



November 29, 2017

Megan Seward  
Chief Advisor, Regulatory Programs  
Florida Department of Environmental Protection  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

**RE: Turkey Point Power Plant Consent Agreement 2016 Annual Report**

Dear Ms. Seward:

Pursuant to reporting requirements contained in the June 20, 2016 Consent Order (CO) between the Florida Department of Environmental protection (FDEP) and Florida Power & Light Company (FPL), FPL is pleased to submit the annual report entitled, *2017 Annual Turkey Point Power Plant Remediation/Restoration Report*. Copies of this report are also provided to Miami-Dade County (MDC) and the South Florida Water Management District.

This report documents the progress made by FPL in achieving the objectives, the status of implementing the projects, and monitoring data contained in and required by the CO. In addition, this report summarizes progress made in achieving the objectives and requirements of the MDC Consent Agreement (CA). This comprehensive annual remediation/restoration report combined with the September 2017 Turkey Point Plant Annual Monitoring Report, provide the agencies with a complete assessment of conditions in and adjacent to the Plant along with the status of remedial/restoration actions taken by FPL in compliance with the MDC CA and FDEP CO. Due to size considerations, data and reports required under the CO are posted on the FPL Environmental Data Management System (EDMS) database (<http://css-3-4-plan.com>) and a thumb drive containing the data and reports is being sent to you in the mail.

Should you have any questions regarding this compliance submittal, please contact Scott Burns at (561) 694-4633 or me (561) 691-2808 at your convenience.

Sincerely,

A handwritten signature in black ink, appearing to read 'M. J. Raffenberg', is written over a horizontal line.

Matthew J. Raffenberg  
Senior Director, Environmental Licensing and Permitting

CC: John Truitt, FDEP  
Terrie Bates, SFWMD

Attachments: 2017 Annual Turkey Point Power Plant Remediation/Restoration Report



**FPL**

# **2017 Annual Turkey Point Power Plant Remediation/Restoration Report**

November 2017



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# ACRONYMS AND ABBREVIATIONS

Agencies	Miami-Dade County's Department of Regulatory and Economic Resources and the Florida Department of Environmental Protection
Barge Basin	Barge Canal Turning Basin
CA	Miami-Dade County Consent Agreement
CCS	Cooling Canal System
CO	Florida Department of Environmental Protection Consent Order
CSEM	Continuous Surface Electromagnetic Mapping
DERM	Miami-Dade County's Department of Environmental Resources Management
EDMS	Florida Power & Light Company Turkey Point Power Plant Electronic Data Management System
EMB	Everglades Mitigation Bank
EPU	Extended Power Uprate
FDEP	Florida Department of Environmental Protection
FDOH	Florida Department of Health
FPL	Florida Power & Light Company
MDC	Miami-Dade County
mgd	million gallons per day
mg/L	milligrams per liter
NAVD 88	North American Vertical Datum of 1988
NEXRAD	Next Generation Radar
NGVD	National Geodetic Vertical Datum
NMP	Nutrient Management Plan
Plant	Florida Power & Light Company Turkey Point Power Plant
psu	practical salinity unit
RAP	Remediation Action Plan
RWS	Recovery Well System
SAP	Site Assessment Plan

SAR	Site Assessment Report
SFWMD	South Florida Water Management District
TEP	Thermal Efficiency Plan
TKN	total Kjeldahl nitrogen
UFA	Upper Floridan aquifer
UIC	underground injection control
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey



## **EXECUTIVE SUMMARY**

The Cooling Canal System (CCS) is an integral part of the Florida Power & Light Company (FPL) Turkey Point Power Plant (Plant) site that has provided economical, reliable, and extreme low emission power generation for FPL customers for over 40 years. The CCS was uniquely designed to minimize environmental impacts to adjacent Biscayne Bay and surrounding saline groundwater. As with any human undertaking, unintended environmental impacts can occur. Over the past seven years, FPL has been actively working with state and local agencies to assess the unintended impacts of the CCS operation to groundwater and surface water resources. As that information has been collected, analyzed, and better understood, unintended impacts have been identified in some areas and dispelled in others. Strategies for addressing the unintended impacts have been developed. These strategies are based on the concepts of abatement, remediation, onsite containment, restoration, and monitoring. The Consent Agreement (CA) between FPL and Miami-Dade County (MDC) and the Consent Order (CO) between FPL and the Florida Department of Environmental Protection (FDEP) guide the development and implementation of these strategies, where such action is required.

The main objective of the CA is to demonstrate a statistically valid reduction in the salt mass and volumetric extent of hypersaline water (as represented by chloride concentrations above 19,000 milligrams per liter [mg/L]) in groundwater west and north of FPL's property without creating adverse environmental impacts. A further objective of the CA is to reduce the rate of, and, as an ultimate goal, arrest migration of hypersaline groundwater. The objectives of the CO are threefold and include: (1) the cessation of discharges from the CCS that impair the reasonable beneficial use of adjacent G-II groundwaters; (2) prevention of releases of groundwater from the CCS to surface waters connected to Biscayne Bay that result in exceedances of surface water standards in the Bay; and (3) mitigation for impacts related to the historical operations of the CCS.

Progress made during this reporting period (October 2016 through September 2017) has advanced the objectives of both the CA and CO. FPL fully implemented the authorized CCS freshening activities, adding nearly 4.4 billion gallons of low salinity Upper Floridan aquifer (UFA) water to the CCS to offset freshwater that evaporated during the abnormally dry 2017 dry season. These actions, coupled with the return of a healthy wet season rainfall, resulted in a September 30, 2017, CCS salinity level of 41.2 practical salinity units (psu), which is the lowest September CCS salinity recorded since 1995. The abatement of hypersalinity in the CCS helps arrest the migration of hypersaline groundwater beneath and surrounding the CCS.

Secondly, FPL was successful in gaining regulatory approval to conduct an extended injection test of 15 million gallons per day (mgd) of hypersaline groundwater from beneath the CCS during the time when the approved groundwater Recovery Well System (RWS) was being permitted and constructed. During this test, hypersaline groundwater from the Biscayne aquifer

was pumped into a confined regional groundwater disposal horizon located 3,000 feet below the Biscayne aquifer. From October 2016 through September 2017, almost 5 billion gallons of hypersaline groundwater were removed from the Biscayne aquifer beneath the CCS, with an equivalent amount of salt removed exceeding 1,290,000 tons.

Finally, FPL conducted sampling and analyses of surface water, porewater, canal sediments and groundwater from numerous sites inside, beneath, and surrounding the CCS, as prescribed under the MDC approved Site Assessment Plan (SAP). The objective of this plan was to identify the source(s) of the ammonia exceedances and the delineation of the vertical and horizontal extents of the subject ammonia exceedances in waters tidally connected to Biscayne Bay. The analyses of the data were compiled in FPL's Site Assessment Report (SAR) submitted to MDC, which concluded that the collected data indicated the presence of elevated ammonia values in excess of MDC's surface water standards in waters adjacent to the CCS are not the result of point or non-point-source contamination attributable to the Plant. The SAR is currently under review by MDC.

Specifically, the following actions that further the objectives of the CA and CO were completed during this past year:

- All compliance targets were achieved, as required by the CA and CO.
- UFA and marine wells successfully limited the CCS salinity levels to less than 70 psu during the sixth driest dry season in the past 49 years and, combined with wet season rainfall, CCS salinity dropped to 40 psu by the end of the reporting period, which was the lowest salinity level in September since 1995.
- FPL submitted its CCS Thermal Efficiency Plan (TEP) and Nutrient Management Plan (NMP) to FDEP. FDEP has reviewed both of these plans and instructed FPL to implement them. The annual CCS thermal efficiency for the reporting period was approximately 84%, which is well above the CO action level of 70%.
- Designs for the groundwater RWS have been approved by MDC and FDEP and permits have been applied for and issued. Construction is underway, with a scheduled completion and operation in April 2018.
- Plans and designs for the Barge Canal Turning Basin (Barge Basin) and Turtle Point Canal restoration projects have been completed and permit applications have been submitted and are under review.
- FPL implemented the MDC approved SAP and submitted the required SAR to MDC, which concludes that the CCS is not the cause of ammonia exceedances measured in deep, man-made, dead-end canals adjacent to the Plant and CCS. The SAR was under review by MDC at the time of this report.
- Inspection of the CCS perimeter by an independent licensed dam safety engineer revealed no structural defects or breaches. Maintenance recommendations are being implemented in 2017.

- Modeling to allocate relative contributions of other entities or factors on the movement of the saltwater interface, as required under the CO, has begun.
- An agreement between FPL and the South Florida Water Management District (SFWMD) on conveying property rights in support of the Biscayne Bay Coastal Wetlands Everglades Restoration Project has been reached, with final appraisals being completed.
- Assessment of impacts to raising weir elevations in the FPL Everglades Mitigation Bank (EMB) culverts required by MDC was completed and reports were filed, as required, with MDC and FDEP. The study concluded the increased stages resulted in high downstream salinities capable of adversely affecting success criteria of the EMB permit. Normal permitted operations were restored at the end of the study.
- Expansion of groundwater and surface water monitoring stations, as required in the CA and CO, were permitted and construction was initiated (with the exception of the TPGW-18 well cluster, pending MDC Class I permit issuance). Sampling of the installed wells will be conducted prior to startup of the recovery well system.
- Expanded monitoring reporting has been made available on the FPL Plant's Electronic Data Management System (EDMS) available to MDC and FDEP.
- Extensive numbers of permit applications have been successfully prepared and submitted in support of the activities required under the CA and CO. A total of 30 permit applications were filed with county, state, and federal agencies, and all but five permit applications have been issued.

# **1. BACKGROUND**

Miami Dade County and FPL entered into a CA on October 7, 2015 (amended on August 15, 2016) in which FPL agreed to conduct specific actions to remediate groundwater impacts adjacent to the Plant and the associated CCS and to take actions to address MDC's allegations that FPL violated water quality standards related to exceedances of ammonia. FDEP and FPL entered into a CO on June 20, 2016, which also required actions to be undertaken by FPL to address groundwater impacts associated with the CCS.

Paragraph 17.d.v. of the MDC CA states:

“FPL shall submit annual reports providing an evaluation of progress in achieving the objectives of this Consent Agreement, status of implementing projects identified above, and the results of monitoring to determine the impacts of these activities. Recommendations for refinements to the activities will be included in the annual report. This may include deletions of monitoring that is demonstrated to no longer be needed, or additional monitoring that is warranted based on observations.”

Paragraph 28 of the FDEP CO states:

“FPL shall expand the 2009 Monitoring Plan database to include all additional water monitoring data related to this Order required by all other governmental agencies and entities, including but not limited to the SFWMD, Nuclear Regulatory Commission, Miami-Dade County and the Florida Department of Health, as well as all monitoring data that is required in this Order.” This language is essentially repeated in Paragraphs 31.a. and b. of the CO.

FPL submits this consolidated 2017 Annual Turkey Point Power Plant Remediation/Restoration Report in compliance with the reporting requirements of the MDC CA and FDEP CO as a single report that presents a comprehensive update and status of the progress FPL is making in meeting the remediation, restoration, and reporting requirements of both agency directives. This annual report also expands upon the September 2017 Turkey Point Plant Annual Monitoring Report by providing all other water monitoring data that are required by the MDC CA and FDEP CO and additional water monitoring data required by other governmental agencies/entities. These data are summarized here and provided to the Agencies electronically in the FPL EDMS. This report is organized consistent with the sections of the MDC CA and FDEP CO that require actions by FPL and covers the reporting period of October 2016 through September 2017.



## **2. STATUS**

FPL continues to make progress in implementing the measures outlined in the CA and CO. These measures focus on CCS freshening, groundwater salinity remediation and containment, external canal restoration, assessment of ammonia in surface waters adjacent to the CCS, monitoring, and reporting. To achieve the objectives of the CA and CO, design, agency coordination/approval, permitting, and construction are required to be completed prior to implementation/operation. The following is a summary of the actions taken during the reporting period (October 2016 through September 2017) to meet the requirements of the CA and CO. A summary of the permits required and the overall status of activities is provided in Table 2.0-1 and Table 2.0-2.

### **2.1 CCS Freshening Activities**

Higher specific gravity hypersaline water can displace fresher groundwater contributing to saltwater migration in groundwater surrounding the CCS. FPL has proposed to use fresher water sources to replace freshwater evaporated from the CCS and thereby reduce average annual CCS salinity. Sustained average annual salinities closer to those of Biscayne Bay (34 psu) will support seagrass re-population and associated natural nutrient management in the CCS.

Currently, FPL has two sources of fresher water available to moderate CCS salinity: UFA groundwater and shallow marine groundwater from the Biscayne aquifer. Due to the high salinity of the marine well water, this source is limited to extraordinary circumstances to avoid extremely high CCS salinities or extremely low water levels. A summary of the use and status of both sources is provided below in Sections 2.2.1 and 2.1.2. FPL elected to discontinue the L-31E canal source for freshening, and the pumping facilities were decommissioned in December 2016. FPL continues to work with MDC on a feasible reclaimed water application for the CCS and Plant, as recommended by MDC's Department of Environmental Resources Management (DERM) in their letter to FPL dated December 22, 2016.

#### **2.1.1 Upper Floridan Aquifer Freshening Well Operations**

FPL filed an application to modify Site License Number PA 03-45D (September 14, 2014) to include the construction and use of up to six low salinity UFA wells with a total daily allocation of 14 mgd. The recommended site license modification was issued by FDEP and administratively challenged. A hearing was held in November 2015, and the final order approving the modification was issued on March 29, 2016. Pursuant to achieving the objective in Paragraph 20.a. of the FDEP CO, FPL proceeded with the construction of the UFA freshening system, which became fully operational on November 28, 2016. The wells flow under natural artesian pressure and have been in continuous operation since startup. Between November 28, 2016, and September 30, 2017, the wells pumped approximately 4.4 billion gallons of low salinity groundwater, into the CCS (Table 2.1-1 and Appendix A), with an average cumulative salinity of 2.3 psu. Appendix B provides a summary of salinity results for the UFA wells.

Approximately 14 mgd have been discharged into the CCS from the UFA since November 28, 2016. Figure 2.1-1 shows the locations of the operating UFA wells; F-2 is a backup well that has not been constructed and is not shown. Results from quarterly sampling of the wells are included in Appendix C.

Wet season rainfall (Figure 2.1-2) combined with the freshening activities were effective in lowering CCS salinity by the end of the reporting period. During the dry season, peak CCS salinity reached 68.9 psu but dropped to 41.2 psu by September 30, 2017. Monthly volumes of freshening sources, rainfall, and average monthly CCS salinity for the reporting period are shown on Figure 2.1-3. Appendix D, which was used to develop Figure 2.1-3, provides a daily summary of the average CCS salinity calculated in accordance with Paragraph 29.j. of the FDEP CO.

### **2.1.2 Marine Freshening Well Operations**

Due to exceptionally dry conditions that persisted from November 2016 through the 2017 dry season (sixth driest January through May period in the previous 49 years: FPL, September 2017 Turkey Point Annual Monitoring Report), FPL operated up to three marine wells in conjunction with the UFA freshening wells during the reporting period (the locations of these wells are shown on Figure 2.1-1). The marine wells were operated at varying rates from March through August 2017, as necessary, to keep the CCS salinities below 70 psu. The total volume of water added was a little over 4.1 billion gallons (Table 2.1-1 and Appendix A), with an average salinity of approximately 36 psu (Appendix B).

### **2.1.3 Thermal Efficiency Plan**

Pursuant to Paragraph 20.b. of the FDEP CO, FPL submitted a TEP to FDEP on December 14, 2016. FPL identified that maintaining high thermal efficiency within the CCS was necessary for controlling evaporation and CCS salinity. The plan identified primary and secondary performance metrics to be monitored. These metrics are used to guide corrective actions, and near- and long-term actions to maintain high thermal efficiencies (equal or greater than 70). On July 7, 2017, FDEP instructed FPL to implement the plan. Several of the near-term actions have been implemented to varying degrees in the CCS. These actions have included sediment removal in many of the CCS canals, flow management within the CCS, water stage management, and vegetation management.

As a result, thermal efficiency during the 2017 reporting period met objectives, with an annual CCS efficiency for October 2016 through September 2017 of approximately 84%. Figure 2.1-4 shows a monthly summary of the thermal efficiency since October 2010 and the improvements in efficiency since 2015.

### **2.1.4 Nutrient Management Plan**

Pursuant to Paragraph 21.b. of the FDEP CO, FPL submitted a NMP to FDEP on September 16, 2016. The NMP is composed of three primary nutrient management strategies: active algae/nutrient removal; canal and berm maintenance; and salinity reduction and controlled flow management. On July 7, 2017, FDEP instructed FPL to implement the NMP. A copy of the NMP is provided on the EDMS.

During this reporting period, FPL has performed many bench and pilot tests to find the most appropriate active nutrient/algae removal regime for the unique ecology and water chemistry of the CCS. These methods include chemical flocculants/coagulants, non-chemical physical removal methods, and aeration. In addition, FPL has reviewed canal practices in order to integrate the goal of minimizing erosion and nutrient inputs from sediment and berm sources. FPL is in the process of evaluating appropriate, cost-efficient, and non-harmful methods to achieve the goals of the NMP considering information gathered from pilot testing, supplemental evaluations, and input from subject matter experts.

## **2.2 Remediation/Restoration/Containment Activities**

Phase I of the MDC CA and the first objective of the FDEP CO focus on halting the westward migration of hypersaline groundwater from the CCS and reducing the westward extent of the hypersaline plume to the L-31E canal. These objectives are to be achieved through the design, construction, and operation of a groundwater RWS. The second objective of the CO is to prevent releases of groundwater from the CCS to surface waters connected to Biscayne Bay by undertaking restoration projects in the Turtle Point Canal and Barge Basin. The amendment to the MDC CA directed FPL to identify the sources and vertical and horizontal extents of ammonia exceedances in surface waters surrounding the facility. During the reporting period, FPL has completed designs for the remediation and restoration projects, pursued permit approvals, initiated construction prescribed by the Agencies, conducted water quality sampling, and completed an analysis of ammonia surrounding the CCS. Further description of the project status is provided below in Sections 2.2.1 through 2.2.4.

### **2.2.1 Groundwater Recovery Well System**

Pursuant to Paragraph 20.c.i. and ii. of the FDEP CO and Paragraph 17.b.i. of the MDC CA, the groundwater RWS design, informed by the FPL variable density 3-D solute transport groundwater flow model, was submitted to MDC on May 16, 2016, and to FDEP on July 20, 2016. In a letter dated September 29, 2017, MDC required FPL to submit a Phase I Remediation Action Plan (RAP) within 120 days. Elements required to be included in the RAP were numerous revisions to and sensitivity analyses conducted by the 3-D variable density model and details regarding monitoring and reporting over the first several years of RWS operations. FPL submitted the Phase I RAP on January 27, 2017, and conditional approval of the RAP and original design of the RWS was provided by MDC on May 15, 2017. FPL filed permit applications for the RWS at the local, state, and federal levels on September 16, 2016 (see Table 2.0-1 for permitting details).

During the permitting process, FPL identified some alternative locations and piping paths that eliminated potential wetland impacts for the projects. FPL initiated construction of the RWS on June 19, 2017, consisting of road and site improvements, transmission line installations, well construction, and pipe placement. The construction is proceeding on schedule, with an estimated completion date in April 2018. The location of the RWS is shown on Figure 2.2-1. Where available, well logs generated during the construction of the RWS are included in Appendix E.

Part of the RWS design includes the repurposing of a permitted underground injection control (UIC) disposal test well located on site. The existing test injection well (DIW-1) was installed

into a regionally confined disposal horizon (the Boulder Zone) located over 3,000 feet below the Biscayne aquifer. FPL applied for and received a UIC permit modification for extended operational injection testing of DIW-1 (Permit No. 293962-003-UC/MM, issued on September 21, 2016). In order to conduct the extended testing, FPL designed and constructed four 90-foot-deep Biscayne aquifer production wells (Figure 2.2-1). The disposal well and production wells are equipped with pumps and power adequate for the withdrawal and injection of 15 mgd of hypersaline groundwater from beneath the CCS into the Boulder Zone.

FPL began injection testing of DIW-1 on September 28, 2016. Since injection testing began, the system has removed and safely disposed of approximately 5 billion gallons of hypersaline groundwater through September 2017 (Table 2.2-1). The mass of salt removed from the Biscayne aquifer associated with the volume of hypersaline groundwater disposed of during the extended injection testing as of September 2017 was 1,296,500 tons. Figure 2.2-2 shows a monthly summary of the salt mass removed and the volume of water pumped. The extended injection testing shall continue until the RWS is operational, at which time the four test wells will be secured and the ten RWS plume extraction wells will commence operations.

### **2.2.2 Barge Canal – Turtle Point Canal Restoration**

Pursuant to Paragraph 21.a. of the FDEP CO, FPL developed a detailed plan and design for restoration of the Barge Basin and Turtle Point canals. These artificial deep canals were originally designed as the cooling water intake and discharge for Units 1 and 2 at the Plant. The plan includes filling the deep areas of the Barge Basin to an elevation of -15 feet NAVD 88 (North American Vertical Datum of 1988) and the deep areas of Turtle Point to an elevation -7 feet NAVD 88. This restoration strategy will significantly reduce any potential groundwater flow from the CCS to the surface waters and is very effective at maintaining water quality in the canals, as the shallower depths will allow tidal flows and natural reaeration of the canals. In order to further improve coastal habitat, FPL proposes to fill one-third of the Turtle Point canal to +1 foot NAVD 88 starting at the CCS berm and sloping fill toward the mouth of the canal to a final depth of approximately -7 feet NAVD 88. This design will provide additional mangrove and American crocodile habitat east of the CCS.

Plans and designs of FPL's proposed canal remediation were provided to FDEP on August 19, 2016. FPL submitted all permit applications for the restoration projects to FDEP, the United States Army Corps of Engineers (USACE), and MDC within 90 days of the effective date of the CO (pursuant to FDEP CO Paragraph 21.b.). The specific permits are described in Table 2.0-1. FPL received Environmental Resource Permit and Submerged Lands Permit 13-0127512-013 on September 27, 2016. USACE Nationwide Permit 27 – Habitat Restoration and Enhancement and MDC Class I Permit for Coastal Construction are still pending (Table 2.0-1). Monitoring at new station TPBBSW-7T will commence when the permits authorizing the restoration efforts have been issued.

### **2.2.3 Site Assessment Plan and Report**

Pursuant to Paragraph 34.a. of the MDC CA, FPL submitted a SAP on September 14, 2016, for the purpose of identifying the source and extent of ammonia in surface waters surrounding the Plant facility that exceeded MDC water quality standards. In a letter dated December 21, 2016,



MDC identified revisions to the FPL SAP, and on December 29, 2016, FPL submitted an amended SAP and commenced sampling with MDC approval on January 3, 2017 (letter documenting MDC approval received February 14, 2017).

Pursuant to Paragraph 34.b. of the MDC CA, FPL submitted a SAR on March 17, 2017, which included all data and FPL evaluations regarding the sources and extent of elevated ammonia in surface waters. The report found that the CCS and Biscayne Bay had very low levels of ammonia, while elevated ammonia (greater than 0.5 mg/L) was measured in bottom samples collected in some of the deep, stagnant, man-made canals. The report concluded the occurrence of elevated ammonia measured during the sampling event did not come from the CCS but was likely the result of localized organic nitrogen (originating from vegetation detritus, organic soils, nitrogen fixation, etc.) being converted to ammonia through microbial processes in anaerobic, stagnant, basal portions of deep canals. The report also found that these conditions occur elsewhere in Biscayne Bay and the extent of elevated ammonia occurrences was limited (vertically, spatially, and temporarily). On July 7, 2017, MDC requested that FPL collect additional data and provide clarification and additional analyses, which were being produced at the time of this report.

#### **2.2.4 Inspection of CCS Perimeter**

Pursuant to Paragraph 21.c. of the FDEP CO, FPL contracted for services for an independent, qualified, and licensed Professional Engineer to conduct an inspection of the CCS periphery, including all dams, dikes, surrounding berms, and appurtenant structures. The survey was completed, and a signed and sealed copy was provided to FDEP on October 12, 2016. The survey found no structural defects or breaches. The inspection report included recommendations for near-term and long-term maintenance activities. The near-term activities are underway and scheduled for completion by the end of 2017 and early 2018. In response to the long-term maintenance activities, FPL has established an annual and five-year preventative maintenance program that includes inspection of the perimeter berm slope and the removal of vegetation.

### **2.3 Mitigation for Impacts Related to Historical Operations of the CCS**

In order to address impacts related to historical operations of the CCS, both the MDC CA and FDEP CO included specific actions for FPL to implement. Progress made by FPL during the reporting period is described in Sections 2.3.1 through 2.3.4.

#### **2.3.1 Saltwater Interface Allocation of Contribution**

Paragraph 23.a. of the FDEP CO requires FPL to complete an analysis with input from FDEP and other agencies using the variable density 3-D model developed under the MDC CA that seeks to allocate relative contributions of other entities and factors to the movement of the coastal saltwater interface. FPL has contracted for modeling services, identified modifications needed to be made to the model for the analyses, identified entities and factors to be evaluated by the model, and has shared the approach with and received input from FDEP. The modeling and analyses are scheduled to be completed by June 2018.

### **2.3.2 Agreements to Convey Property Interests**

Paragraph 23.b. of the FDEP CO states that, if requested by the SFWMD, FPL will convey interests in essential properties within the Biscayne Bay Coastal Wetlands Phase I project to facilitate the Comprehensive Everglades Restoration Plan in exchange for payment based on a jointly approved appraisal process or other mutually agreeable considerations. The SFWMD provided notification of their intent to purchase FPL lands on August 25, 2016. FPL entered into negotiations with the SFWMD to identify lands for purchase, lands for easement, and procedures for appraisal and compensation, and an agreement was reached on May 5, 2017. A total of 193 acres of FPL owned lands within the Biscayne Bay Coastal Wetlands Phase I project corridor were identified to be conveyed to the SFWMD. At the time of this report, FPL and the SFWMD are finalizing appraisals for the FPL owned parcels. The land conveyance transaction for Biscayne Bay Coastal Wetland project lands is targeted to be completed by March 2018.

### **2.3.3 Increase Weir Elevations in FPL's Everglades Mitigation Bank**

Paragraph 17.c.i. of the MDC CA required FPL to raise the control elevations of the EMB culvert weirs to be no lower than 0.2 foot lower than the 2.4-foot trigger of the S-20 structure and shall maintain this elevation for one year and evaluate the change in control elevation with regards to impacts to salinity, water quality, and environmental lift in the EMB. On October 22, 2015, the weir elevations were raised, as required, to an elevation of 2.2 feet National Geodetic Vertical Datum (NGVD) and remained at that elevation for one year. FPL collected data on flow through the culverts, salinity trends downstream, and vegetation surveys upstream and downstream of the culverts. These data were compared with historical EMB data for comparative purposes and summarized in a report sent to DERM and FDEP (per Paragraph 32 of the MDC CA) on May 9, 2017. The report documented a significant reduction in freshwater flows to the south of the weirs and an associated increase in salinity to a degree that could affect the viability of freshwater wetland recruitment that has been achieved south of the L-31E levee since 2005 as well as ability of the EMB to meet the success criteria specified in the FDEP mitigation bank permit. The historical permitted operations of the weirs were restored in October 2016, and improved flows and reduced salinities in the EMB have been documented in 2017.

### **2.3.4 Escrow Funding for Mitigation of Saltwater Intrusion**

Paragraph 23.d. of the FDEP CO requires FPL to deposit \$1.5 million into a Florida Department of Financial Services escrow account in accordance with an escrow agreement signed by FPL, FDEP, and the Florida Department of Financial Services. The escrow account shall be used to finance projects in the Plant's region that support mitigation of saltwater intrusion. FPL and FDEP are in the process of developing the escrow agreement.

## **2.4 Monitoring and Reporting**

Both the MDC CA and FDEP CO include requirements for installation of additional monitoring stations, conducting initial baseline surveys prior to operation of the RWS, expansion of data posting, and annual reporting primarily for the purpose of monitoring progress toward achievement of the hypersaline plume retraction and determination of the rate of westward

migration of the hypersaline groundwater. Progress made by FPL during the reporting period is discussed below.

#### **2.4.1 Continuous Surface Electromagnetic Mapping**

Pursuant to Paragraph 17.d.iii. of the MDC CA and Paragraph 29.a. of the FDEP CO, FPL shall conduct and report to the Agencies a baseline survey of the hypersaline plume after freshening activities are in operation but before the complete RWS begins operation. A baseline Continuous Surface Electromagnetic Mapping survey is anticipated to be conducted in January or February of 2018 prior to the operation of the complete groundwater RWS. Subsequent surveys will be conducted annually for the first three years of operation and every other year thereafter. Since a baseline survey is pending, as well as subsequent surveys, the extent, volume, and movement of hypersaline groundwater west and north of the CCS cannot be determined for this reporting period.

#### **2.4.2 Expanded Groundwater Monitoring**

Pursuant to Paragraph 17.d.iv. of the MDC CA and Paragraph 27.a. of the FDEP CO, FPL is required to expand the groundwater monitoring network. The MDC CA requires that FPL add three groundwater monitoring clusters (shallow, mid, and deep) to monitor groundwater conditions in the Model Lands basin, similar in design and function to existing groundwater monitoring wells in the region, as part of the CCS monitoring program. These new groundwater wells are designated as TPGW-17, TPGW-18, and TPGW-19. On November 11, 2016, FPL filed Class I wetland permit applications for the three monitoring sites with MDC. Through negotiations with DERM, an agreement was reached to relocate TPGW-17 and TPGW-19 to upland locations to avoid wetland impacts. Figure 2.4-1 includes the locations of these three wells. The construction and installation of TPGW-17 and TPGW-19 is underway. Final well completion/construction closeout is scheduled for January 31, 2018, for both wells. Available information on construction details and initial logging information are provided in Appendix B. The Class I permit application for TPGW-18 was under review at the time of this report. Construction of TPGW-18 will start immediately following permit issuance.

The FDEP CO requires that FPL add monitoring data from six United States Geological Survey (USGS) wells to the EDMS (G-3946-S, G-3946-D, G-3900, G-3976, G-3966, and G-3699), replace existing monitoring well TPGW-8S, and construct a new deep monitoring well (TPGW-20) and a new three-well monitoring cluster (TPGW-21) consistent with the 2009 Monitoring Plan. FPL completed the construction and installation of TPGW-20 on August 24, 2017. The final construction completion/closeout for that well occurred on October 13, 2017. Construction completion of wells TPGW-8S and TPGW-21 is scheduled for December 1, 2017, and December 22, 2017, respectively. Available information on construction details and initial logging information are included in Appendix E. Figure 2.4-1 includes the locations of these wells.

Groundwater samples were not collected from the CA or CO monitoring wells during the reporting period since none of the wells reached the final completion/construction closeout phase. Groundwater sampling and monitoring of these wells will be conducted during the next reporting period.

The USGS groundwater analytical data have been uploaded into a folder in the EDMS (<http://css-3-4-plan.com/PublicResource>; note that the address will change when the EDMS websites are consolidated). A summary of the chloride data, the only parameter collected consistently, is included in Appendix F.

### **2.4.3 Expanded Biscayne Bay Water Quality Sampling**

Pursuant to Paragraphs 23.d. and 29.k. of the FDEP CO, FPL is required to collect surface water samples in Biscayne Bay once every two months at six new stations (TPBBSW-15, TPBBSW-16, TPBBSW-17, TPBBSW-18, TPBBSW-19, and TPBBSW-20) near the top and bottom of the water column. Figure 2.4-2 shows the locations of these stations. The parameters sampled include temperature, conductivity, pH, dissolved oxygen, turbidity, salinity, tritium, ammonia, nitrate/nitrite, total Kjeldahl nitrogen (TKN), orthophosphate, total phosphorus, chlorophyll-a, and Secchi disk depth. The bimonthly results, starting in September 2016 through September 2017, are included in Appendix G and are maintained in a folder on the EDMS.

### **2.4.4 Expanded reporting of CCS Related Monitoring Data**

Pursuant to Paragraphs 28, 31, and 33 of the FDEP CO, FPL is required to expand the 2009 Monitoring Plan database to include additional water monitoring data required by all other governmental agencies and entities including, but not limited to, SFWMD, the Nuclear Regulatory Commission, MDC, and the Florida Department of Health, as well as all monitoring data that are required in the CO. In November 2017, FPL expanded the Public Resources section of the EDMS database to include these documents beginning in June 2016, when the CO was executed. Tables 2.4-1 and 2.4-2 provide a summary of the additional information added to the EDMS; this information is currently at <http://css-3-4-plan.com/PublicResource>, but the address will change when the EDMS websites are consolidated.

### **2.4.5 Annual Progress Reports**

Pursuant to Paragraph 17.d.v. of the MDC CA and Paragraph 31 of the FDEP CO, FPL is required to provide an annual report. The first annual report (FPL 2016) was provided to the Agencies on November 11, 2016. This report constitutes the second annual report.



### **3. PROGRESS IN ACHIEVING THE OBJECTIVES OF THE CA AND CO**

FPL's progress in achieving the objectives of the CA and CO this year (October 2016 through September 2017) has been notable. Actions focused on abatement of salinity in the CCS, gaining approval and initiating construction of the RWS, design and permitting of the Barge Basin and Turtle Point canal restoration projects, permitting and construction of the expanded groundwater monitoring wells, and conducting evaluations of ammonia in surface water within and surrounding the CCS.

While CCS freshening had not reached one full year at the time this report was completed, the 10-month CCS average salinity for November 28, 2016, through September 30, 2017, was 61.7 psu. This salinity response is significant in that the rainfall over the CCS in November 2016 was 0.23 inch and the total for the period from January to May 2017 was the sixth lowest (6.7 inches) based on 49 years of data (September 2017 FPL Turkey Point Plant Annual Monitoring Report). Despite these low rainfall totals, the addition of the UFA groundwater and marine well water was effective in keeping average CCS salinities below 70 psu. By comparison, CCS salinities during the dry seasons of 2014 and 2015 (which were not as dry as 2017) exceeded 90 psu. With the high rainfalls of the 2017 wet season (including Hurricane Irma), CCS salinities dropped to 41.2 psu by the end of September, which was the lowest September value since 1995. While it can be expected that the CCS salinities will rise during the 2018 dry season, the low initial CCS salinity combined with the addition of fresher UFA water is anticipated to further moderate annual CCS salinity in 2018 (not withstanding unusual drought conditions).

The thermal efficiency of the CCS for the period of November 28, 2016, through September 30, 2017, was approximately 84%. This is a significant improvement over levels measured in 2013 and 2014, as described in the 2016 FPL TEP. While freshening may have had a minor impact, sediment removal and implementation of near-term recommendations of the TEP are considered to be more influential factors in overall improved system efficiency.

Completion of the design and permitting phase and subsequent initiation of construction of the RWS were significant achievements of the 2017 reporting period. While not a requirement of the CA or CO, the initiation of the extended injection test of the Plant's UIC well was responsible for removing nearly 5 billion gallons of hypersaline groundwater from beneath the CCS. This action was helpful in removing source waters of the hypersaline plume and, combined with CCS freshening, are positive actions toward meeting the objectives of halting and eventually retracting the hypersaline plume west and north of the CCS.

Other actions described above, including monitoring well construction, assessment of ammonia, and contributing factors to the movement of the saltwater interface, will position FPL and the Agencies to evaluate the success of the RWS once operational.

## **4. RECOMMENDATIONS FOR REFINEMENT OF ACTIVITIES**

FPL recommends that reporting for the MDC CA, FDEP CO, and Extended Power Uprate (EPU) monitoring be consolidated into one report, with the focus shifted toward progress in abating/remediating the CCS plume and associated impacts per the CA and CO. FPL also recommends that the annual reports be streamlined and summarized with the backup data provided in the EDMS, rather than included in multi-volume reports.

FPL will provide a RWS startup report and quarterly reports (for one year) as required by MDC, but recommends that the annual reporting be part of the larger comprehensive single report recommended above. Since it is anticipated that the RWS will begin operations during the spring of 2018, the first annual report will be submitted 15 months later. The reporting period will run from June 2018 through May 2019, with this first report submitted to the Agencies at the end of August 2019. The RWS startup report will cover the reporting period of October 2017 through May 2018 and will include the baseline data for the RWS system along with the EPU monitoring information. The startup report will be provided to the Agencies by September 2018.

In addition, FPL suggests shifting the report text away from specific conductance and presenting salinity data instead, since the CA and CO refer to salinity and not specific conductance. Early in the EPU project, the Agencies requested that FPL use specific conductance or salinity in the annual reports, but not interchangeably. Since specific conductance is a more direct measurement than salinity, FPL opted to focus on specific conductance in the previous reports; however, moving forward, salinity will be used consistent with the reporting requirements of the CA and CO.

# **TABLES**

Table 2.0-1 Permitting Activities Status

Project	Agency	Permit Type	Permit Application Number	Permit Number	Submittal Date	Permit Issued Date
<b>FDEP Consent Order Paragraph 21.a</b>						
Turtle Point and Barge Canal Restoration	Florida Department of Environmental Protection	Joint Application Environmental Resource Permit	13-0127512-013	13-0127512-013	8/4/16	9/27/16
Turtle Point and Barge Canal Restoration	U.S. Army Corps of Engineers	Section 404: Dredge & Fill	SAJ-2016-02462(SP-MLC)	Pending	8/4/16	Pending
Turtle Point and Barge Canal Restoration	Miami-Dade County Department of Environmental Resource Management	Class I Wetlands Permit	CLI-2016-0244	Pending	8/4/16	Pending
<b>FDEP Consent Order Paragraph 27.c</b>						
Groundwater Monitoring Wells: TPGW-8S	Miami-Dade County	Right of Way	2017002979	2017002979	9/15/16	5/18/17
Groundwater Monitoring Wells: TPGW-8S	Miami-Dade County	Well Construction Permit	13-59-13647	13-59-13647	4/7/17	4/11/17
<b>MDC Consent Agreement Paragraph 17.d.iv</b>						
Groundwater Monitoring Wells: TPGW-17	Miami-Dade County	Well Construction Permit	Shallow: 13-59-13648 Mid:13-59-13692 Deep: 13-59-13693	Shallow: 13-59-13648 Mid:13-59-13692 Deep: 13-59-13693	4/7/17	5/2/17
Groundwater Monitoring Wells: TPGW-18	Miami-Dade County	Well Construction Permit	Shallow: 13-59-13885 Mid:13-59-13886 Deep: 13-59-13887	Shallow: 13-59-13885 Mid:13-59-13886 Deep: 13-59-13887	6/30/17	7/6/17
Groundwater Monitoring Wells: TPGW-18	Florida Department of Environmental Protection	Joint Application Environmental Resource Permit	13-0127512-014EI	13-0127512-014EI	9/15/16	12/19/16

Table 2.0-1 Permitting Activities Status

Project	Agency	Permit Type	Permit Application Number	Permit Number	Submittal Date	Permit Issued Date
Groundwater Monitoring Wells: TPGW-18	U.S. Army Corps of Engineers	Section 404: Dredge & Fill	SAJ-2016-02462	SAJ-2016-02462	9/15/16	2/27/17
Groundwater Monitoring Wells: TPGW-18	Miami-Dade County Department of Environmental Resource Management	Class I Wetlands Permit	CLI-2016-0303	Pending	11/11/16	Pending
Groundwater Monitoring Wells: TPGW-19	Miami-Dade County	Well Construction Permit	Shallow: 13-59-13888 Mid: 13-59-13889 Deep: 13-59-13884	Shallow: 13-59-13888 Mid: 13-59-13889 Deep: 13-59-13884	6/30/17	7/6/17
<b>FDEP Consent Order Paragraph 27.d</b>						
Groundwater Monitoring Wells: TPGW-20	City of Homestead	Right of Way	NA	17-14	3/2/17	5/30/17
Groundwater Monitoring Wells: TPGW-20	Miami-Dade County	Well Construction Permit	Deep: 13-59-13650	Deep: 13-59-13650	4/7/17	4/11/17
<b>FDEP Consent Order Paragraph 27.b</b>						
Groundwater Monitoring Wells: TPGW-21	Miami-Dade County	Right of Way	2017002980	201700298	9/15/16	5/18/17
Groundwater Monitoring Wells: TPGW-21	Miami-Dade County	Well Construction Permit	Shallow: 13-59-13649 Mid: 13-59-1394 Deep: 13-59-13695	Shallow: 13-59-13649 Mid: 13-59-1394 Deep: 13-59-13695	4/7/17	5/2/17

Table 2.0-1 Permitting Activities Status

Project	Agency	Permit Type	Permit Application Number	Permit Number	Submittal Date	Permit Issued Date
<b>FDEP Consent Order Paragraph 21.c and MDC Consent Agreement Paragraph 17.b.i</b>						
Recovery Well System: Pipeline & L31 Levee Crossing	South Florida Water Management District	Right of Way	16-0920-2	14742	9/15/16	3/7/17
Recovery Well System: Pipeline & L31 Levee Crossing	U.S. Army Corps of Engineers	Section 408	NA	Pending	2/24/17	Pending
Recovery Well System: Pipeline along Palm Drive	Miami-Dade County	Right of Way	2017003859	2017003859	5/30/17	8/16/17
Recovery Well System: Consumptive Use (15 MGD)	South Florida Water Management District	Consumptive Water Use	160916-12	13-06251-W	9/15/16	3/1/17
Recovery Well System: RWS-1	Miami-Dade County	Well Construction Permit	13-59-13736	13-59-13736	5/5/17	5/8/17
Recovery Well System: RWS-2	Miami-Dade County	Well Construction Permit	13-59-13737	13-59-13737	5/5/17	5/8/17
Recovery Well System: RWS-3	Miami-Dade County	Well Construction Permit	13-59-13738	13-59-13738	5/5/17	5/8/17
Recovery Well System: RWS-4	Miami-Dade County	Well Construction Permit	13-59-13739	13-59-13739	5/5/17	5/8/17
Recovery Well System: RWS-5	Miami-Dade County	Well Construction Permit	13-59-13740	13-59-13740	5/5/17	5/8/17
Recovery Well System: RWS-6	Miami-Dade County	Well Construction Permit	13-59-13741	13-59-13741	5/5/17	5/8/17
Recovery Well System: RWS-7	Miami-Dade County	Well Construction Permit	13-59-13742	13-59-13742	5/5/17	5/8/17

Table 2.0-1 Permitting Activities Status

Project	Agency	Permit Type	Permit Application Number	Permit Number	Submittal Date	Permit Issued Date
Recovery Well System: RWS-8	Miami-Dade County	Well Construction Permit	13-59-13743	13-59-13743	5/5/17	5/8/17
Recovery Well System: RWS-9	Miami-Dade County	Well Construction Permit	13-59-13744	13-59-13744	5/5/17	5/8/17
Underground Injection Control Well: Disposal Well	Florida Department of Environmental Protection	Injection Test	293962-003-UC/MM	293962-003-UC/MM	8/31/16	9/21/16
Underground Injection Control Well: Disposal Well	Florida Department of Environmental Protection	Operational Permit	0293962-004-UO/II	0293962-004-UO/II	6/1/17	Pending



**Table 2.0-2 Overall Status of Activities**

Activity	CO / CA No.	Status	Additional Comments
<b>CCS Freshening Activities</b>			
Upper Floridan Aquifer Wells	CO 20.a.	14 mgd capacity UFA well system operational 11/28/17. Operations maintained throughout reporting period (307 days).	Average salinity of UFA water added during reporting period: 2.3 psu. Total UFA water added to CCS during reporting period: 4.37 billion gallons.
Existing Marine Wells	CA 17.a.i.2.	Wells activated on 3/8/17 and secured on 8/28/17 (141 days of operation during reporting period).	Average salinity of marine well water added during reporting period: 36.4 psu. Total marine well water added to CCS during reporting period: 4.18 billion gallons.
L-31E Source Water	CA 17.a.i.2.	Not Available.	FPL removed L-31E facilities in December 2016 with close-out inspection by the SFWMD on 1/9/17.
Evaluation of Alternative Sources	CA 17.a.ii.	FPL working with MDC on use of reclaimed water for CCS freshening source.	
Thermal Efficiency Plan (TEP)	CO 20.b.	FPL submitted TEP to FDEP: 12/14/2016. FDEP instructs FPL to implement plan 7/7/2017.	Average CCS thermal efficiency during the reporting period is approximately 84%.
Nutrient Management Plan (NMP)	CO 21.b.	FPL submitted NMP to FDEP: 9/16/2016. FDEP instructs FPL to implement plan 7/7/2017.	
<b>Remediation – Restoration Activities</b>			
Recovery Well System (RWS)	CO 20.c.i. & ii. CA 17.b.i.	RWS designs submitted to MDC 5/16/2016 and to FDEP 7/20/2016. Permit applications for RWS filed on 9/16/2016, all permits issued except USACE 408 permit and UIC Operational Permit (pending). MDC approves RWS: 5/15/2017. Construction initiated on 6/19/17.	UIC extended injection well testing permit issued by FDEP: 9/21/2016. FPL initiated 15mgd injection testing using hypersaline GW from beneath CCS: 9/29/2016.  5 billion gallons containing 1,296,500 tons of salt disposed of during reporting period injection test. RWS target operational startup: April 2018.
Turtle Point and Barge Basin Canal Restoration	CO 21.a.	Plans and designs submitted to FDEP 8/19/2016. Permit applications filed 8/4/2016. COE 404 and MDC Class I applications are under review.	

**Table 2.0-2 Overall Status of Activities**

Activity	CO / CA No.	Status	Additional Comments
Site Assessment Plan (SAP)	CA 34.a.	SAP submitted by FPL 9/14/2016, Plan amended 12/29/2016. Plan approved by MDC 2/14/2017.	Sampling completed in January 2017.
Site Assessment Report (SAR)	CA 34.b.	Report submitted. 3/17/2017. MDC issued RFI on 7/7/2017.	FPL responses to RFI on 11/13/17.
Inspection of CCS perimeter	CO 21.c.	Inspection report filed with FDEP 10/12/2016.	Inspection found no structural defects or breaches. Recommended maintenance activities are underway in 2017.
<b>Mitigation for Impacts Related to Historical Operations of the CCS</b>			
Saltwater Interface allocation of contributions	CO 23.a.	Contract for modeling issued and work has begun.	Completion date 6/20/2018.
Agreements to convey property interests for CERP BBCW and S-20 structure projects	CO 23.b. CA 17.c.iii.	District notified FPL of intent to purchase: August 25, 2016. Agreement reached on 5/5/2017. Appraisals conducted and sales documents are being drafted. No determination of need by District at this time for S-20 structure.	Completion of the land conveyance transaction for BBCW project lands estimated for completion March 2018.
Filling portions of Model Lands North Canal	CA 17.c.ii.	Activity completed.	No additional actions required.
Increase weir control elevation test in FPL Everglades Mitigation Bank	CO 32. CA 17.c.i.	Activity completed, report submitted to MDC and FDEP: 5/9/2017.	No additional actions required.
Escrow funding for mitigation of saltwater intrusion	CO 23.d.	FPL and FDEP in process of developing the escrow agreement.	
<b>Monitoring and Reporting</b>			
CSEM Baseline Survey	CO 29.a. CA 17.d.iii.	Bid for services issued.	Baseline survey to be conducted no more than 60 days prior to RWS startup.
Expanded groundwater monitoring in Model Lands and surrounding area	CO 27a.,b., c., & d. CA 17.d.iv.	Permitting for construction of all new monitoring wells complete (except TPGW-18). Construction of TPGW-20, 21, 17, 19 and 8S began during the reporting period. TPGW-18 Class I permit pending.	USGS well data posted on EDMS and included in this report. Sampling of newly constructed monitoring wells to begin 60 days or less prior to RWS startup.

**Table 2.0-2 Overall Status of Activities**

Activity	CO / CA No.	Status	Additional Comments
Expanded Biscayne Bay WQ sampling	CO 23.d., CO 29.k.	Bi-monthly sampling was initiated in September 2016 and will continue for two years.	Data provided on EDMS database and included in this report.
Expanded reporting of CCS related monitoring	CO 28., 31.	Updates to EDMS and posting of reports complete: November 2017.	Data can be found in the FPL EDMS.
Submit annual progress reports	CO 31. CA 17d.v.	Provided November 2016 and 2017.	
Provide FDEP with copies of submittals to other agencies	CO 33.	Copies of FPL reports and compliance submittals to MDC and EPU reports to SFWMD provided to FDEP.	

**Table 2.1-1 Monthly Summary of Upper Floridan Aquifer and Marine Water Inputs During the Reporting Period (October 2016–September 2017)**

Month	Total Water Inputs (million gallons)	
	Upper Floridan Wells	Marine Wells
Oct-16	63.9	0.0
Nov-16	320.1	0.0
Dec-16	420.2	0.0
Jan-17	409.5	0.0
Feb-17	375.9	0.0
Mar-17	406.3	421.0
Apr-17	388.4	900.1
May-17	409.9	1,176.7
Jun-17	382.5	207.5
Jul-17	422.3	582.0
Aug-17	401.7	891.1
Sep-17	371.0	0.0
<b>Total</b>	<b>4,371.8</b>	<b>4,178.5</b>

**Table 2.2-1 Monthly Summary of Water Pumped from Temporary Production Wells and Net Mass Salt Removed from Groundwater (October 2016–September 2017)**

<b>Month</b>	<b>Gallons Pumped (Millions)</b>	<b>Average Salinity (PSU)</b>	<b>Monthly Tons of Salt Removed</b>
10/2016	429	61	113000
11/2016	442	59	114500
12/2016	455	59	117000
1/2017	445	60	116000
2/2017	412	60	107000
3/2017	455	60	118500
4/2017	436	60	114000
5/2017	409	59	105500
6/2017	438	60	114500
7/2017	438	60	113500
8/2017	387	57	96000
9/2017	251	62	67000
<b>Total</b>	<b>4,997</b>	<b>-</b>	<b>1,296,500</b>

Table 2.4-1 Additional Related Water Monitoring Data Required by Other Governmental Entities (CO Paragraph 31.b.; Data Provided in the Florida Power & Light Company Electronic Data Management System)

EDMS Folder	Permit/Condition #	Submittal/Parameters	Frequency	Government Agency
Industrial Wastewater Facility Permit (Outfalls I-001 & I-002)	FL0001562	pH	Monthly	FDEP
		Temperature	Monthly	FDEP
		Specific conductance	Quarterly	FDEP
		TSS, pH, salinity, specific conductance	Quarterly	FDEP
		TSS, lead, oil & grease, copper, zinc	Semi-annually	FDEP
		Copper, iron, zinc	Semi-annually	FDEP
		Log check and report	Monthly	FDEP
Domestic Wastewater Annual Operating Permit	DWO-000010-2017/2018	DMR	Monthly	MDC
Domestic Wastewater Facility Permit and Underground Injection Well	FLA013612 and 0127512-006-UO	MOR	Monthly	FDEP
		Wastewater effluent stream analysis	Within 6 months expiration of permit	FDEP
		Permit renewal notice	60 days prior to expiration	FDEP
Other data/documents (Consent Agreement)	17.d.ii	L-31E data (current and historic) groundwater and surface water data	Weekly, Quarterly, SA	MDC
	Addendum	SAP and SAP associated data collection	TBD	MDC
	17.d.ii/17.b.ii	Data reports including operation of RWS, consistent with the data reports currently required by the MDC Class I permit	Monthly/Semi-Annual	MDC
Other data/documents (Consent Order)	SC 23.d	Data from six Biscayne Bay sites	Every 2 months (for 2 years)	FDEP
	SC 27.a	Data from six USGS wells	Updated monthly	FDEP

Table 2.4-1 Additional Related Water Monitoring Data Required by Other Governmental Entities (CO Paragraph 31.b.; Data Provided in the Florida Power & Light Company Electronic Data Management System)

EDMS Folder	Permit/Condition #	Submittal/Parameters	Frequency	Government Agency
Interceptor Ditch (5th Supplemental Agreement)	Monitoring Plan	Seasonal readings	Updated Bi-Monthly	SFWMD
		Telemetry based readings	Updated Daily	SFWMD
		Surface water samples	Updated Bi-Monthly	SFWMD
		Manual readings	Updated Bi-Monthly	SFWMD
		ID readings and pump operations entries	Updated Bi-Monthly	SFWMD
		ID staff gauge surveys and pump calibrations	Annual or as needed	SFWMD



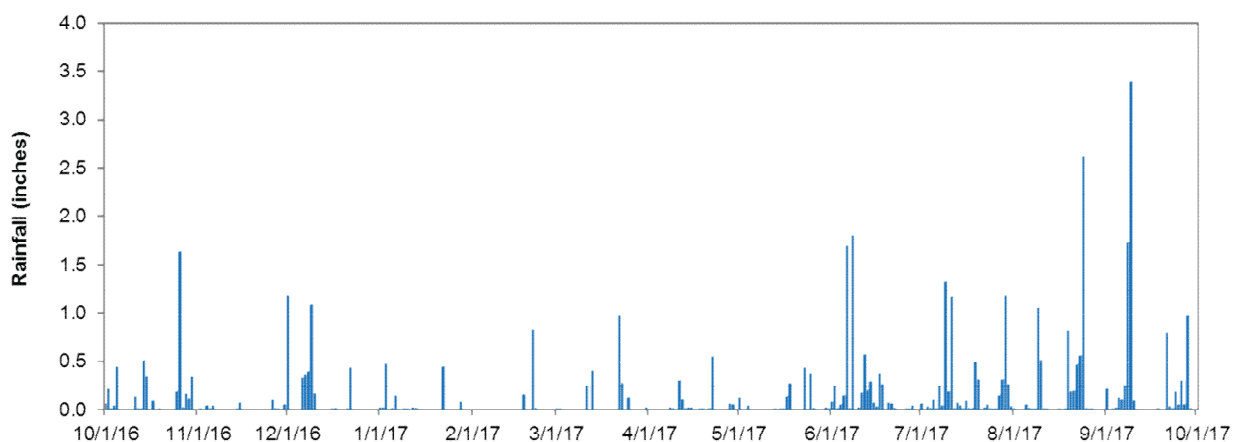
Table 2.4-2 Additional Consent Order Related Reports Required by Other Governmental Entities and Provided in the Florida Power & Light Company Electronic Data Management System

EDMS Folder	Permit/Condition #	Submittal/Parameters	Frequency	Government Agency
Other Reports (Consent Agreement)	Addendum	SAR	Single submittal	MDC
	17.d.v	Alternative Water Supply Report	Single submittal	MDC
	17.d.v	Model Documentation Reports	Single submittal	MDC
	17.d.ii/17.b.ii	Data reports including operation of RWS, consistent with the data reports currently required by the MDC Class I permit	Monthly/Semi-Annual	MDC
	SC 20.b	Thermal Efficiency Plan	Single submittal	FDEP
	SC 28	Nutrient Management Report	Single submittal	FDEP
	SC 28	REMP/RETZ reports	Annual report	FDEP
Interceptor Ditch (5th Supplemental Agreement)	Monitoring Plan	Annual Interceptor Ditch Assessment (as part of Annual Uprate Report)	Annual	SFWMD
UIC Class I Injection Well System Permit	293962-002-UC	UIC MOR	Monthly	FDEP
Upper Floridan Aquifer data/documents (Conditions of Certification )	PA 03-45E	UFA Water withdrawal Report	Quarterly	SFWMD/FDEP
Nuclear Regulatory Commission	CA, Special Condition 28	REMP/RETZ reports	Annual report	FDEP
Florida Department of Health (FDOH)	COC VII. B.4.	Tritium monitoring	Monthly	FDOH

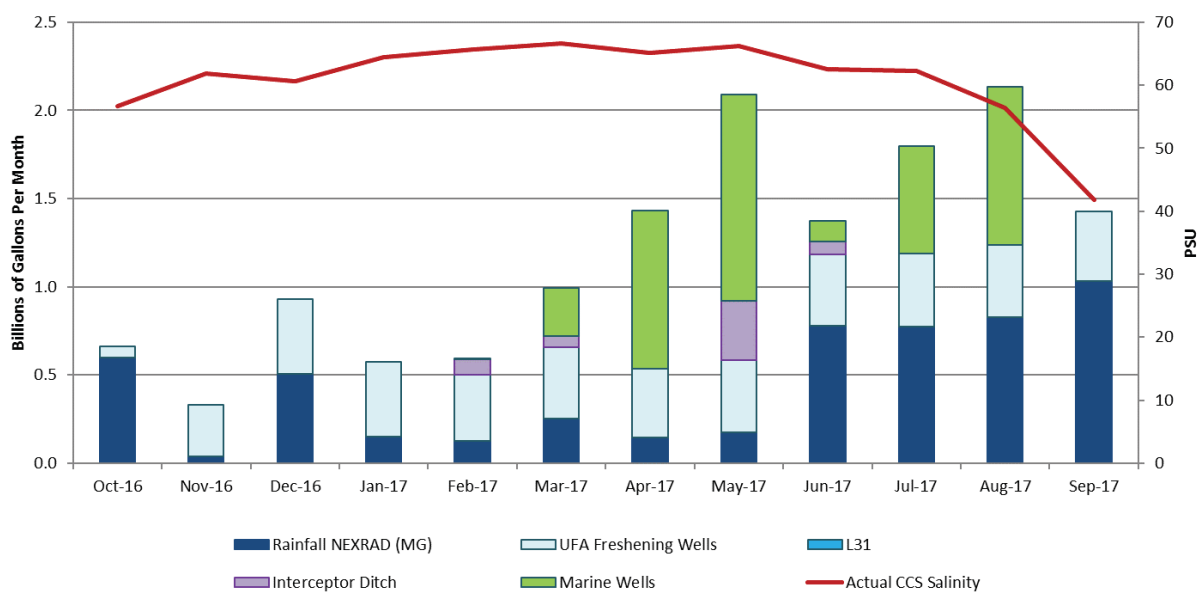
# FIGURES



Figure 2.1-1 Location of Floridan Wells and Point Wells



**Figure 2.1-2 Daily Rainfall (NEXRAD) into CCS**



**Figure 2.1-3 Average Monthly Water Inputs and Salinity in the CCS**

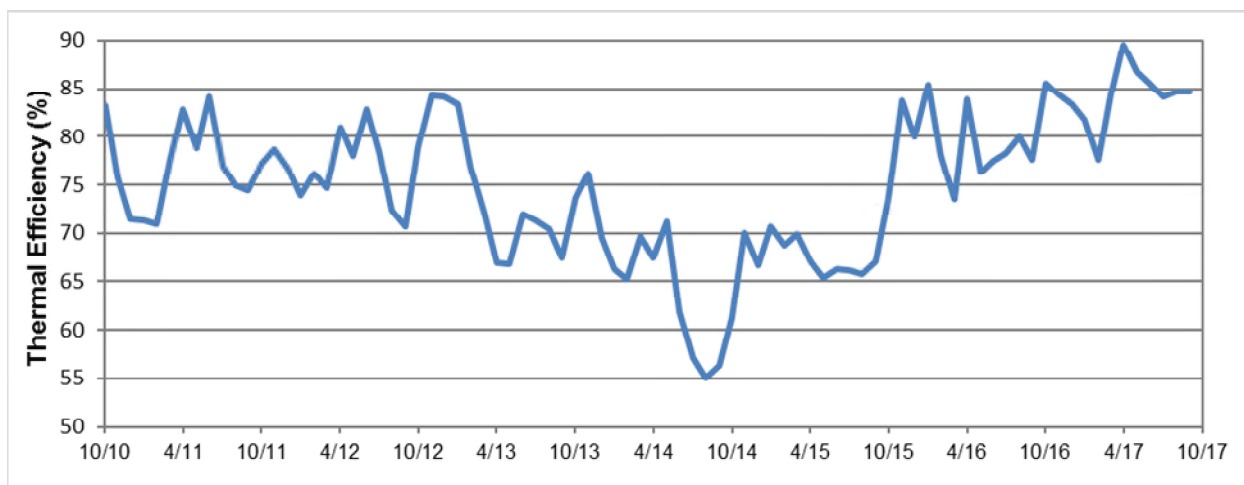


Figure 2.1-4 CCS Thermal Efficiency



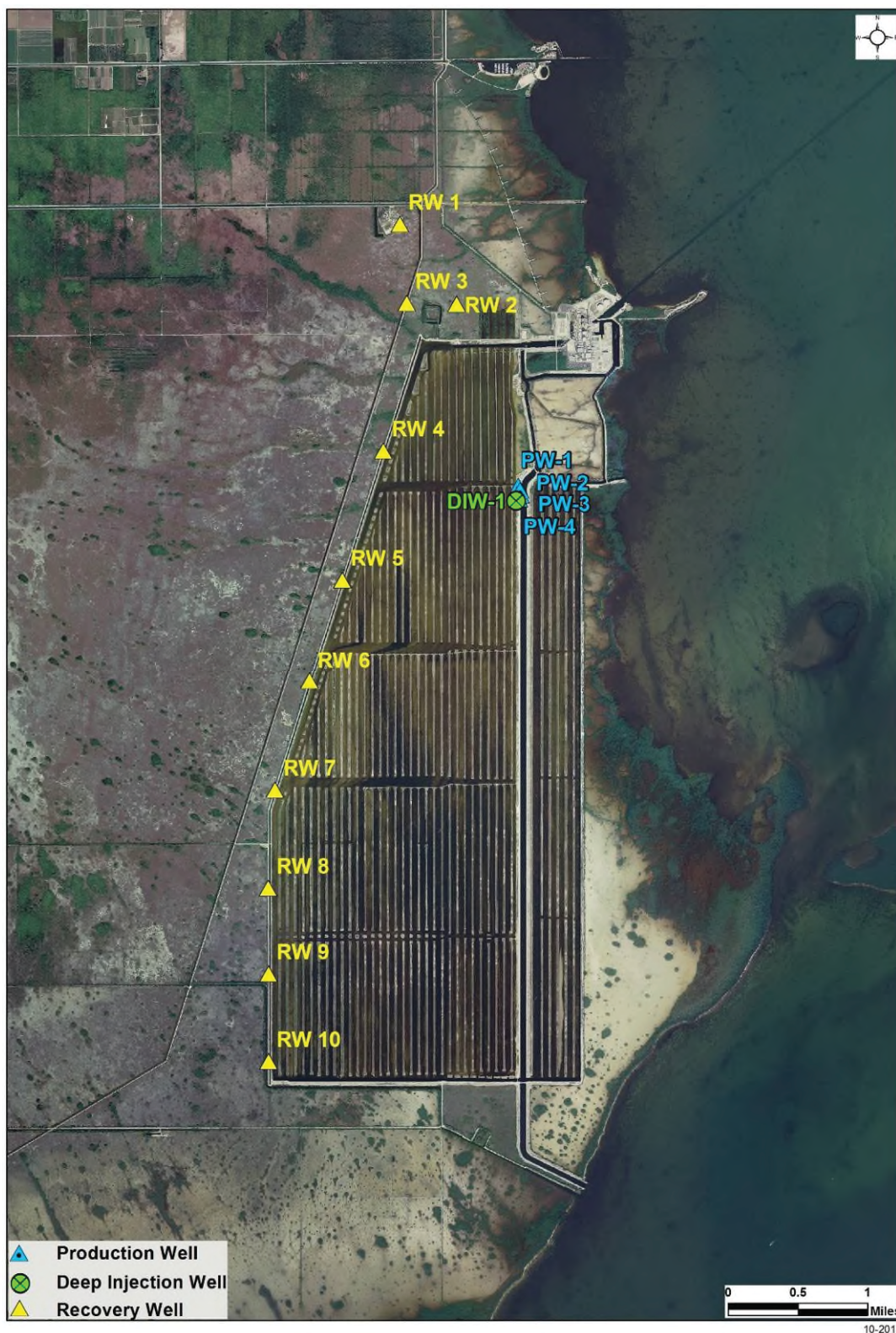
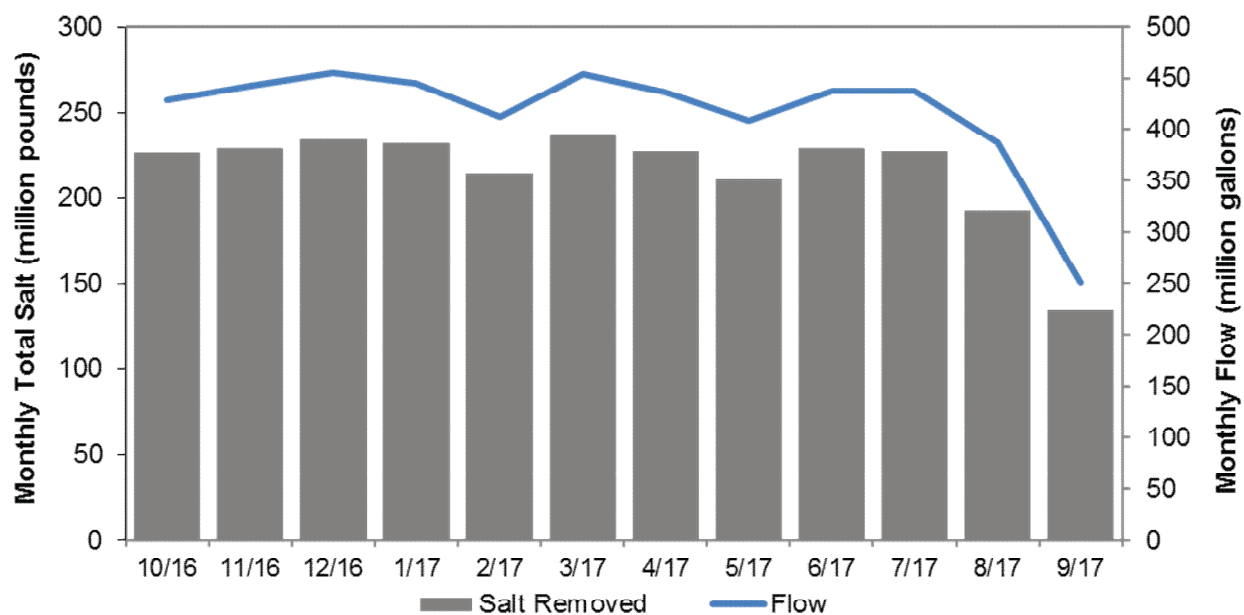


Figure 2.2-1 Location of Recovery Wells, Temporary Production Wells, and Injection Well





Note: Probes were not reporting salinity values 9/6-9/25/2017. The average of available salinity values from 9/26-10/1/2017 was used for salt removed calculations during this period.

**Figure 2.2-2 Monthly Total Salt Removed and Flow in the UIC Well**



Figure 2.4-1 Location of New Groundwater Monitoring Stations Relative to the Existing Groundwater Monitoring Network





Figure 2.4-2 Location of New Surface Water Monitoring Stations per the Consent Order and Consent Agreement