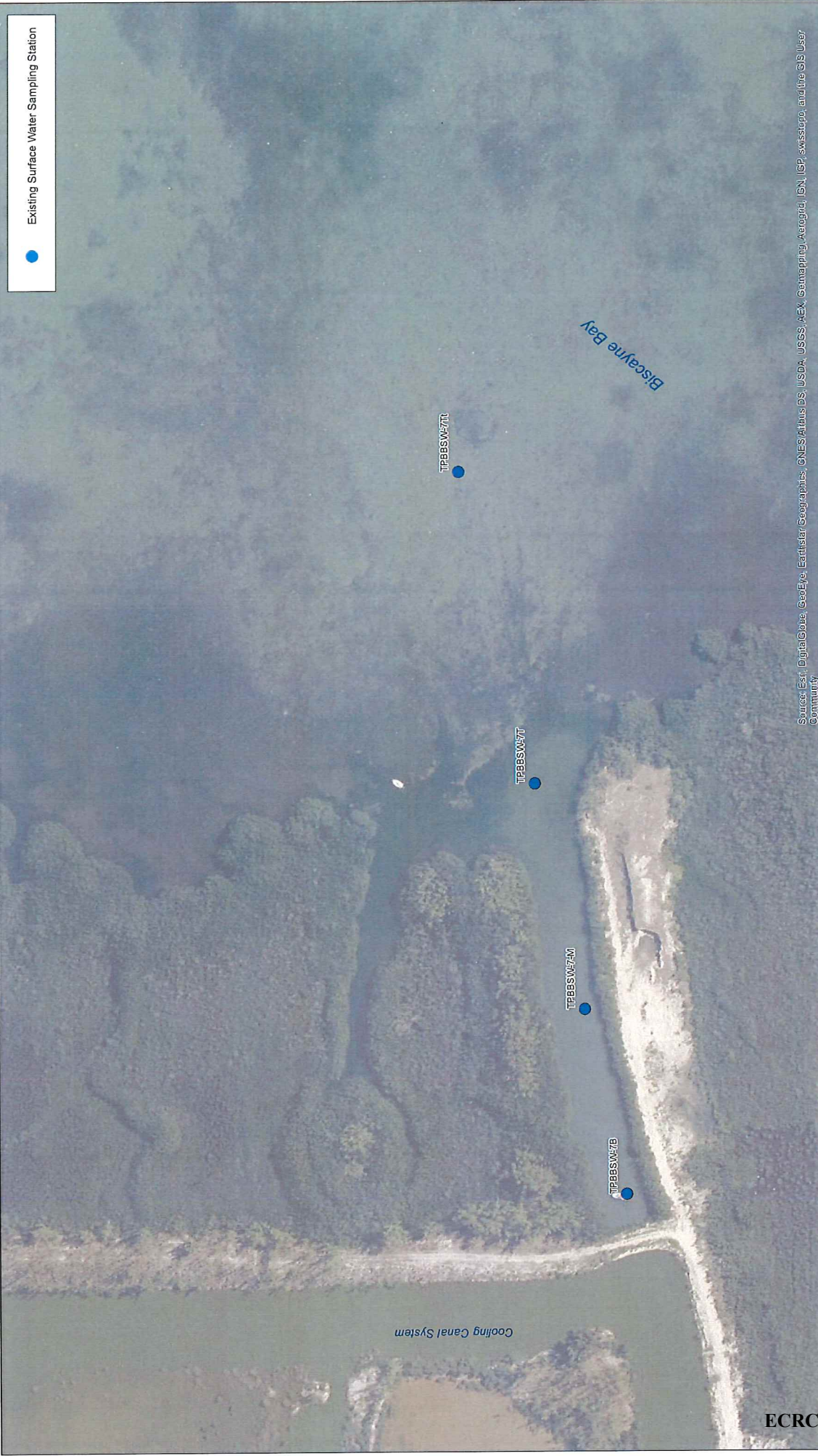
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M. O'Meara - Tallahassee

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Florida Power and Light
Turkey Point Plant

Figure 1
Proposed Turning Basin Area
Surface Water Sample Stations



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community





M. O'Meara - Tallahassee

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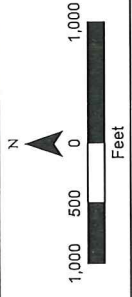
Figure 2
Proposed Turtle Point Study Area
Surface Water Sample Stations

Florida Power and Light
Turkey Point Plant



 Proposed Surface Water Sampling Station
 Existing Surface Water Sampling Station

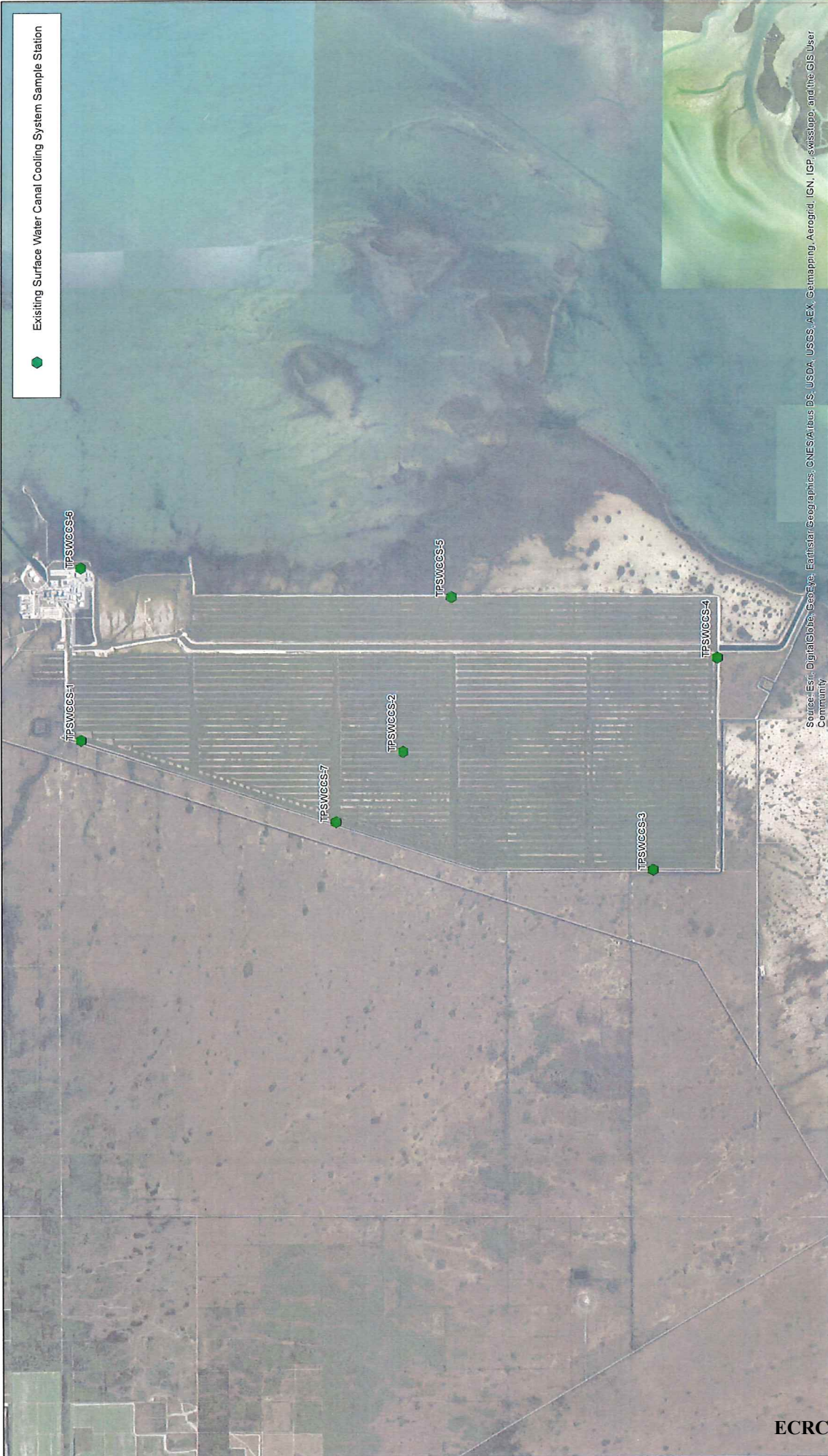
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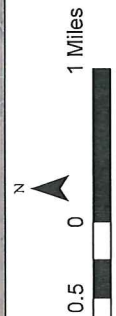
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 M. O'Meara - Tallahassee
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Figure 3
 Florida Power and Light
 Turkey Point Plant
 Proposed Card Sound Canal and S-20 Canal
 Surface Water Sample Stations
 TP-10



Existing Surface Water Canal Cooling System Sample Station

ECRC-17-014947



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community

AECOM

M. O'Meara - Tallahassee

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Florida Power and Light
Turkey Point Plant
Proposed Cooling Canal System
Surface Water Sample Stations

Figure 4



Tables



Table 1 - SAP Parameter List

Parameter/Analyte	Procedure
Dissolved Oxygen	Field Measurement
pH	Field Measurement
Temperature	Field Measurement
Salinity	Field Measurement
Conductivity	Field Measurement
Turbidity	Field Measurement
Depth of Sample	Field Measurement
Water Level (MWs)	Field Measurement
Chlorophyll a	Laboratory
Total Organic Carbon	Laboratory
Total Organic Nitrogen	Laboratory
Total Nitrogen	Laboratory
Nitrite+Nitrate N	Laboratory
Kjeldahl N - total	Laboratory
Coliform (total), number per 100 mL	Laboratory
Coliform (total), in presence of chlorine, number per 100 mL	Laboratory
Total Phosphorus, as PO ₄ P	Laboratory
Orthophosphate	Laboratory
Carbon Dioxide	Laboratory
Hydrogen Sulfide	Laboratory
Total Ammonia, as N	Laboratory
Un-ionized Ammonia (NH ₃ -N)	Laboratory
Ionized Ammonia, as N (NH ₄ ⁺)	Laboratory

Attachment 2:
Copy of August 31, 2016 Administrative Fee Payment Letter



August 31, 2016

Barbara Brown
Code Enforcement Officer II
Miami Dade County Department of Regulatory and Economic Resources
Division of Environmental Resources Management
701 N.W. 1st Court 6th Floor
Miami, FL 33136-3912

RE: Florida Power & Light Company – Miami-Dade County Department of Regulatory and Economic Resources Consent Agreement; Compliance Submittal

Dear Ms. Brown:

Pursuant to Paragraph 34.e, of the Florida Power and Light Company (FPL) – Miami-Dade County Division of Environmental Resource Management (MDC DERM) Consent Agreement as amended on August 15, 2016; FPL is hereby submitting a payment of \$5,000.00 (check number 5000450180) for Miami-Dade County administrative costs. Based upon these actions, FPL respectfully requests verification that the Company is in compliance with paragraph 34.e of the Consent Agreement.

FPL appreciates the review of this submittal, should you have any questions please contact me at 561-691-2808 (Matthew.Raffenberg@fpl.com) or Scott Burns at 561-694-4633 (Scott.Burns@fpl.com).

Sincerely,

A handwritten signature in blue ink that reads "Matthew J. Raffenberg".

Matthew J. Raffenberg
Sr. Director of Environmental Licensing and Permitting

CC: Lee Hefty, MDC DERM
Wilbur Mayorga, MDC DERM
Lisa Spadafina, MDC DERM