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September 25, 2017

-VIA ELECTRONIC FILING -

Ms. Carlotta S. Stauffer Commission Clerk Florida Public Service Commission 2540 Shumard Oak Blvd. Tallahassee, FL 32399-0850

Re: Docket No. 20170007-EI

Dear Ms. Stauffer:

I enclose for electronic filing in the above-referenced docket Florida Power & Light Company's prepared rebuttal testimony and exhibits.

This filing is being made via the Florida Public Service Commission's Web Based Electronic Filing portal and consists of two submittals, each including a signed certificate of service. This letter and the rebuttal testimony and exhibit of Michael Sole and rebuttal testimony of Keith Ferguson is the first submittal (1 of 2). The second submittal is the rebuttal testimony and exhibits of Peter Andersen (2 of 2).

If there are any questions regarding this transmittal, please contact me at (561) 304-5226.

Sincerely,

<u>s/Jessica A. Cano</u> Jessica A. Cano

Enclosures cc: Counsel for Parties of Record (w/encl.)

Florida Power & Light Company

700 Universe Boulevard, Juno Beach, FL 33408

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 20170007-EI FLORIDA POWER & LIGHT COMPANY

SEPTEMBER 25, 2017

IN RE: ENVIRONMENTAL COST RECOVERY

REBUTTAL TESTIMONY OF:

MICHAEL W. SOLE PETER F. ANDERSEN KEITH FERGUSON

1		BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION
2		FLORIDA POWER & LIGHT COMPANY
3		REBUTTAL TESTIMONY OF MICHAEL W. SOLE
4		DOCKET NO. 20170007-EI
5		SEPTEMBER 25, 2017
6		
7	Q.	Please state your name and business address.
8	A.	My name is Michael W. Sole and my business address is 700 Universe
9		Boulevard, Juno Beach, Florida 33408.
10	Q.	Have you previously filed testimony in this docket?
11	A.	Yes.
12	Q.	Are you sponsoring any rebuttal exhibits?
13	A.	Yes, I am sponsoring the following exhibit:
14		• MWS-20 FPL and SFWMD Fourth Supplemental Agreement
15	Q.	What is the purpose of your rebuttal testimony?
16	A.	The purpose of my testimony is to respond to the testimony provided by Dr.
17		Sorab Panday on behalf of the Office of Public Counsel ("OPC").
18		Specifically, I address his allegations that (i) FPL should have taken corrective
19		actions sooner with respect to hypersalinity in the Turkey Point Cooling Canal
20		System ("CCS") and, ironically, that (ii) FPL is now moving too quickly to
21		implement the required corrective actions.
22	Q.	Please summarize your rebuttal testimony.

1 A. OPC witness Panday makes two ill-founded criticisms of FPL's evaluation and response to hypersalinity associated with the CCS. First, he relies on the 2 benefits of hindsight to opine as to what he believes should have motivated 3 FPL corrective actions in earlier years. However, his conclusions are at odds 4 with the evaluations and analyses of the CCS that were developed at the time, 5 6 through a robust regulatory process involving private, local and state experts in the field of hydrogeology over many decades. Second, OPC witness 7 Panday criticizes the corrective actions for the CCS that FPL is presently 8 9 taking with the concurrence of the relevant regulatory agencies. In doing so, he ignores ample evidence that FPL's approach has been open and 10 collaborative, working with Miami-Dade County ("MDC"), the Florida 11 Department of Environmental Protection ("FDEP"), and the South Florida 12 Water Management District ("SFWMD") which has resulted in a sound 13 project design in compliance with regulatory directives and in the best interest 14 of FPL customers and the environment. Because of these serious flaws, this 15 Commission should not rely on OPC witness Panday's testimony in this 16 docket. 17

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FPL'S HISTORIC ACTIONS AND APPROACH

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Q. Does OPC witness Panday's testimony focus on the issues FPL has been
 directed to address in the 2015 Consent Agreement between FPL and the
 MDC Department of Environmental Resources Management ("2015

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CA") and the 2016 Consent Order executed by FPL and the FDEP ("2016 CO"), governing FPL's abatement and remediation activities?

A. No. OPC witness Panday's testimony spends a considerable amount of time discussing saline groundwater and the saltwater interface generally and inappropriately contributes all movement of the saltwater interface to the CCS. Moreover, he ignores the fact that FPL's remediation obligations are on the retraction of the *hypersaline* plume – not saline water or the saltwater interface.

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OPC witness Panday's allegation that the CCS has been a major contributor to 10 the movement of the saltwater interface - and that FPL should have been 11 aware of that contribution decades ago - is simply unsupported by the facts. 12 While he briefly acknowledges the complex interaction of modern 13 14 developmental activities upon the rate and extent of saltwater intrusion (page 8 line 15), throughout the remainder of his testimony he ignores these facts 15 and inappropriately implies that any movement of the saltwater interface is the 16 17 result of movement of hypersaline water from the CCS into the Biscayne Aquifer. The facts regarding the complex and challenging relationship 18 19 between the saltwater interface and the hypersaline plume are clearly 20 acknowledged in the April 2013 SFWMD letter (Exhibit MWS-6), on page 3 of 10 of the FDEP Administrative Order (Exhibit MWS-7) and in the 2016 21 22 CO (Exhibit MWS-12, page 12). His testimony is inconsistent with these 23 facts.

Recognizing this complicated relationship, the 2016 CO requires FPL to 2 complete an analysis that seeks to allocate relative contributions of *other* 3 entities or factors to the movement of the saltwater interface. Moreover, early 4 on in the monitoring of the CCS, the 1978 Salinity Evaluation report 5 6 referenced in witness OPC witness Panday's testimony noted that "No reliable technique was found to distinguish between the relative contribution of 7 salinity increases from either natural intrusion or canal water and ground 8 9 water interchange." This is a rather key point that OPC witness Panday ignores. 10

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Because of the challenges created by this complex hydrogeological 12 relationship, it was not until the additional monitoring required in the 5th 13 supplemental agreement (Exhibit MWS-4) that FPL and the governmental 14 entities involved determined that corrective action was needed as evidenced in 15 the SFWMD's April 13, 2013 letter (MWS-6), FDEP Administrative Order 16 17 (MWS-7) and Miami-Dade Notice of Violation (MWS-8). Via a series of regulatory requirements, FPL has committed to take corrective actions 18 addressing the movement of hypersaline water that originates in the CCS into 19 20 the saltwater intruded portion of the Biscayne Aquifer.

Q. OPC witness Panday states that as early as 1978 and at least by 1990 or 1992, FPL should have known that saline water from the CCS was

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intruding into groundwater outside of FPL's property. How do you respond to this statement?

A. OPC witness Panday is essentially trying to substitute his opinion for the opinions of the independent investigators and regulatory agencies charged with oversight of the CCS at the time the data he references was collected and reported. Beginning with the design and construction of the CCS, FPL has worked collaboratively with federal, state, and local agencies to make decisions and take action to meet all applicable regulatory requirements concerning the CCS.

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FPL, as required by the regulatory agreements outlined in my July 19, 2017 11 direct testimony, performed monitoring beginning in the earliest days of the 12 CCS to understand the extent and movement of saline groundwater. This 13 14 monitoring was performed so as to put both FPL and the regulators in a good position to evaluate the impact of the CCS and assess whether there was a 15 need and sufficient information to implement further measures. Throughout 16 17 the CCS's operating history, FPL has provided the relevant environmental regulatory agencies with monitoring reports and any monitoring data that has 18 19 been requested. Until quite recently, that large body of data did not lead any 20 of the relevant regulators to conclude that the impacts of the CCS warranted 21 implementing any further measures.

It is telling that OPC witness Panday has chosen to discard the conclusions provided in the three specific reports that he references. The conclusions on

page 105 of the January 5, 1978 report clearly state "that there are not forces 1 2 or mechanisms at work within the system that can lead to massive ongoing 3 salt water intrusion of the aquifer and that any increases in salinity will be limited to the near vicinity of the system." The August 30, 1990 Dames and 4 Moore monitoring report concludes on page 11 that "...the increase in 5 6 ground-water salinity has been very small and does not represent significant change in the wedge movement or configuration...We see no indication that 7 these small changes are due to other than natural ground-water elevation/salt 8 9 water wedge dynamics." Finally, the authors of the 1992 Dames and Moore Report note that "the increase in ground-water salinity has been very small 10 and does not represent significant change in the wedge movement or 11 configuration. With the continuation of normal to increased rainfall amounts 12 and ground-water levels, wedge movement has stopped and chloride contents 13 14 at respective locations has returned to the historical limits." These reports and their conclusions were reviewed by the appropriate regulatory agencies 15 without comment or direction for further action on the part of FPL. They 16 17 speak for themselves as refutation of OPC witness Panday's "Monday morning quarterbacking." 18

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In summary, the best experts working with the best information available provided opinions that advised the decision-making of FPL and the regulatory agencies. OPC witness Panday's critique of that decision-making benefits from the luxury of hindsight gained by being able to survey the full body of

data collected for more than 45 years. His conclusions were not apparent to
 FPL, the regulatory agencies or the authors of these many reports as the
 events, data and analysis occurred.

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Only recently has the requisite certainty about the need for corrective actions evolved out of the extensive monitoring and technological analyses conducted within the last several years. OPC witness Panday's conclusions do not reflect what was known and knowable at the time of earlier decision-making.

9 Q. Was FPL prudent in its selection and oversight of GeoTrans, later
 10 TetraTech, for the monitoring, analysis, and reporting it provided?

11 A. Yes. GeoTrans is well recognized in the fields of hydrogeology and geology, 12 and FPL has worked to ensure that FPL and its consultants were meeting the 13 expectations of the regulatory agencies. Moreover, aspects of the data 14 collection, analysis and formulation of alternative remediation strategies that 15 were performed by GeoTrans/Tetra Tech have also been conducted 16 contemporaneously by other experts in relation to the CCS.

17 Q. Did FPL follow the guidance and requirements embodied in the permits
 18 and agreements governing the operation and monitoring of the CCS?

A. Yes. The original agreements provided specific direction, and were
supplemented as information was developed and analyzed in a publicly
accessible process. For example, the Fourth Supplemental Agreement
between FPL and the SFWMD governed the operation of the Cooling Canal
System from 1983 to 2009. The document includes a finding by the SFWMD

that "...the obligations undertaken by FPL and the CSFFCD in the original
Agreement and the supplemental agreements have been satisfactorily
performed to date." In conjunction with the FDEP Site Certification process,
the Fifth Supplemental Agreement was developed, including increased
monitoring and collection that would ultimately provide a sound basis upon
which to determine the full extent of impacts and actions to mitigate and
remediate those impacts.

Q. Please respond to OPC witness Panday's claim on page 21 that FPL did not provide required monitoring reports to the SFWMD in 2005, 2006, and 2007.

A. OPC witness Panday is searching for problems where none exist. Although 11 they were delayed, the monitoring reports for 2005, 2006 and 2007 were 12 ultimately provided to the SFWMD. After reviewing those reports in detail, 13 14 the SFWMD chose not to invoke consultation or otherwise direct that FPL take additional actions. FPL's 2008 and 2009 monitoring reports were timely 15 filed and, as noted by OPC witness Panday (at page 21), the SFWMD 16 17 expressed a desire for additional data and analysis based on the information in those reports. Ultimately, the SFWMD still required several years of 18 additional data before determining in 2013 to invoke consultation on 19 20 corrective actions.

Q. Do you believe that FPL should have taken corrective actions on its own initiative, beyond the regulatory requirements for monitoring and operating the CCS?

1 A. No, I don't think that it would have been reasonable for FPL to undertake expensive corrective actions unilaterally, without a clear understanding of the 2 environmental impacts and regulatory approval or direction to do so. In the 3 early years of CCS operation, FPL and the involved agencies did not 4 determine that further actions were warranted. Once it was observed that 5 6 migration of hypersaline water was indicated, FPL and the agencies determined that the most prudent course of action was to assess the issue 7 through more extensive data collection and analysis. Following the collection 8 9 and analysis of that information, remediation options were developed and tested through the application of the most comprehensive groundwater model 10 developed for the area. All of these efforts took time and involved significant 11 12 costs.

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14 Performing expensive environmental related activities beyond the environmental compliance activities required by regulatory bodies without 15 understanding the cause and contribution is not something FPL believes is 16 17 prudent as a regular course of action, a view shared by our environmental regulators. FPL prudently manages its environmental compliance 18 19 expenditures by working closely with regulatory agencies and developing 20 cost-effective responses to regulatory requirements. With respect to the CCS, as I have previously noted, FPL has continuously worked with federal, state, 21 and local environmental regulatory agencies to monitor environmental 22

1		conditions in and around the CCS, and collaboratively determine appropriate
2		corrective or remedial activities.
3		
4		SELECTION OF REMEDIAL ALTERNATIVE
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6	Q.	Does your review of OPC witness Panday's testimony indicate that he has
7		a strong grasp of the regulatory structure and requirements of the 2015
8		CA or the 2016 CO?
9	A.	No. His review and commentary do not appear to be aligned with the specific
10		objectives of the agreements and may explain why his review is critical of
11		FPL's and the regulatory agencies' collective judgment.
12		
13		The review appears to be misdirected in three notable facets. First, OPC
14		witness Panday does not acknowledge the scope of the requirements in the
15		2015 CA and the 2016 CO, which direct FPL both to "abate" the source of the
16		hypersalinity through freshening of the CCS surface water and to "remediate"
17		the hypersaline plume through application of the Recovery Well System
18		("RWS"). Second, his testimony is critical of the impact the RWS would
19		have on movement of the saltwater interface. He fails to appreciate that
20		neither the 2015 CA nor the 2016 CO addresses movement of the saltwater
21		interface; rather, they are directed at arresting and retracting the hypersaline
22		plume. Finally, his criticism does not acknowledge the value of moving

forward now with a functional project, which can always be refined later if
 warranted by actual, operational data.

Q. OPC witness Panday asserts that the RWS component of the approved mitigation response will not be reasonably effective in retracting the hypersaline plume. Do you agree?

The RWS is designed based on a well understood remediation 6 A. No. methodology, and guided by a site specific advanced variable density solute 7 transport groundwater model developed for this purpose. FPL selected 8 9 corrective action Alternative 3D (which includes the RWS) only after evaluating a number of credible alternatives providing a range of outcomes 10 and impacts. Environmental and practical constraints were considered, with 11 an overall desire to move forward and take action. FPL and the combined 12 reviewing agencies have assessed the RWS and concluded that it is a strong, 13 14 positive step forward in addressing the need to retract the hypersaline plume. Moreover, the implementing direction from the regulatory agencies 15 anticipates the need to monitor the response of the plume to the RWS and 16 17 contemplates that the system may be modified to improve its effectiveness, once actual performance data can be collected and integrated. This iterative 18 19 approach is a reasonable and appropriate compromise between the need to 20 begin corrective actions promptly and the desire to optimize system performance over time. 21

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In criticizing the planned use of the RWS, OPC witness Panday must also be 1 asserting that FPL should seek out and study additional, unspecified 2 alternatives to achieve the retraction of the hypersaline plume. This would 3 delay commencement of corrective action substantially. Thus, his position on 4 this point stands in stark and ironic contrast to his criticism that FPL failed to 5 6 take unilateral corrective actions much sooner, when they necessarily would have been based on far less complete data and understanding of the CCS and 7 the surrounding hydrogeological conditions. It is difficult to reconcile the two 8 9 positions.

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Moreover, OPC witness Panday's reticence to accept the corrective actions 11 that are embodied in the 2015 CA and 2016 CO appears to be based on the 12 false premise that a perfect solution can potentially be achieved at some future 13 14 point. This brings to mind the old adage that "the perfect is the enemy of the good." In the practical world, FPL and the regulatory agencies have 15 determined that the RWS presents a logical and reasonable means of 16 17 addressing the hypersaline plume without further postponing meaningful action. 18

Q. Are FPL customers well served by undertaking the combined projects of CCS freshening using the Floridan wells and remediating the hypersaline plume using the RWS?

A. Yes. The combined projects address an unintended consequence of the CCS
design and operation that evolved slowly, over many years. Once those

1 unintended consequences were definitively identified, the project design was 2 informed by extensive data collection, in-situ geologic sampling (core borings) and a sophisticated variable density solute transport groundwater 3 4 model. The resulting project design addresses the 2015 CA and 2016 CO directives using known methods and with the ability to monitor, measure and 5 adapt the implementation as further actual (not modeled) data is obtained. 6 This deliberate and highly structured approach offers the best path to quickly 7 begin addressing the major concerns. 8

9 Q. Does this conclude your testimony?

10 A. Yes.

AGREEMENT

THIS AGREEMENT made and entered into this 15^{\pm} day of yuly, A. D., 1983, by and between FLORIDA POWER & LIGHT COMPANY, hereinafter referred to as "FPL" and SOUTH FLORIDA WATER MANAGEMENT DISTRICT, hereinafter referred to as "DISTRICT".

WITNESSETH

WHEREAS, FPL and the CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT, hereinafter referred to as the "CSFFCD", predecessor to the DISTRICT, entered into an agreement dated February 2, 1972, hereinafter referred to as the "Original Agreement", governing the rights and obligations of the parties concerning the construction, operation and monitoring of the cooling water system for FPL's power generating plant at Turkey Point in Dade County, Florida; and

WHEREAS, the Original Agreement has been supplemented and amended on three separate occasions; the First Supplemental Agreement having been executed on October 21, 1974; the Second Supplemental Agreement having been executed on August 14, 1975; and the Third Supplemental Agreement having been executed on September 10, 1976; and

WHEREAS, the obligations undertaken by FPL and the CSFFCD in the Original Agreement and the supplemental agreements have been satisfactorily performed to date; and construction of the cooling water system is complete; and

WHEREAS, FPL still has a continuing obligation to monitor for impacts of the cooling water system on the water resources of the DISTRICT in general and on the DISTRICT's facilities and operations in particular; and

WHEREAS, past monitoring activities indicate that any such impacts can be sufficiently determined through a modified monitoring program; and FPL Agreement Page 2 of 7

WHEREAS, the parties desire to modify the present monitoring program to reflect current needs and conditions; and

WHEREAS, the parties desire to set forth, in one agreement, all remaining obligations existing between them by virtue of the Original Agreement, the supplemental agreements and the modified monitoring program.

NOW THEREFORE, the parties hereto agree as follows:

A. INTERCEPTOR DITCH SYSTEM

1. FPL and DISTRICT agree that the purpose of the system is to restrict movement of saline water from the cooling water system westward of Levee 31E adjacent to the cooling water system to those amounts which would occur without the existence of the cooling water system.

2. The operating criteria for the interceptor ditch system have been established by FPL to meet the objective set forth in Paragraph A.1. If at any time it is determined by DISTRICT that FPL operations are such that the objective of Paragraph A.1. is not being achieved, FPL agrees that it will immediately revise the operating criteria for the interceptor ditch system upon the written instructions of DISTRICT's Executive Director or his authorized representative. Upon approval by DISTRICT, the new operating criteria shall be immediately placed into effect. FPL shall designate an official or employee of FPL who will be responsible for the receipt of said operating criteria and for carrying them out.

3. If in the sole judgment of DISTRICT it is determined that operational changes, as specified under Paragraph A.2., are not adequate to achieve the objective of Paragraph A.1., FPL will promptly take action to find and implement other feasible engineering measures to achieve the objective of Paragraph A.1., including reasonable

FPL Agreement Page 3 of 7

alterations in the operation or design of the interceptor ditch system. Should such alterations fail to achieve said objective, other feasible engineering measures regarding the cooling water system will be undertaken. If alterations to the cooling water system become necessary, any such alterations will take into account the reasonable operational requirements of the existing power plant.

4. Nothing contained in this Agreement shall estop the DISTRICT from availing itself of all other rights and remedies it may now or hereafter have to achieve the objective of Paragraph A.1.

5. Pump operation logs of a form acceptable to the DISTRICT shall be maintained by FPL for each interceptor ditch pumping installation. The current and preceding month's logs will be maintained at a designated on-site location for examination by DISTRICT personnel.

6. FPL shall bear all costs associated with the construction, operation, maintenance, replacement, alteration, modification, or relocation of any and all existing or future interceptor ditch facilities made necessary by the cooling water system.

7. FPL shall save and hold the DISTRICT harmless and will defend against any and all claims arising from construction, operation, maintenance, replacement, alteration, modification or relocation of any existing or future interceptor ditch facilities made necessary by the cooling water system.

B. WATER TRANSFER FACILITIES

1. FPL shall accept on its lands east of Levee 31E, and be responsible for the use or disposal of all excess surface waters from the drainage basins of Canals 106 and 107, as shown on the attached Exhibit "A", made a part hereof, which can be delivered by Structures 20-A and 20 regardless of time and duration of discharge and quality. The FPL Agreement Page 4 of 7

parties agree that the capacity of the existing water transfer facilities replaces as nearly as practical that capacity which existed prior to the construction of FPL's cooling system. FPL shall, at its expense, operate and maintain the drainage system from Structure 20 seaward to the intersection with the Seadade Canal.

2. Operation of water transfer facilities shall be in accordance with instructions given FPL by DISTRICT's Director of Field Services or his designated representative. FPL shall designate an official or employee of FPL who will be responsible for the receipt of said operating instructions and for carrying them out.

3. FPL agrees to hold and save the DISTRICT harmless and to defend against any claim arising from the construction, operation, maintenance, replacement, modification, alteration or relocation of the water transfer facilities for Canal 106 and Canal 107.

C. MONITORING PROVISIONS

1. FPL shall monitor the cooling water system and the interceptor ditch facilities to ensure that the objective specified in Paragraph A.1. is met.

2. The monitoring program outlined in the manual designated "FLORIDA POWER & LIGHT COMPANY, TURKEY POINT, FLORIDA, GROUNDWATER MONITORING AND INTERCEPTOR DITCH OPERATION PROCEDURES", revised July, 1983, hereinafter referred to as the "REVISED OPERATING MANUAL", which is incorporated herein by reference, shall be sufficient to meet the monitoring requirements imposed in Paragraph C.1.

3. Further revision or modification of the REVISED OPERATING MANUAL, shall be made in accordance with this Agreement and shall be set out in a supplement executed by both parties hereto, which supplement shall be attached to the FPL Agreement Page 5 of 7

REVISED OPERATING MANUAL as a part of that document. Provided, however, that non-substantive changes may be accomplished by letter, which, when signed by the party requesting the change and accepted by the other party, shall be incorporated into the REVISED OPERATING MANUAL.

4. FPL shall designate an official, employee or agent of FPL who will have the responsibility for maintaining the monitoring installations in satisfactory operating condition and for collecting the required data and maintaining the record thereof.

5. FPL shall collect the data as provided in the REVISED OPERATING MANUAL; shall retain the same for a minimum of twenty-four (24) months; and shall review and analyze the data so collected consistent with the objectives of this Agreement. In August of each year, FPL shall submit to the DISTRICT a summary report evaluating the preceding year's events in terms of historic trends. The summary report shall consist of the information called for in the REVISED OPERATING MANUAL. The summary report shall not contain raw data unless specifically requested by the DISTRICT.

6. FPL shall bear all costs of installation, instrumentation, operation, maintenance, replacement, modification, alteration, or relocation of the monitoring system or any element thereof.

7. FPL shall hold and save DISTRICT harmless and will defend against any and all claims arising from installation, instrumentation, operation, maintenance, replacement, modification, alteration, or relocation of the monitoring system or any element thereof.

D. GENERAL PROVISIONS

1. This Agreement supercedes the Original Agreement between the

FPL Agreement Page 6 of 7

parties dated February 2, 1972, and the Supplemental Agreements, dated October 21, 1974, August 14, 1975, and September 10, 1976.

2. This Agreement shall be binding on the parties and their assigns and successors.

3. Should any unusual event occur or should any substantive physical, mechanical, structural or operational changes be contemplated to be made to the cooling water system, then FPL shall immediately notify the DISTRICT and, if the DISTRICT shall so request, a meeting of the representatives of both FPL and the DISTRICT, comprising the group known as the Technical Advisory Group, shall be convened at the earliest mutually convenient time to review and analyze such unusual occurrence or such contemplated substantive physical, mechanical, structural or operational changes and to determine by mutual agreement what action shall be taken in relation thereto.

4. Should any unusual event occur or should any substantive physical, mechanical, structural or operational changes be contemplated to be made with regard to DISTRICT'S operations in the vicinity of the cooling water system, then DISTRICT shall immediately notify FPL and, if FPL shall so request, a meeting of the representatives of both FPL and the DISTRICT, comprising the group known as the Technical Advisory Group, shall be convened at the earliest mutually convenient time to review and analyze such unusual occurrence or such contemplated substantive physical, mechanical, structural or operational changes and for FPL to make recommendations regarding the action to be taken in relation thereto.

5. In the event FPL discontinues the use of the feeder, collector and cooling canals as a part of its cooling system, then FPL's obligations as to interceptor ditch pumping and as to monitoring shall cease and terminate. In the event FPL

FPL Agreement Page 7 of 7

discontinues the use of a portion of the feeder, collector or cooling canals as a part of its cooling system, then, to the extent, in the judgment of DISTRICT, that interceptor ditch pumping and monitoring are no longer necessary, such obligations shall cease and terminate.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals, in duplicate originals, the day and year first above written.

(Corporate Seal)

Executed in the presence of:

As to FPL

FLORIDA POWER & LIGHT COMPANY

By Title: Vice President

Advanced Systems and Technology

ATTEST:

Bv

Title: Notary Public for the State of Florida at Large

(Corporate Seal)

Executed in the preserve of:

11 x 1 an

As to DISTRICT

SOUTH TLORIDA WATER MANAGEMENT DISTRÍO , BY ITS GOVERNING BOARD

Nice Chairman

ATTEST:

By

By Secretary





EXHIBIT A. DRAINAGE BASINS OF CANALS 106 and 107

• • • • •

1.0 INTRODUCTION

This procedures manual applies to field work presently being conducted at Turkey Point for the Ground water Monitoring Program west of the Cooling Canal System and Interceptor Ditch Operation.

The procedures presented in this Revised Operations Manual reflect new agreements between Florida Power & Light Company and South Florida Water Management District. Reference is also made to the 1983 Turkey Point Agreement between the above mentioned parties, dated $\int u \ln 15, 1983$.

2.0 KEY PARTICIPANTS

The following tabulation gives the key parties involved in this project for Florida Power & Light Company and their relative responsibilities:

Company

Responsibility

Florida Power & Light Co.

Environmental Affairs Department P. O. Box 14000 700 Universe Boulevard Juno Beach, Florida 33408 Overall Program Direction and Contact

Phone: (305) 863-3624

Land Utilization Department P. O. Box 1565 Homestead, Florida 33030

Program Operations Data Processing

Consultant

Dames & Moore 301 W. Camino Gardens Blvd. Plaza 6, Suite 201 Boca Raton, Florida 33432

Phone: (305) 392-9070

Data Verification and Review

3.0 GROUND WATER MONITORING PROGRAM

3.1 Monitoring Locations

The following wells shall be monitored during this program: L-3 and L-5; G-21 and G-28. G-6, G-27 and G-35 shall not be monitored, but shall be capped and maintained in a ready condition. These wells are located as shown on Figures 1 and 2.

3.2 Monitoring Frequency

The wells specified in Section 3.1 shall be monitored 4 times a year during the months of October, January, April, and July.

3.3 Parameters

The following data shall be collected at each well at the times specified in the preceding section:

- a. Ground water Elevation (ft.) Measured inside the casing from top of casing. Elevation of top of casing is known.
- b. Surface Water Elevation (ft.) Measured outside the casing from top of casing.
- c. Conductivity (umhos/cm) Measured at one (1) foot intervals for the total well depth.
- d. Temperature (^OC) Measured the same as conductivity.
- e. Water Sample Collection Two water samples per well will be obtained for laboratory titration of chloride ion content. Depth of sample collection is not constant, but approximately half the water samples should be obtained from within the first twenty feet of the water column in the well. Generally, this portion of the water column contains the transition from water of low chlorinity to water of higher chlorinity. These samples, in combination with water samples from deeper depths, should provide chloride data which generally spans the entire spectrum of chloride ion encountered.

3.4 Monitoring Procedure

f.

The following procedure shall be followed in collection of field data:

- a. Calibrate the Conductivity-Temperature Meter prior to each day of the monitoring using two standard saline solutions of 15,000 umhos/cm and 90,000 umhos/cm. The instrument will be calibrated in accordance with the procedures established in Section 3.7, Equipment Calibration.
- Measure both surface water elevation and ground-water surface elevation at
 each well by measuring from top of well casing.
- c. Insert probe to a depth of one (1) foot below water level in well; when meter needle stabilizes, read and record conductivity and temperature.
- d. Repeat procedure in Step c. at intervals of one (1) foot to bottom of well.
- e. Obtain water sample for chloride ion titration in accordance with recommendations in Section 3.3e. Water samples are obtained with a Masterflex Pump or equivalent system. When taking a sample with the pump, a minimum of 1000 ml of water from the desired sampling depth shall be pumped through the line to insure the sample is representative and not contaminated by water left in the line from a previous sampling station. Sample water will be pumped directly into clean, dry bottles which will be tightly capped to prevent contamination of the sample.
 - After every well is monitored, calibration of the field monitoring unit will be checked with the 90,000 umhos/cm standard saline solution in accordance with procedures described in Section 3.7. Note, however, that the instrument shall not be adjusted at this time.
- g. After each day of monitoring, the conductivity of the 90,000 umhos/cm standard solution and the calibration of the field monitoring unit will be checked in accordance with procedures in Section 3.7.

3.5 Data Verification

In order to check the validity of the conductivity data, the relationship of conductivity versus chloride will be determined for each monitoring period by regression analysis. This analysis requires the use of an independent variable (true variable) and a dependent variable. Chloride content determined by laboratory titration will be used as the true variable and the conductivity variable will be adjusted to the line of best fit by the method of least squares.

In order to reduce the possibility of error, the raw titration data and raw conductivity data will be immediately plotted on the historical conductivity-chloride relationship as shown on Figure 3. The majority (75 percent) of the plotted raw data points should fall within the variance shown for the historical relationships. The remaining 25 percent of the points should be reasonably close to the historical relationships are less definitive. For those conductivities, the ratio of the raw titration value (parts per thousand) to the corresponding raw conductivity value (umhos/cm) should be reasonably close to the following historical relations:

Conductivity _umhos/cm	Ratio
Less than 2000	0.100
2000-6000	0.237
6000-10000	0.314

In addition to these two check methods, the raw points will be inspected for direct proportionality. In other words, the chloride content increases with increasing conductivity. Any two relative data points which reverse this relationship will be checked for probable error.

If, at any time, data are suspected to be in error, the following steps shall be taken:

- Retitrate the suspect water sample to determine chloride content. Replot the titration data versus the corresponding conductivity data and reinspect for direct proportionality.
- b. If data are still suspected to be in error after the retitration, then the well(s) in which the suspect data occur shall be remonitored in accordance with the procedures set forth in Section 3.4.

The conductivity, temperature, water level and titration data will be transmitted to FPL's consultant. The consultant will recheck the titration data for proportionality and variance from the historical relationship in accordance with methods presented in previous paragraphs. The water level, temperature and conductivity data will be compared with historical data from periods of similar seasonal conditions. (Water level fluctuations, precipitation and air temperature are among the factors to be considered when choosing times of similar seasonal conditions.) If any water level, temperature and/or conductivity data exhibit abnormal changes, the wells in which these changes occur will be remonitored in accordance with procedures set forth in Section 3.4. Suspect wells will be remonitored and checked until the consultant is satisfied that the data represent actual ground-water conditions. At this time, the data will be processed in accordance with Section 3.6.

The initiation of the monitoring each quarter will allow sufficient time for checking suspect field data. Therefore, the monitoring should be initiated at least five working days prior to the 1st of each quarterly month.

3.6. Data Processing

The raw field data shall be entered on standard forms (Figure 4).

Distribution of the data shall be in accordance with the following:

- a. Original To FPL Environmental Affairs Department
- b. One Copy Retained on file at Land Utilization Department at Turkey Point

c. One Copy - Forwarded to FPL's consultant.

3.7 Equipment Calibration

The following calibration procedures apply to the Conductivity-Temperature Meter.

<u>Conductivity Calibration</u> - Prior to each day of monitoring, the instrument shall be calibrated in accordance with the following procedures and the appropriate information entered on the Calibration Log (Figure 5) in the space designated "Before Monitoring".

The calibration of the conductivity meter is accomplished by the use of two potassium chloride (KCl) solutions prepared in accordance with ASTM D1125-64, Standard Methods of Test for Electrical Conductivity of Water.

The procedure is as follows:

- a. Prepare one solution of approximately 90,000 umhos/cm conductivity.
 - 1. Dissolve approximately 60.0 g of KCl to 1 liter of Category III Water.
 - 2. Determine the conductivity of the KCl solution using a conductivity bridge and certified cell to determine the "true" conductivity of the solution.
 - Calibrate the upper end of the field units conductivity range using the KCl conductivity standard as prepared above.

b. Prepare one solution of approximately 15,000 umhos/cm conductivity.

- 1. Dissolve approximately 7.50 g of KCl to 1 liter of Category III Water.
- 2. Determine the conductivity of the KCl solution using a conductivity bridge and certified cell to determine the "true" conductivity of the solution.
- 3. Read conductivity of solution using the field unit.

If the reading obtained with the field unit differs from the reading for the low conductivity solution more than 1,000 umhos/cm, the conductivity of the 90,000

umhos/cm solution will be rechecked with the conductivity bridge and the procedure repeated. Calibrating the field unit with a solution of high conductivity reduces the percent error introduced when calibrating the instrument at the lower end of the conductivity range. The 15,000 umhos/cm solution serves as a check on the accuracy of calibration at 90,000 umhos/cm.

In order to insure that the instrument maintains calibration throughout each day of monitoring, the 90,000 umhos/cm standard saline solution used in the initial calibration will be carried to the field and the solution will be read after monitoring every well. The reading given by the instrument will be recorded in the Calibration Log in spaces designated "During Monitoring". However, the instrument SHALL NOT be adjusted in the field to the reading given by the standard solution.

Upon returning to the laboratory after each day of monitoring the conductivity of the 90,000 umhos/cm solution will be checked with the conductivity bridge to assure that the conductivity of the standard solution has not changed throughout the day. The standard solution shall then be read with the field unit. This calibration sequence will be entered on the Calibration Log in the space labeled "After Monitoring".

The Calibration Log can be used to develop "drift curves" in order to correct "instrument drift". If the "After Monitoring" calibration sequence yields a reading deviation exceeding five (5) percent of the total reading, the data shall be corrected using the drift curve. In summary, the maximum allowable reading deviation for a 90,000 umhos/cm solution would be $\frac{+}{4}$,500 umhos/cm.

<u>Temperature Calibration</u> - Calibrate the field unit using the following procedure or equivalent:

a. Turn the instrument to "temperature zero" and adjust to read -5 degrees C.

b. Turn the instrument to "temperature calibrate" and adjust to read 45 degrees C.

- c. Prepare two H₂O solutions at temperatures of approximately 20 degrees C and 30 degrees C respectively.
- d. Compare the temperatures measured with the field unit to those obtained with a highly accurate laboratory thermometer.
- e. If the field unit and the thermometer agree within 0.5 degrees C, the temperature meter is considered calibrated.
- f. If the two do not agree, use the following procedure:
 - Adjust the field unit to read the results given by the thermometer in the 20 degrees C solution.
 - Read the 30 degrees C solution with the field unit and thermometer.
 If the readings differ, adjust the field unit to read the same as the thermometer.
 - 3. Again read the 20 degrees C solution with both instruments. If there is a difference, adjust the field_unit to equal the thermometer reading.

4.

Repeat this alternating procedure until the field unit will read both solutions within 0.5 degrees C.

4.0 INTERCEPTOR DITCH OPERATION

4.1 Introduction

The purpose of the Interceptor Ditch is to restrict inland movement of cooling canal water by maintaining a seaward ground water gradient during times when a natural seaward gradient does not exist. During the wet season and the early part of the dry season, a natural seaward gradient usually does exist. During the rest of the year, however, it is necessary to artificially generate a seaward gradient east of Levee 31 Borrow Canal by pumping water out of the Interceptor Ditch. The procedure for monitoring the ground water gradient and operation of the Interceptor Ditch is presented

in the following sections.

4.2 Monitoring Locations

Surface water elevations shall be monitored at staff gages located in the West Feeder Canal of the Canal System, Levee 31 Borrow Canal and the Interceptor Ditch at five locations relative to Lines A, B, C, D and E, as shown on the inset, Figure 2. When pumping of the Interceptor Ditch commences, additional data shall be obtained at each of the two ID pump stations. Locations of the pump stations are also shown on Figure 2.

4.3 Monitoring Frequency

Water elevation data shall be collected at the fifteen locations twice a month during non-pumping periods. These elevations will be measured on or about the 1st of each month and again near the middle of the month. Non-pumping periods reflect the wet season high water levels i.e., June through November.

During the period December through May, water elevation data will be collected once a week except during periods when pumping is necessary to create a seaward gradient. When pumping is required, water surface elevation data will be collected at least twice weekly. Adequate surveillance shall be set up to assure proper Interceptor Ditch operation. Data on pump run time and segments being pumped will be recorded in the Interceptor Ditch Pump Operation Log (Figure 9).

4.4 Pumping Criteria

As long as a natural seaward ground-water gradient exists, pumping of the Interceptor Ditch is not required. The following criteria define when a natural seaward gradient exists and when the Interceptor Ditch must be pumped to create an artificial gradient east of Levee 31 Borrow Canal.

<u>Seaward Gradient</u> - A natural seaward gradient exists when the Levee 31 water surface elevation (ft.,MSL) minus the West Feeder Canal water surface elevation

(ft., MSL) is greater than 0.20 ft.

If this criterion is not met, a natural seaward gradient still exists if the Levee 31 water surface elevation (ft., MSL) minus the Interceptor Ditch water surface elevation (ft., MSL) is greater than 0.30 ft.

Landward Gradient - If a natural seaward gradient does not exist, pumping of the Interceptor Ditch must be initiated to artificially create a seaward gradient. Pumping shall be adjusted so that the water surface elevation (ft.,MSL) in the Interceptor Ditch is maintained on the order of 0.30 feet lower than the water surface elevation (ft.,MSL) in Levee 31. Pumping can be terminated when the criteria for a natural seaward gradient is met.

The flow chart on Figure 6 depicts the requirements for pump operation. This chart should be referred to each time water elevation data are obtained in order to more easily determine when pumping is or is not required.

As can be seen on Figure 2 the pump stations divide the Interceptor Ditch into three segments. Each segment is evaluated separately with respect to the operating criteria. One segment, therefore, might require pumping while another might not. Pumping shall be initiated when any of the lines of staff gages governing that segment fails to meet the specified criteria for a seaward gradient. Adjustable intake gates (stoplogs) in each pump intake basin allow for various pump combinations to drawdown specific Interceptor Ditch segments.

4.6 Data Processing

Data shall be compiled on the forms provided (Figures 7-9). Field data will be kept for 24 months. Field data shall be distributed as follows:

- a. Original- FPL Environmental Affairs Department.
- b. One Copy- Retain on file at FPL Land Utilization Department at Turkey Point.

c. One Copy- Forwarded to FPL's Consultant.

4.7 Annual Report

An Annual Summary Report covering the preceding year's monitoring and operations data will be compiled and subsequently submitted to the South Florida Water Management District by the end of August of each year.

These reports, to be retained for the life of the Interceptor Ditch Program, will consist of the following elements:

- a. a description of any operational or structural changes made to the Interceptor Ditch System,
- b, a description of climatological conditions, including any unusual events,
- c. a description of the results of the previous year's monitoring program,
- d. updated time-history plots for all wells and parameters monitored and,
- e. time-history plots for each Interceptor Ditch pumping station.

Distribution shall be in accordance with the following:

One Copy - Forward to South Florida Water Management District

4.8 Equipment Maintenance

Occasional cleaning of the staff gages is required when algae and other marine growths inhibit reading of the staff gages. Care must be taken when cleaning to prevent damage to or movement of the staff gages.

FIGURES

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1.	Groundwater Monitoring Program well locations.
.2.	Interceptor Ditch, Levee-31 Well and Pump Locations.
3.	Historical conductivity-chloride relationship.
4.	Raw Data Forms.
5.	Calibration Log.
6.	Interceptor Ditch Program Operational Flow Diagram.
7.	Interceptor Ditch, Levee-31, Canal 32 Water Level Data.
8.	Interceptor Ditch, Levee-31, Canal 32 Water Level Data.
9.	Interceptor Ditch Pump Operation Log.

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Interceptor Ditch, Levee-31, Well and Pump Locations Figure 2.

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Figure 3. Conductivity-Chloride relationship, G-Wells.

GROUND WATER MONITORING PROGRAM SFWMD Fourth Supplemental Agreement FCD WELL SERIES Exhibit MWS-20, Page 24 of 29 TURKEY POINT, FLORIDA

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CALIBRATION LOG

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INTERCEPTOR DITCH PROGRAM OPERATIONAL FLOW DIAGRAM



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INTERCEPTOR DITCH PROGRAM

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Figure 7



WATER LEVELS-LEVEE 31, CANAL 32, INTERCEPTOR DITCH

INTERCEPTOR DITCH PROGRAM

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INTERCEPTOR DITCH PUMP

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1		BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION
2		FLORIDA POWER & LIGHT COMPANY
3		REBUTTAL TESTIMONY OF KEITH FERGUSON
4		DOCKET NO. 20170007-EI
5		SEPTEMBER 25, 2017
6		
7	Q.	Please state your name and business address.
8	А.	My name is Keith Ferguson, and my business address is Florida Power &
9		Light Company, 700 Universe Boulevard, Juno Beach, Florida 33408.
10	Q.	Have you previously provided testimony in this docket?
11	А.	Yes.
12	Q.	Are you sponsoring a rebuttal exhibit in this case?
13	А.	No.
14	Q.	What is the purpose of your rebuttal testimony?
15	А.	The purpose of my testimony is to address a recommendation made by Office
16		of Public Counsel ("OPC") witness Dr. Sorab Panday with regards to the
17		allocation of costs between containment activities (prevention) versus
18		retraction activities (remediation) associated with the Recovery Well System
19		("RWS") that is part of FPL's Turkey Point Cooling Canal Monitoring Plan
20		("TPCCMP" or "CCS") Project.
21	Q.	On Page 45, Lines 9 through 14 of OPC witness Panday's testimony, he
22		recommends that the initial allocation of RWS costs be based on the
23		projected relative contribution of the RWS to containment and retraction

1for the first two years of operation and then revisited and adjusted as2needed over the remaining operational life of the project. Is this3appropriate treatment under generally accepted accounting principles4("GAAP")?

5 No. OPC witness Panday is proposing an approach that would not be A. 6 consistent with GAAP. As I explained in my direct testimony in this docket, 7 the RWS has a 20-year expected operating life. FPL utilized the report provided by Tetra Tech (Exhibit KF-1 attached to my direct testimony filed 8 9 April 3, 2017) to estimate the cost allocation between operations and 10 maintenance expenses ("O&M") and capital based on the relative contribution of the RWS to containment and retraction that is projected over its full 11 GAAP¹ requires that a long-lived asset be recorded at 12 operating life. 13 historical cost, which includes "the costs necessarily incurred to bring it to the condition and location necessary for its intended use." Those costs are 14 15 known, and their allocation accordingly should be determined, at the time that 16 the asset goes into service. There is no provision in GAAP for re-allocating 17 costs already incurred for a long-lived asset between O&M and capital over 18 time, as those relative contributions evolve. FPL conservatively chose a 74% 19 / 26% split to allocate RWS costs between capital and O&M (the Tetra Tech 20 report could have supported an 83% / 17% split). That allocation is 21 reasonable, can only be made once, and should be approved.

¹ Accounting Standards Codification No. 360-10-30-1, Property, Plant, and Equipment

- 1 Q. Does this conclude your testimony?
- 2 A. Yes.

CERTIFICATE OF SERVICE Docket No. 20170007-EI

I HEREBY CERTIFY that a true and correct copy of the rebuttal testimony and exhibit of Michael Sole and Keith Ferguson has been furnished by electronic service this 25th day of September, 2017 to the following:

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s/ Jessica A. Cano

Jessica A. Cano Florida Bar No. 0037372