

**STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

**FLORIDA KEYS AQUEDUCT AUTHORITY, )**

**Petitioner, )**

**and )**

**MONROE COUNTY, )**

**Intervenor, )**

**v. )**

**FLORIDA POWER AND LIGHT and )  
DEPARTMENT OF ENVIRONMENTAL )  
PROTECTION, )**

**Respondents. )**

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**FLORIDA KEYS FISHING GUIDES )  
ASSOCIATION, INC., )**

**Petitioner, )**

**and )**

**MONROE COUNTY, )**

**Intervenor, )**

**v. )**

**FLORIDA POWER AND LIGHT AND )  
DEPARTMENT OF ENVIRONMENTAL )  
PROTECTION, )**

**Respondents. )**

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**OGC CASE NO. 20-0820  
DOAH CASE NO. 20-2967**

**OGC CASE NO. 20-0846  
DOAH CASE NO. 20-2968**

**CONSOLIDATED FINAL ORDER**

An Administrative Law Judge (ALJ) with the Division of Administrative Hearings (DOAH) on February 18, 2022, submitted a Recommended Order (RO) to the Department of Environmental Protection (DEP or Department) in the above-captioned administrative proceeding. On February 21, 2022, the ALJ submitted an Amended Recommended Order (Amended RO) to the Department, which modified two paragraphs in the initial RO. A copy of the Amended RO is attached hereto as Exhibit A. No party filed exceptions to the ALJ's RO.<sup>1</sup>

This matter is now before the Secretary of the Department for final agency action.

### **BACKGROUND**

On October 21, 2009, Respondent, Florida Power & Light Company (FPL) filed an application with DEP to renew and modify FPL's existing Permit No. FL0001562-04-IW1N (the Renewal Permit), authorizing the continued operation of the Turkey Point Cooling Canal System (CCS). DEP's proposed issuance of the Renewal Permit has been challenged in these proceedings.

On April 13, 2020, DEP published an Intent to Issue the Permit, proposing to issue the Renewal Permit authorizing the continued operation of the CCS. On June 4, 2020, the Florida Keys Aqueduct Authority (FKAA) and the Florida Keys Fishing Guide Association, Inc. (FKFGA) filed separate petitions for administrative hearing (Petitions), challenging DEP's proposed issuance of the Renewal Permit. The cases were referred to DOAH on June 29, 2020.

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<sup>1</sup> On March 4, 2022, the Petitioners filed an Unopposed Motion for Enlargement of Time to file exceptions, responses to exceptions, and waived the Department's 45-day deadline to issue its final order in this case until April 29, 2022. On March 7, 2022, the Department issued an order granting the Unopposed Motion for Enlargement of Time. *See Op. Att'y Gen. Fla. 77-41 (1977); Yesterday's Ret. Manor, Inc. v. Dep't of Health & Rehab. Services*, DOAH Case No. 81-3046 (Fla. DOAH March 7, 1983; Fla. DHRS April 18, 1983) (Statutory deadlines for issuance of a permit or license are a "substantive right that may be freely and voluntarily waived.") Nevertheless, none of the parties chose to file exceptions after a thorough review of the DOAH Recommended Order and the extensive record of the DOAH hearing.

FKAA's challenge was assigned DOAH Case No. 20-2967 and FKFGA's challenge was assigned DOAH Case No. 20-2968. Pursuant to the parties' request, the cases were consolidated. On August 24, 2020, Monroe County, Florida (Monroe County), filed a motion to intervene; and, on August 26, 2020, the ALJ issued an order granting the County's motion to intervene into the consolidated proceedings.

On January 11, 2021, DEP filed an Amended Motion in Limine (DEP's Motion in Limine) requesting exclusion of evidence and argument that had the effect of challenging the terms and conditions of the Consent Order between DEP and FPL entered on June 20, 2016, in OGC File No. 16-0241, and a proposal, set forth in an application that FPL filed with the Siting Office. FPL designed the application with the Siting Office to modify the ground water allocation authorized under its Florida Electrical Power Plant Siting Act license, License No. PA03-045, to allow an increased amount of ground water to be added to the CCS to further freshen the water in the CCS. On January 15, 2021, the Petitioners and Intervenor filed their response to DEP's amended motion in limine.

DEP's motion in limine was granted at the beginning of the final hearing on the basis that the remedial measures approved in the Consent Order and proposed in the application to modify the Certification were beyond the scope of these consolidated proceedings, the sole purpose of which is to determine whether FPL has provided reasonable assurance that the Renewal Permit should be issued.

On January 14, 2021, FPL filed an amended motion to exclude the late expert opinion of James Fourquean, requesting that the late-disclosed expert opinions of Petitioners' and Intervenor's witness, Dr. James Fourquean, be stricken, and that his testimony and related exhibits be excluded from evidence at the final hearing. On January 15, 2021, the Petitioners and

Intervenor filed a response in opposition to FPL's amended motion in limine. FPL's motion in limine was denied at the beginning of the final hearing.

The ALJ scheduled the final hearing for August 24 and 25, 2020, but continued it to January 19 through 22 and 25 through 29, 2021, in Miami, Florida. The final hearing was held by WebEx on January 19 through 22 and 25 through 29, 2021. On January 29, 2021, Petitioners and Intervenor filed a Notice of Petitioners' Proffer, describing the testimony and providing exhibits addressing the excluded evidence, for purposes of preserving the matters for appeal.

FPL presented the testimony of Michael Sole, Dr. Mark Stewart, Dr. Kip Solomon, Dr. Jerald Ault, Russel Frydenborg, and Dr. David Tomasko. FPL Exhibits 2 through 6, 8 through 11, 13, 14, 16 through 24, 26, 27, 38 through 40, 46-1 through 46-3, 47, 50, 57 through 60, 63, 66, 67, 72, 74, 75, 88, 89, 108, 109, 111, 113, 141, and 282 were admitted into evidence without objection. FPL Exhibits 7, 12, 15, 45, 51, 53, 55, 140, and 217 were admitted into evidence over objection.

DEP presented the testimony of Marc Harris, Allan Stodghill, and Ken Weaver. DEP Exhibits 2 through 4, 7, 16, 35, and 56 were admitted into evidence. DEP Composite Exhibit 1 (consisting of subparts 1 through 274) was admitted into evidence over objection.

Petitioners FKAA and FKFGA and Intervenor Monroe County presented the testimony of JoLynn Reynolds, Stephen Friedman, Benjamin Blanco, Michael Forster, E.J. Wexler, Kirk Martin, Dr. William Nuttle, and Dr. James Fourquarean. Petitioners' Exhibits 4, 7, 19, 22, 26, 28, 34, 37, 60, 75A, 76, 96, 99, 104, 106, 109, 110, 119, 120, 123, 149, 187, 201, 212, 233, 258, 267, 282, 283, 292, 299, 300, 321, 330, 418, and 569 were admitted into evidence without objection. Petitioners' and Intervenor's Exhibits 1, 32, 239, 390, and 406 were admitted into evidence over objection.



A sixteen-volume transcript of the final hearing was filed with DOAH on March 18, 2021. All parties filed proposed recommended orders (PROs) on May 17, 2021.

### **SUMMARY OF THE RECOMMENDED ORDER**

In the Amended RO, the ALJ recommended that the Department enter a final order granting Industrial Wastewater/National Pollutant Discharge Elimination System (NPDES) Permit No. FL001562-012-IW1N to FPL for renewal of its Turkey Point Cooling Canal System. (RO at p. 124). In doing so, the ALJ concluded that FPL provided reasonable assurances that continued operation of the Cooling Canal System under the Renewal Permit will meet all the applicable requirements of Florida Administrative Code chapters 62-4, 62-302, 62-520, and 62-620, and all applicable requirements of Florida Statutes chapter 403. (RO at ¶ 471).

### **STANDARD OF REVIEW FOR DOAH RECOMMENDED ORDERS**

The case law of Florida holds that parties to formal administrative proceedings must alert reviewing agencies to any perceived defects in DOAH hearing procedures or in the findings of fact of ALJs by filing exceptions to DOAH recommended orders. *See, e.g., Comm'n on Ethics v. Barker*, 677 So. 2d 254, 256 (Fla. 1996); *Henderson v. Dep't of Health, Bd. of Nursing*, 954 So. 2d 77, 81 (Fla. 5th DCA 2007); *Fla. Dep't of Corr. v. Bradley*, 510 So. 2d 1122, 1124 (Fla. 1st DCA 1987). Having filed no exceptions to any findings of fact the parties “[have] thereby expressed [their] agreement with, or at least waived any objection to, those findings of fact.” *Env't Coal. of Fla., Inc. v. Broward Cnty.*, 586 So. 2d 1212, 1213 (Fla. 1st DCA 1991); *see also Colomade Med. Ctr., Inc. v. State of Fla., Agency for Health Care Admin.*, 847 So. 2d 540, 542 (Fla. 4th DCA 2003). However, even when exceptions are not filed, an agency head reviewing a recommended order is free to modify or reject any erroneous conclusions of law over which the agency has substantive jurisdiction. *See* § 120.57(1)(l), Fla. Stat. (2021); *Barfield v. Dep't of*

*Health*, 805 So. 2d 1008, 1012 (Fla. 1st DCA 2001); *Fla. Public Emp. Council, 79 v. Daniels*, 646 So. 2d 813, 816 (Fla. 1st DCA 1994). In this case, no party filed any exceptions to the RO objecting to the ALJ's findings, conclusions of law, recommendations, or to the DOAH hearing procedures.

### **CONCLUSION**

Having considered the applicable law and standards of review in light of the findings and conclusions set forth in the Amended RO, and being otherwise duly advised, it is

ORDERED that:

A. The Amended Recommended Order (Exhibit A) is adopted in its entirety, and incorporated by reference herein; and

B. The proposed Industrial Wastewater/National Pollutant Discharge Elimination System renewal of Permit No. FL001562-012-IW1N to Florida Power & Light Company is GRANTED, subject to the general and specific conditions set forth therein.

### **JUDICIAL REVIEW**

Any party to this proceeding has the right to seek judicial review of the Final Order pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, M.S. 35, Tallahassee, Florida 32399-3000; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the

appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this Final Order is filed with the clerk of the Department.

DONE AND ORDERED this 29<sup>th</sup> day of April 2022, in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL PROTECTION



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SHAWN HAMILTON  
Secretary

Marjory Stoneman Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

FILED ON THIS DATE PURSUANT TO § 120.52,  
FLORIDA STATUTES, WITH THE DESIGNATED  
DEPARTMENT CLERK, RECEIPT OF WHICH IS  
HEREBY ACKNOWLEDGED.

**Syndie Kinsey**

Digitally signed by Syndie  
Kinsey  
Date: 2022.04.29 12:34:09  
-04'00'

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CLERK

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DATE

### **CERTIFICATE OF SERVICE**

I HEREBY CERTIFY that a copy of the foregoing Final Order has been sent by  
electronic mail to:

Joseph Ianno, Esquire Florida Power & Light Company 700 Universe Boulevard June Beach, Florida 33408 <a href="mailto:joseph.iannojr@fpl.com">joseph.iannojr@fpl.com</a>	Peter Cocotos, Esquire Florida Power & Light Company 134 West Jefferson Street Tallahassee, Florida 32301 <a href="mailto:peter.cocotos@fpl.com">peter.cocotos@fpl.com</a>
Brian Stamp Florida Power & Light Company 9760 Southwest 344 Street Florida City, Florida 33035 <a href="mailto:Brian.Stamp@fpl.com">Brian.Stamp@fpl.com</a>	
Andrew J. Baumann, Esquire Amy Taylor Petrick, Esquire Lewis, Longman & Walker, P.A. 515 North Flagler Drive, Suite 1500 West Palm Beach, Florida 33401 <a href="mailto:abaumann@llw-law.com">abaumann@llw-law.com</a> <a href="mailto:kderooches@llw-law.com">kderooches@llw-law.com</a> <a href="mailto:apetrick@llw-law.com">apetrick@llw-law.com</a> <a href="mailto:bpennington@llw-law.com">bpennington@llw-law.com</a>	Frederick L. Aschauer, Jr., Esquire Lewis, Longman & Walker, P.A. 315 South Calhoun Street, Suite 830 Tallahassee, Florida 32301 <a href="mailto:faschauer@llw-law.com">faschauer@llw-law.com</a> <a href="mailto:jmelchior@llw-law.com">jmelchior@llw-law.com</a>
Thomas Neal McAliley, Esquire Yolanda P. Strader, Esquire Carlton Fields, P.A. 100 Southeast Second Street, Suite 4200 Miami, Florida 33131 <a href="mailto:nmcilley@carltonfields.com">nmcilley@carltonfields.com</a> <a href="mailto:ystrader@carltonfields.com">ystrader@carltonfields.com</a>	Christopher J. Wahl, Esquire Abbie Schwaderer Raurell, Esquire Miami-Dade County Attorney's Office Stephen P. Clark Center 111 Northwest 1st Street, Suite 2810 Miami, Florida 33128 <a href="mailto:wahl@miamidade.gov">wahl@miamidade.gov</a> <a href="mailto:ans1@miamidade.gov">ans1@miamidade.gov</a> <a href="mailto:morillo@miamidade.gov">morillo@miamidade.gov</a> <a href="mailto:lisdiaz@miamidade.gov">lisdiaz@miamidade.gov</a>

Derek Howard Monroe County Attorney's Office 1111 12th Street, Suite 408 Key West, Florida 33040 <a href="mailto:Howard-Derek@monroecounty-fl.gov">Howard-Derek@monroecounty-fl.gov</a> <a href="mailto:Dastugue-Laurie@monroecounty-fl.gov">Dastugue-Laurie@monroecounty-fl.gov</a>	Marianna Sarkisyan, Esquire Matthew J. Knoll, Esquire Department of Environmental Protection 3900 Commonwealth Blvd., Mail Station 35 Tallahassee, Florida 32399-3000 <a href="mailto:Marianna.Sarkisyan@FloridaDEP.gov">Marianna.Sarkisyan@FloridaDEP.gov</a> <a href="mailto:Matthew.Knoll@FloridaDEP.gov">Matthew.Knoll@FloridaDEP.gov</a> <a href="mailto:Michelle.M.Knight@FloridaDEP.gov">Michelle.M.Knight@FloridaDEP.gov</a>
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this 29<sup>th</sup> day of April 2022.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL PROTECTION




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STACEY D. COWLEY  
Administrative Law Counsel

3900 Commonwealth Blvd., M.S. 35  
Tallahassee, FL 32399-3000  
e-mail: [Stacey.Cowley@FloridaDEP.gov](mailto:Stacey.Cowley@FloridaDEP.gov)

**STATE OF FLORIDA  
DIVISION OF ADMINISTRATIVE HEARINGS**

FLORIDA KEYS AQUEDUCT AUTHORITY,

Petitioner,

and

MONROE COUNTY,

Intervenor,

vs.

Case No. 20-2967

FLORIDA POWER AND LIGHT AND  
DEPARTMENT OF ENVIRONMENTAL  
PROTECTION,

Respondents.

\_\_\_\_\_  
FLORIDA KEYS FISHING GUIDES  
ASSOCIATION, INC.,

Petitioner,

vs.

Case No. 20-2968

FLORIDA POWER AND LIGHT AND  
DEPARTMENT OF ENVIRONMENTAL  
PROTECTION,

\*AMENDED AS TO PARAGRAPHS 70  
AND 105 ONLY

Respondents.

\_\_\_\_\_

\*AMENDED RECOMMENDED ORDER

Pursuant to notice, a hearing was conducted in these consolidated proceedings pursuant to sections 120.569 and 120.57(1), Florida Statutes,<sup>1</sup> on

\_\_\_\_\_  
<sup>1</sup> All references to Florida Statutes are to the 2021 version, which was in effect at the time of issuance of this Recommended Order. *See Lavernia v. Dep't of Pro. Regul., Bd. of Med.*, 616 So. 2d 53, 54 (Fla. 1st DCA 1993)(law in effect at time of licensure decision controls).

January 19 through 22 and 25 through 29, 2021, by Webex Conference, before Administrative Law Judge Cathy M. Sellers of the Division of Administrative Hearings ("DOAH").

APPEARANCES

For Petitioners and Intervenor:

Andrew J. Baumann, Esquire  
Amy Taylor Petrick, Esquire  
Lewis, Longman & Walker, P.A.  
515 North Flagler Drive, Suite 1500  
West Palm Beach, Florida 33401

Frederick L. Aschauer, Esquire  
Lewis, Longman & Walker, P.A.  
315 South Calhoun Street, Suite 830  
Tallahassee, Florida 32301

For Respondent, Department of Environmental Protection:

Marianna Sarkisyan, Esquire  
Matthew J. Knoll, Esquire  
Office of the General Counsel  
Department of Environmental Protection  
Douglas Building, Mail Station 35  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

For Respondent, Florida Power & Light Company:

Thomas Neal McAliley, Esquire  
Yolanda P. Strader, Esquire  
Steven M. Blickensderfer, Esquire  
Carlton Fields, P.A.  
100 Southeast Second Street, Suite 4200  
Miami, Florida 33131

Peter Cocotos, Esquire  
Florida Power & Light Company  
215 South Monroe Street, Suite 810  
Tallahassee, Florida 32301

### STATEMENT OF THE ISSUE

Whether Respondent, Florida Power & Light Company, is entitled to the renewal of Permit No. FL0001562-012-IW1N, the combined Industrial Wastewater/National Pollutant Discharge Elimination System permit for the continued operation of the Turkey Point Cooling Canal System.

### PRELIMINARY STATEMENT

On October 21, 2009, Respondent, Florida Power & Light Company ("FPL"), filed an application with Respondent, Florida Department of Environmental Protection ("DEP"), to renew and modify FPL's existing Permit No. FL0001562-04-IW1N (the "Permit"), authorizing the continued operation of the Turkey Point Cooling Canal System ("CCS"). The proposed issuance of the renewed and modified Permit, Permit No. FL0001562-012-IW1N, hereafter referred to as the "Renewal Permit," has been challenged in these proceedings.

On April 13, 2020, DEP published an Intent to Issue the Permit, proposing to issue the Renewal Permit authorizing the continued operation of the CCS. On June 4, 2020, the Florida Keys Aqueduct Authority ("FKAA") and Florida Keys Fishing Guide Association, Inc. ("FKFGA") filed separate petitions for administrative hearing (hereafter, "Petitions"), challenging DEP's proposed issuance of the Renewal Permit. The cases were referred to DOAH on June 29, 2020. FKAA's challenge was assigned DOAH Case No. 20-2967 and FKFGA's challenge was assigned DOAH Case No. 20-2968. Pursuant to the parties' request, the cases were consolidated. On August 24, 2020, Monroe County, Florida ("Monroe County" or "County"), filed Monroe County's Motion to Intervene, and on August 26, 2020, the undersigned



issued the Order Granting Motion to Intervene, granting the County's intervention into the consolidated proceedings.<sup>2</sup>

The final hearing initially was scheduled for August 25 and 25, 2020, but subsequently was continued for January 19 through 22 and 25 through 29, 2021, in Miami, Florida. Thereafter, due to the COVID-19 pandemic, the final hearing was rescheduled to be conducted by WebEx. The final hearing was held by WebEx on January 19 through 22 and 25 through 29, 2021.

On January 11, 2021, DEP filed an Amended Motion in Limine ("DEP's Motion in Limine") requesting exclusion of evidence and argument which had the effect of challenging the terms and conditions of the Consent Order between DEP and FPL entered on June 20, 2016, in OFG File No. 16-0241, and a proposal, set forth in an application that FPL filed with the Siting Office, to modify the ground water allocation authorized under its Florida Electrical Power Plant Siting Act ("Siting Act") license, License No. PA03-045 ("Certification"), to allow an increased amount of ground water to be added to the CCS to further freshen the water in the CCS. On January 15, 2021, Petitioners and Intervenor filed Petitioners' and Intervenor's Response in Opposition to Respondent, Florida Department of Environmental Protection's Amended Motion in Limine.

DEP's Motion in Limine was granted at the beginning of the final hearing on the basis that the remedial measures approved in the Consent Order and proposed in the application to modify the Certification were beyond the scope of these consolidated proceedings, the sole purpose of which is to determine whether FPL has provided reasonable assurance that the Renewal Permit

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<sup>2</sup> As appropriate, FKAA and FKFGA are collectively referred to as "Petitioners," and FKAA, FKFGA, and the County are collectively referred to as "Petitioners and Intervenor."

should be issued.<sup>3</sup> On January 29, 2021, Petitioners and Intervenor filed the Notice of Petitioners' Proffer, describing the testimony and providing exhibits addressing the excluded evidence, for purposes of preserving the matters for appeal.

On January 14, 2021, FPL filed Florida Power & Light Company's Amended Motion to Exclude Late Expert Opinion of James Fourquean ("FPL's Motion in Limine"), requesting that the late-disclosed expert opinion of Petitioners' and Intervenor's witness, Dr. James W. Fourquean, be stricken, and that Fourquean's testimony and related exhibits be excluded from evidence at the final hearing. On January 15, 2021, Petitioners and Intervenor filed a Response in Opposition to Respondent, Florida Power & Light's Amended Motion in Limine. FPL's Motion in Limine was denied at the commencement of the final hearing.

FPL presented the testimony of Michael Sole, Dr. Mark Stewart, Dr. Kip Solomon, Dr. Jerald Ault, Russel Frydenborg, and Dr. David Tomasko. FPL Exhibits 2 through 6, 8 through 11, 13, 14, 16 through 24, 26, 27, 38 through 40, 46-1 through 46-3, 47, 50, 57 through 60, 63, 66, 67, 72, 74, 75, 88, 89, 108, 109, 111, 113, 141, and 282 were admitted into evidence without objection. FPL Exhibits 7, 12, 15, 45, 51, 53, 55, 140, and 217 were admitted into evidence over objection.

DEP presented the testimony of Marc Harris, Allan Stodghill, and Ken Weaver. DEP Exhibits 2 through 4, 7, 16, 35, and 56 were admitted into

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<sup>3</sup> Petitioners and Intervenor proposed to present evidence regarding the effects of additional water withdrawal from the Upper Floridan Aquifer to freshen the water in the CCS pursuant to a proposal filed by FPL to modify the Certification to authorize. This evidence was excluded because it involved a modification to the Certification, which is beyond the scope of this proceeding. To the extent such modification ultimately may be authorized in the future, that agency action would be subject to challenge by parties whose substantial interests would be affected by such modification. *See* § 403.508, Fla Stat.

evidence. DEP Composite Exhibit 1 (consisting of subparts 1 through 274) was admitted into evidence over objection.

FKAA, FKFGA, and Monroe County presented the testimony of JoLynn Reynolds, Stephen Friedman, Benjamin Blanco, Michael Forster, E.J. Wexler, Kirk Martin, Dr. William Nuttle, and Dr. James W. Fourqurean. Petitioners' Exhibits 4, 7, 19, 22, 26, 28, 34, 37, 60, 75A, 76, 96, 99, 104, 106, 109, 110, 119, 120, 123, 149, 187, 201, 212, 233, 258, 267, 282, 283, 292, 299, 300, 321, 330, 418, and 569 were admitted into evidence without objection. Petitioners' and Intervenor's Exhibits 1, 32, 239, 390, and 406 were admitted into evidence over objection.

The 16-volume Transcript of the final hearing was filed at DOAH on March 18, 2021. The parties initially were given until April 19, 2021, and subsequently were given until May 17, 2021, to file their proposed recommended orders. The parties filed their proposed recommended orders ("PROs") on May 17, 2021, and the PROs have been duly considered in preparing this Recommended Order.

#### FINDINGS OF FACT

##### I. The Parties

1. Respondent FPL is the largest energy company in the United States, serving more than five million customer accounts in the state of Florida. FPL owns and operates the Turkey Point Clean Energy Center ("Turkey Point"), which consists of three electrical generating units. FPL is the holder of the Permit, an industrial wastewater ("IWW")/National Pollutant Discharge Elimination System ("NPDES") permit for the Turkey Point CCS, which provides wastewater treatment and effluent disposal for two of the three electrical generating units at Turkey Point. As stated above, FPL is the

applicant for the Renewal Permit that has been challenged in this proceeding.

2. Respondent DEP is the state agency authorized to regulate the construction and operation of wastewater treatment and effluent disposal facilities, pursuant to chapter 403, Florida Statutes, and implementing rules. As part of its responsibilities, DEP issues permits to authorize the treatment and discharge of industrial wastewater under the state industrial wastewater program, and the federal NPDES program pursuant to delegation from the United States Environmental Protection Agency ("EPA").<sup>4</sup>

3. Petitioner FKAA is a public water supply utility authority, established pursuant to chapter 76-441, Laws of Florida. It is responsible for providing potable water services in Monroe County, and domestic wastewater and reclaimed water services to select areas within its geographic jurisdiction. FKAA operates a potable water wellfield in Florida City, Florida, approximately 9.5 miles west of the CCS that withdraws water from the Biscayne Aquifer.

4. Petitioner FKFGA is a volunteer association comprised of professional fishing guides who conduct business, and engage in conservation and education activities, in and around south Florida.

5. Intervenor Monroe County is a county and political subdivision of the state of Florida, the geographic boundaries of which include the Florida Keys, the Florida Keys National Marine Sanctuary, and a portion of Biscayne Bay. Monroe County receives its potable drinking water services from FKAA.

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<sup>4</sup> The NPDES program is a federal pollution control program established by the Clean Water Act at 33 U.S.C. §1342, the purpose of which is to control point source discharges of industrial and domestic wastewater and stormwater into navigable waters of the United States.

## II. The Turkey Point Clean Energy Center and the CCS

6. Turkey Point is an electrical generating facility located on approximately 11,000 acres in unincorporated southeast Miami-Dade County. Its business address is 9760 Southwest 344th Street, Florida City, Florida.

7. The Biscayne National Park is east of, and adjacent to, the facility, and the Biscayne Bay Aquatic Preserve is located northeast, east, and southeast of the facility. The Model Land area, which is a tract of freshwater and brackish wetlands, is generally located to the north, west, and south of the CCS.

8. Several water management canals are located in close proximity to Turkey Point. Specifically, the South Florida Water Management District's ("SFWMD") L-31E Canal, C-106 North Model Land Canal, and C-107 South Model Land Canal are located west of the CCS. Additionally, the Card Sound Road Canal is located west and southwest of the facility, and discharges into Biscayne Bay south of the CCS. The SFWMD S-20 Discharge Canal is located west and south of the CCS, and the Sea-Dade Canal is south of the facility; these canals discharge into Biscayne Bay south of the CCS.

9. Additionally, remnant once-through cooling water canals are located at Turtle Point and the Barge Basin, at the eastern boundary of the facility. These canals have been plugged, so that they no longer are connected to Biscayne Bay.

10. As stated above, Turkey Point currently consists of three electrical generating units: Units 3 and 4, which are nuclear units; and Unit 5, which is a natural gas-fired combined-cycle unit. These electrical generating units are authorized pursuant to the Certification. The Turkey Point facility is the only baseload electrical generating facility that serves the critical load area of Miami-Dade County, Florida.

11. The CCS consists of a network of canals covering approximately 5,900 acres and providing wastewater treatment and effluent disposal for

Units 3 and 4, as well as functioning like a radiator to dissipate heat from the cooling water generated by the operation of these units.

12. The heated cooling water is discharged into the CCS at an internal outfall located at the northwest end of the CCS. Water pumps and gravity circulate the heated water in a counterclockwise direction, north to south, through the CCS, dissipating heat as the water flows through the CCS. Once the cooling water has circulated through the CCS, it is pumped back into Units 3 and 4 at the northeast end of the CCS for reuse as cooling water for those units.

13. The CCS was excavated into sediments and limestone that are part of the surficial Biscayne Aquifer. The CCS is not lined, so there is no physical barrier that prevents water in the canals from entering the Biscayne Aquifer ground water beneath the CCS.

14. Most of the canals comprising the CCS are between three and four feet deep, with an approximately 20-foot-deep canal that formerly was part of the once-through cooling system.

15. A perimeter berm system blocks the CCS from having a direct connection to surface waters, and there are no water control structures, such as culverts, pipes, or pumps, which allow water to be directly discharged from the CCS into offsite surface waters.

16. There are approximately 4.5 billion gallons of water in the CCS, on average. Although some small wastewater streams from the electrical generating units and stormwater are discharged into the CCS, the water in the CCS is comprised of rainfall, cooling water for the electrical generating units, water pumped into the CCS from the Upper Floridan Aquifer, and ground water seepage. Evaporation is the predominant means by which water leaves the CCS, and water from the CCS also seeps into ground water.

17. Evaporation, rainfall, and water inflows from other sources affect the salinity of the water in the CCS canals. As a result of evaporation and periods of low rainfall, the salinity of the water in the CCS has increased over



time. The addition of water from rainfall, ground water seepage, and other sources counteracts the effect of evaporation on salinity in the canals. Thus, the salinity of the water in the canals at any given time is driven by the balance of evaporation, water inflows, and water outflows.

18. The Interceptor Ditch, which is located immediately west of the CCS and immediately east of the L-31E Canal, was constructed to create a hydraulic barrier between the CCS and the L-31E Canal and lands west of the L-31E Canal.

### III. Permitting History of Turkey Point and the CCS

19. The Turkey Point electrical generating facility was constructed in the 1960s. As originally constructed, Turkey Point had a once-through cooling water system through which heated cooling water was directly discharged into Biscayne Bay.

20. Pursuant to a 1971 Consent Decree between FPL and the U.S. Department of Justice, FPL constructed the CCS to alleviate the adverse environmental effects of the direct discharge of heated cooling water into Biscayne Bay.

21. When the CCS was designed, the U.S. Atomic Energy Commission prepared an Environmental Impact Statement ("EIS"), which recognized that water from the CCS could seep, via ground water, into Biscayne Bay. The EIS concluded that the effect of this seepage would be insignificant and was outweighed by the benefit of stopping direct discharges of heated water from Turkey Point into Biscayne Bay.

22. In order to construct the CCS, FPL obtained numerous permits and approvals from multiple regulatory agencies, including the U.S. Atomic Energy Commission, EPA, the U.S. Army Corps of Engineers, the Florida Water Pollution Control Board, and Miami-Dade County, Florida.

23. FPL has operated the CCS, consistent with its original design, since 1973. EPA issued NPDES permits for the CCS, and these permits periodically were renewed. Additionally, since approximately 1982, DEP and

its predecessor agency have issued industrial wastewater permits for the CCS. EPA delegated the NPDES permitting program to DEP in 1995, and since that time, DEP has issued combined IWW/NPDES permits<sup>5</sup> for the CCS. These permits typically have been issued for a five-year period, and renewed for subsequent five-year periods.

24. The existing Permit authorizes discharges of stormwater and industrial wastewater from the electrical generating units through internal outfalls into the CCS. The Permit does not authorize direct discharges from the CCS into surface waters of the state.

25. The Permit authorizes discharges from the CCS into the Class G-III<sup>6</sup> ground water underlying the CCS, provided that these discharges do not cause a violation of the minimum criteria for ground water codified in Florida Administrative Code Rules 62-520.400 and 62-520.430, and do not impair the reasonable and beneficial use of adjacent ground waters or surface waters, in violation of rule 62-520.400.

26. In order to ensure compliance with the Permit, FPL conducts extensive monitoring<sup>7</sup> of a range of water quality parameters in surface water, porewater, and ground water near the CCS; the seagrass, mangroves, and freshwater marshes near the CCS; and numerous environmental parameters, including rainfall, at, and proximate to, the CCS. FPL reports its data to regulatory agencies on a regular basis, and submits annual reports to

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<sup>5</sup> DEP's industrial wastewater regulatory jurisdiction extends to discharges into ground water and surface waters, while the NPDES regulatory jurisdiction extends to point source discharges into navigable surface waters. The combined IWW/NPDES permit issued by DEP covers all of these types of discharges.

<sup>6</sup> As discussed below, Class G-III ground water has a concentration of 10,000 milligrams per liter ("mg/L") or greater of total dissolved solids.

<sup>7</sup> As an example of the extent of FPL's monitoring associated with the operation of Turkey Point and the CCS, FPL collected over 4.5 million data points through its monitoring network for the period from June 1, 2019, to May 31, 2020.



SFWMD, addressing all data collected over the previous year. FPL also provides reports to the Miami-Dade County Department of Environmental Resource Management ("DERM") regarding its remediation program at the CCS, and provides access to its monitoring data to other regulatory agencies, including DEP.

27. The most recent version of the Permit was issued in 2005.

#### IV. The Biscayne Aquifer

28. As stated above, the CCS is excavated into the sediments and limestone of the surficial portion of the Biscayne Aquifer.

29. The Biscayne Aquifer is a water-bearing formation consisting of porous, highly permeable limestone that underlies Broward County, Miami-Dade County, parts of Palm Beach County, and parts of Monroe County.

30. The surficial portion of the Biscayne Aquifer is connected to surface waters, including Biscayne Bay, and to the CCS and other canals in south Florida that are excavated to sufficient depth to connect to the surficial aquifer.

31. The Biscayne Aquifer contains both saltwater and fresh water. Saltwater enters the aquifer from Biscayne Bay, canals containing saltwater, and saltwater wetlands. Fresh water enters the aquifer from rainfall, canals containing fresh water, and freshwater wetlands.

32. The transmissivity of the Biscayne Aquifer varies. Generally, the horizontal transmissivity is greater than the vertical transmissivity in the aquifer, and the horizontal transmissivity varies between different layers of the aquifer.

33. In the vicinity of the CCS, the shallowest portions of the aquifer, from land surface to approximately 20 feet below land surface, are less transmissive than some deeper portions of the aquifer.

34. Beneath this shallow portion of the aquifer, there are three more transmissive, preferential flow zones through which water flows more readily: the Upper Flow Zone, located approximately 25 to 35 feet below

ground surface; the Lower Flow Zone, located approximately 50 to 65 feet below ground surface; and the Deep Flow Zone, located approximately 70 to 80 feet below ground surface.

35. Portions of the Biscayne Aquifer serve as the primary drinking water source for portions of southern Florida, including Miami-Dade and Monroe counties. The FKAA operates a potable water wellfield, located approximately 9.5 miles west of the CCS in Florida City, that withdraws water from the Biscayne Aquifer.

36. The portions of the Biscayne Aquifer immediately west of the CCS are not used as a potable water source, and there are no drinking water wells in the portion of the Biscayne Aquifer where hypersaline water is present.

37. For purposes of these proceedings, the saltwater interface is the location in the aquifer at which Class G-II and G-III ground water intersect. The saltwater interface is not a vertical line, but, rather, is wedge-shaped, with the lighter, more buoyant fresh water above, and the denser, heavier saltwater below.

38. The location of the saltwater interface changes, depending on hydrologic conditions. Before the substantial drainage of, and development in, south Florida, the saltwater interface was located at the edge of Biscayne Bay in many locations. As a result of the construction and operation of drainage canals, wellfields, water withdrawals, mining activities, and land use practices throughout the 20th century, the saltwater interface has moved inland. By 1955, the saltwater interface already was located west of where the CCS is now located.

39. Thus, by the time the CCS was constructed and became operational in 1973, saline water already had intruded inland along the coast, and saline ground water existed beneath the CCS site and in the deeper portions of the aquifer west of the current location of the CCS. Thus, portions of the

Biscayne Aquifer located west of the CCS did not meet Class G-II<sup>8</sup> ground water quality standards, even before construction and operation of the CCS.

40. Additionally, due to sea level rise and other factors, the saltwater interface in the Biscayne Aquifer generally is continuing to move inland in southeast Florida.

#### V. Interaction of the CCS with Ground Water

41. The ground water under the CCS westward to the L-31E Canal is classified as Class G-III ground water, which is non-potable ground water.

42. At the time the CCS was constructed and began operation, the water in the canals had an average salinity of approximately 34 practical salinity units ("PSU"), close to that of Biscayne Bay. Over time, the salinity of the water in the CCS has increased, primarily due to evaporation, which leaves salt behind.

43. By the early 2000s, the salinity level of the water in the CCS had significantly increased. By 2015, the average salinity of the water in the CCS averaged 50 to 60 PSU and peaked at close to 90 PSU.

44. As the water in the CCS became more saline,<sup>9</sup> it became more dense than the water in the portion of the aquifer immediately underlying the CCS. As a result, the saline water sank out of the CCS into the underlying ground water until it reached the bottom of the aquifer, approximately 80 feet below land surface. From there, the saline water spread horizontally, primarily westward due to the hydraulic head pressure of seawater to the east.

45. By 2013, a body of hypersaline ground water (referred to, for purposes of these proceedings, as the "hypersaline plume") extended 1.5 to 2.5 miles west of the CCS. Due to its greater density, the hypersaline plume is located

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<sup>8</sup> As discussed below, Class G-II ground water is potable ground water having a total dissolved solids concentration of less than 10,000 mg/L.

<sup>9</sup> This term generally means that the water has a salinity level greater than seawater.

at the bottom of the Biscayne Aquifer, with less saline water immediately above it, and fresher water floating near the surface of the aquifer.

46. Over the approximately 48 years of operation of the CCS, the saltwater interface has moved approximately one to 1.5 miles westward from its location when the CCS was constructed and began operating.

47. To date, the greatest westward extent of the saltwater interface is at a point along the Card Sound Road Canal, west and southwest of the CCS, and near the Florida City Canal, north of the CCS.

#### VI. Administrative Enforcement and Remedial Measures

48. Pursuant to the Certification for Turkey Point, starting in 2009, FPL implemented an extensive surface water and ground water monitoring program to determine the vertical and horizontal extent of saline CCS water and its effects on existing and projected surface water and ground water resources. Specifically, FPL installed an extensive water quality monitoring network consisting of 42 ground water monitoring wells and 33 surface water monitoring stations. Each ground water monitoring well consisted of a station comprised of a cluster of three wells: a deep well, an intermediate well, and a shallow well. The ground water monitoring wells and surface water monitoring stations measured and recorded salinity, specific conductance, and other parameters, at established frequencies. As a result of this monitoring program, FPL has collected a substantial amount of data, which has been analyzed and submitted in reports to various regulatory agencies and entities, including SFWMD and DEP.

49. Based on the monitoring data and analysis, in 2013, SFWMD issued a letter to FPL, concluding that the Interceptor Ditch was effective in restricting the westward movement of saline water from the CCS in the upper portion of the aquifer, but was not effective in restricting the movement of saline water from the CCS into the deeper portions of the Aquifer. SFWMD concluded that, as a result of the operation of the CCS, saline water has moved westward of the L-31E Canal.

50. Also based on the monitoring data and analysis, and in consultation with SFWMD and other regulatory entities, DEP determined that the westward migration of saline water from the CCS needed to be abated to prevent further harm to waters of the state, and that, in order to do so, the water in the CCS needed to be freshened to a salinity of approximately 34 PSU.

51. In December 2014, DEP issued Administrative Order 14-0741, directing FPL to develop a CCS salinity management plan to reduce the salinity of the CCS, in order to abate the westward movement of saline CCS water into Class G-II ground water. The Administrative Order was challenged by third parties, and, following an administrative hearing in DOAH Case Nos. 15-1746 and 15-1747, DEP issued a Final Order on April 21, 2016, approving the Administrative Order and the remedial measures established therein.<sup>10</sup>

52. On April 1, 2016, the Siting Board issued a Final Order in OGC Case No. 14-051, DOAH Case No. 15-1559EPP,<sup>11</sup> approving the modification of the Certification, to authorize FPL to construct and operate two wells to withdraw up to 14 million gallons per day ("mgd") of water from the Upper Floridan Aquifer and discharge that water into the CCS as part of the salinity management plan to lower the salinity of the water in the CCS.

53. On April 25, 2016, DEP issued a Warning Letter to FPL, stating that water quality sampling indicated that water originating in the CCS was reaching tidal surface waters connected to Biscayne Bay, possibly violating surface water quality standards and ground water quality standards.

54. Also on April 25, 2016, DEP issued a Notice of Violation ("NOV"), incorporating findings in DEP's Final Order in DOAH Case Nos. 15-1746

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<sup>10</sup> DEP entered a Final Order approving the Administrative Order, which was appealed by one of the parties, Atlantic Civil, Inc. ("ACI") in DCA Case No. 3D16-978. ACI ultimately dismissed its appeal.

<sup>11</sup> ACI and other third parties unsuccessfully challenged the modification of the Certification, authorizing the construction and operation of these wells to freshen the CCS.

and 15-1747. These findings were that the CCS is the major contributing cause of the continued westward movement of the saltwater interface; that the discharge of saline CCS water into ground water contributes to saltwater intrusion; and that saltwater intrusion into the aquifer west of the CCS is impairing the reasonable and beneficial use of adjacent G-II ground water, in violation of rule 62-520.400. Among other things, the NOV directed FPL to consult with DEP to determine appropriate abatement and remediation measures to address the violations identified in the NOV.

55. In May 2016, FPL submitted to DEP nutrient monitoring results from surface water quality monitoring stations in deep channels in Biscayne Bay adjacent to the CCS. Based on the surface water quality monitoring results, DEP determined, and found in the Consent Order, that no violations of surface water quality standards in Biscayne Bay had occurred due to operation of the CCS.

56. On June 20, 2016, FPL and DEP executed a Consent Order to address the ground water quality violations identified in the NOV and to preemptively address future surface water quality violations which were the subject of the Warning Letter.

57. The Consent Order was not timely challenged, so became final agency action and is in effect.

58. To address ground water violations identified in the NOV, and to help ensure that surface water quality standards are not violated in the future, the Consent Order established three objectives: (1) ceasing discharges from the CCS that impair the reasonable and beneficial use of the G-II ground water to the west of the CCS, in violation of rule 62-520.400; (2) preventing releases of ground water from the CCS into surface waters connected to Biscayne Bay that exceed surface water quality standards in Biscayne Bay; and (3) providing mitigation for environmental impacts related to the historic operation of the CCS.



59. The Consent Order identified specific measures for achieving these objectives; established standards for determining compliance with the objectives and measures; and established timeframes for implementing the measures to accomplish the objectives.

60. To achieve the first objective, the Consent Order directed FPL to engage in freshening activities by pumping essentially fresh water from the Floridan Aquifer into the CCS, as authorized under the modification to the Certification<sup>12</sup> to reduce the salinity of the water in the CCS to an average annual salinity of 34 PSU. To implement this remedial measure, FPL installed five wells, having a collective pumping capacity of 14 mgd, to pump brackish water from the Floridan Aquifer into the CCS to reduce the overall salinity of the water in the CCS. The Consent Order established a specific schedule for meeting this target salinity level, and, if necessary, requires FPL to submit a plan containing additional measures to meet that salinity level. FPL began implementing these freshening measures in November 2016, and the CCS had reached a salinity of 34 PSU by November 2020; however, FPL did not achieve the 34 PSU target on an average annual basis because there was less rainfall than in the ten-year period of record on which the freshening plan was based. As previously noted, FPL has proposed additional freshening measures, as required by the Consent Order; however, that proposal, which would be addressed by modifying the Certification, is in the early stages of review and addressed in, or authorized by, the Renewal Permit.<sup>13</sup>

61. FPL also has implemented a thermal efficiency plan, as required by the Consent Order, to maintain the water in the CCS at a lower temperature in order to reduce evaporation.

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<sup>12</sup> Neither the freshening activity authorized in the Certification nor the freshening activity recently proposed by FPL—which, if approved, would be authorized by a modification of the Certification—are authorized by the Renewal Permit. Therefore, these activities are not within the scope of these proceedings.

<sup>13</sup> Refer to notes 3 and 12, above.

62. Another key component of the Consent Order aimed at accomplishing the first objective was to require FPL to halt the migration of the hypersaline plume of water seeping from the CCS within three years of the commencement (i.e., May 15, 2018) of the remediation measures, and to reduce the westward extent of the hypersaline plume back to the L-31E Canal within ten years of commencement of the remediation measures.<sup>14</sup>

63. To withdraw the hypersaline plume eastward to the L-31E Canal, FPL has installed a Recovery Well System ("RWS"), consisting of ten wells located along the northern and western boundary of the CCS. These wells, which are cased to the Lower Flow Zone of the Biscayne Aquifer, collectively withdraw hypersaline water from the bottom hypersaline plume at a rate of 15 mgd. The hypersaline water removed by the wells is injected, by deep underground injection control wells, into the Floridan Aquifer Boulder Zone, a deep isolated geological formation which does not contain potable water and is used for the disposal of domestic and industrial wastewater.

64. As further discussed below, operation of the RWS creates a hydrologic barrier to prevent water beneath the CCS from flowing west of the boundary of the CCS, and also functions as a remediation measure by drawing hypersaline water that previously had migrated westward from the CCS, back to the L-31E Canal.

65. The Consent Order provides that the westward migration of the hypersaline plume will be deemed halted when the third Continuous Surface Electromagnetic Mapping ("CSEM") survey shows no net increase in hypersaline water volume and no net westward movement in the leading edge of the hypersaline plume. As stated above, the RWS became operational on May 15, 2018.

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<sup>14</sup> The rate of discharge of water from the CCS into ground water is directly related to the salinity level of the water in the CCS, with more saline water discharging at a greater rate than less saline water. Reducing the salinity of water in the CCS will reduce the rate of discharge into ground water, and also will reduce the salinity gradient that pushes ground water westward from the CCS. Once the water in the CCS no longer is hypersaline, there will be no further discharge of hypersaline water into the aquifer.



66. To accomplish the second objective of the Consent Order, FPL filled in the Turtle Point Canal and the Barge Basin Canal in order to reduce the potential for CCS-origin ground water to flow or seep into surface waters at these locations.

67. In addition, FPL has implemented a nutrient management plan to reduce nutrient concentrations in the water in the CCS and has undertaken other measures, further discussed below, to mitigate for the impacts of the hypersaline plume.

#### VII. The Renewal Permit

68. On or about October 22, 2009, FPL timely filed the application (hereafter, "Application") to renew Permit No. FL0001562-012-IW1N with DEP, requesting authorization for the continued operation of the CCS as a wastewater treatment and effluent disposal facility for the Turkey Point electrical generating facility.

69. Because FPL timely filed the Application,<sup>15</sup> the validity period of the Permit was administratively extended, so that the 2005 version of the Permit is the current operative regulatory authorization for the CCS. Pursuant to rule 62-620.335(3), the 2005 version of the Permit remains in effect until a final order is issued in these proceedings, approving or denying the Renewal Permit.

70. DEP reviewed the Application and supporting information and determined, based on those submittals; an analysis of FPL's Annual Remedial Action Annual Status Reports ("RAASRs"); the Electronic Document Management System ("EDMS," also known as "OCULUS") database for the Turkey Point facility; and data and information provided by third parties and other regulatory agencies, including SFWMD and DERM, that FPL provided reasonable assurance that it would meet all applicable requirements. In addition, consistent with federal and state rule

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<sup>15</sup> The Application was filed at least 180 days before expiration of the Permit. *See* Fla. Admin. Code r. 62-620.335(1), (3).

requirements, DEP coordinated with EPA regarding renewal of the Permit; EPA did not have any objections to issuance of the Renewal Permit,

71. DEP complied with all applicable permit application review process requirements, pursuant to rule 62-620.510. On January 2, 2019, DEP issued a Notice of Draft Permit, which was published in the Miami Herald on January 15, 2019. A public notice announcing a public meeting on the Draft Permit was published in the Miami Herald on April 4, 2019, and a public meeting on the Draft Permit was held in Homestead, Florida, on May 7, 2019. Additionally, DEP received public comment through May 21, 2019. Pursuant to the comments received and input at the public meeting, DEP made approximately 28 revisions to the Draft Permit.

72. On April 20, 2020, DEP issued the Notice of Intent to Issue the Renewal Permit. The Notice of Intent was published in the Miami Herald on April 23, 2020, Petitioners and Intervenor received written notice on April 22, 2020. After receiving an extension of time to challenge the proposed issuance of the Renewal Permit, on June 4, 2020, FKAA and FKFGA each timely filed a separate petition for administrative hearing, challenging the proposed issuance of the Renewal Permit.

73. The Renewal Permit authorizes FPL to continue to operate the CCS as a wastewater treatment and effluent disposal facility; establishes numeric and narrative limits for constituents in the water leaving the CCS; establishes extensive surface water, ground water, and porewater monitoring requirements, and establishes requirements regarding operation of the CCS.

74. There are no new surface water or ground water discharges authorized by the Renewal Permit.

75. Like the Permit issued in 2005, the Renewal Permit is a "no discharge" NPDES permit, in that it does not authorize a direct point source discharge to surface waters. Consistent with the 1972 EIS prepared for the construction of the CCS, the Renewal Permit continues to authorize seepage of CCS water into surface waters, provided that such seepage does not cause or contribute

to a violation of applicable surface water quality standards and criteria established in Florida Administrative Code Chapter 62-302 and does not impair the designated use of contiguous surface waters.

76. The Renewal Permit also continues to authorize the diffuse discharge of CCS water into Class G-III ground water, provided such discharge meets the water quality standards in rules 62-520.400, 62-520.420, and 62-430 applicable to Class G-III ground water and does not impair the reasonable and beneficial use of adjacent ground waters. The Renewal Permit establishes a compliance schedule for meeting this condition that is consistent with the timeframes set forth in the Consent Order for halting the westward migration of the hypersaline plume of water from the CCS and retracting the hypersaline plume back to the L-31E Canal.<sup>16</sup>

77. Specifically, Renewal Permit paragraphs I.1. and VI.8 through VI.10 require that the westward migration of the hypersaline plume from the CCS be halted within three years of commencement of the remedial measures established in the Consent Order, and that the hypersaline plume be retracted back to the L-31E Canal within ten years of commencement of those remedial measures. Compliance with these requirements is determined by CSEM surveys. As stated above, the remedial measures were commenced on May 15, 2018, so the westward migration of the hypersaline plume must be halted by May 16, 2021, and the hypersaline plume must be retracted back to the L-31E Canal by May 16, 2028.<sup>17</sup>

78. As further discussed below, the competent substantial evidence establishes that by implementing the RWS, FPL already is meeting the requirement to halt the westward migration of the hypersaline plume from

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<sup>16</sup> The Renewal Permit refers to the Consent Order, and imposes a compliance schedule for halting and retracting the hypersaline plume that is consistent with specified provisions of the Consent Order, but it does not incorporate the Consent Order.

<sup>17</sup> FPL's progress in meeting these compliance milestones, in order to demonstrate reasonable assurance that it will comply with the Renewal Permit's ground water-related conditions, is discussed below.

the CCS, and is on track to meet the requirement to withdraw the hypersaline plume back to the L-31E Canal within the timeframe set forth in the Renewal Permit.

79. The Renewal Permit provides that if the compliance milestone established in paragraph VI.9, regarding halting the westward migration of the hypersaline plume, is not met, as determined by the CSEM surveys, FPL must develop and submit a plan for halting the westward migration of the hypersaline plume with the compliance schedule established in the Renewal Permit.

80. The Renewal Permit also provides that at the conclusion of the fifth year of implementing the remedial measures—i.e., May 16, 2023—FPL must evaluate and report to DEP regarding the effectiveness of the remedial measures in retracting the hypersaline plume back to the L-31E Canal by May 16, 2028. If FPL's evaluation shows that such measures are not sufficient to achieve the hypersaline plume ten-year retraction requirement, FPL must provide an alternate plan for DEP review and approval to achieve this requirement.

81. The Renewal Permit authorizes the continued operation of internal outfalls that discharge plant process water and stormwater to the CCS.

82. The Renewal Permit imposes additional protective measures in order to provide reasonable assurance that surface and ground water quality standards will be met by operation of the CCS.

83. Specifically, these measures include a new ground water monitoring group, Ground Water Monitoring Group G-001, which consists of cluster wells that sample ground water at shallow, intermediate, and deep depths, at 20 specified locations in the relative vicinity of the CCS—specifically, west of the L-31E Canal; west of the south-central portion of the CCS; south of the CCS; Southwest Model Lands; Northwest Model Lands; west-central Model Lands; West of Card Sound Canal Road; Biscayne Bay channel entrance to the Barge Basin; Biscayne Bay east of the CCS; north of the CCS; in the

central portion of the CCS; Biscayne Bay southeast of the CCS; the northwest corner of the CCS; east of the south-central portion of the CCS; east of the L-31E Canal, adjacent to the S-20 water control structure; Model Lands west of the L-3 well; Model Lands west of the Florida City Canal—and one deep well adjacent to the City of Homestead baseball complex; the L-3 well sampling at two depths; the L-5 well sampling at two depths; the G-28 well sampling at two depths; and the G-21 well sampling at two depths.

84. These ground water monitoring wells will sample and monitor numerous ground water parameters, including specific conductance; salinity; total dissolved solids ("TDS"); chloride; sodium; nitrogen species, including total ammonia, ammonium ion, nitrate plus nitrite, and total Kjeldahl nitrogen ("TKN"); phosphorus; orthophosphate; magnesium; sulfate; sulfide; and tritium. These sampled parameters include those that Petitioners have raised in these consolidated challenges as exceeding applicable ground water and surface water standards as a result of operation of the CCS.

85. Ground water monitoring wells TPGW-1, 4, 5, 6, 17, 18, and 19 are specifically designated for use in determining compliance with the permit requirement to retract the hypersaline plume.

86. In addition, the Renewal Permit authorizes a new series of surface water monitoring sites, Surface Water Monitoring Group D-01A, at locations in Biscayne Bay, the L-31E Canal, the S-20 Canal, and the Card Sound Canal. Samples collected at these sites will be analyzed for a range of parameters, including TDS; salinity; specific conductance; nitrogen species, including total ammonia, ionized and unionized ammonium, nitrate plus nitrite, and TKN; phosphate; phosphorus; chlorides; chlorophyll; magnesium; sulfate; sodium; and tritium. These sampled parameters include those that Petitioners have raised in these consolidate challenges as exceeding applicable surface water standards as a result of operation of the CCS.



87. The Renewal Permit also authorizes a new series of porewater<sup>18</sup> monitoring sites, Porewater Monitoring Group D-02A, in coastal marine wetlands located north, east, and south of the CCS. Samples collected at these sites will be analyzed for a range of parameters, including TDS; salinity; specific conductance; nitrogen species, including total ammonia, ionized and unionized ammonium, nitrate plus nitrite, and TKN; phosphate; phosphorus; chlorides; chlorophyll; magnesium; sulfate; sodium; and tritium. These sampled parameters include those that Petitioners have raised in these consolidate challenges as exceeding applicable ground water and surface water standards as a result of operation of the CCS.

88. Additionally, the Renewal Permit requires monitoring, at several specified monitoring locations in the CCS, of a range of parameters in non-process wastewater and stormwater discharges into the CCS through and existing internal outfall. The parameters to be sampled include total suspended solids; biochemical oxygen demand; dissolved oxygen; pH; salinity; specific conductance; TDS; nitrogen species, including total ammonia, ionized and unionized ammonium, nitrate plus nitrite, and TKN; orthophosphate; phosphorus; chlorides; chlorophyll; magnesium; sulfate; sodium; and tritium.

89. The Renewal Permit also requires FPL to develop and implement a detailed Best Management Practices ("BMPs") Plan, the purpose of which is to prevent or minimize the generation, and potential for release, of pollutants from operation of the Turkey Point facility that would be discharged into the CCS.

90. As discussed above, after FPL submitted the Application for the Renewal Permit in 2009, and before DEP issued the Notice of Intent to issue the Renewal Permit, DEP determined that the discharge of water from the

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<sup>18</sup> Porewater is the free water present in sediment. It is water within the interstitial distance between ground water, where ground water standards apply, and surface water, where surface water quality standards apply. Porewater sampling and analysis is a useful tool in determining whether constituents in ground water are seeping into surface water.

CCS into ground water was impairing the reasonable and beneficial use of adjacent Class G-II ground water, and issued the NOV.

91. FPL and DEP entered into the Consent Order to resolve that violation, as well as to ensure that water seeping from the CCS into ground water would not cause violations of surface water quality standards. In implementing the remediation measures required under the Consent Order,<sup>19</sup> FPL constructed, and is operating, the RWS. As further discussed below, the RWS already has halted the westward migration of the hypersaline plume, so that the operation of the CCS under the Renewal Permit will not violate applicable ground water quality standards.

92. Thus, when DEP issued the Notice of Intent, FPL no longer was in violation of any conditions of the Permit or applicable ground water or surface water quality standards; accordingly, DEP determined that the Renewal Permit should not be denied on the basis of a violation of any permit condition.

#### VIII. Challenge to the Renewal Permit

93. As discussed above, on June 4, 2020, Petitioners FKAA and FKFGA each filed a petition, challenging DEP's proposed issuance of the Renewal Permit. These challenges were referred to DOAH and respectively assigned Case Nos. 20-2967 and 20-2968.

94. As noted above, on August 24, 2020, Monroe County filed its unopposed Motion to Intervene, challenging the proposed issuance of the Renewal Permit. Monroe County became a party to these consolidated proceedings on August 26, 2020.

95. At their core, the Administrative Petitions and Motion to Intervene allege, in part, that continued operation of the CCS will result in the

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<sup>19</sup> The specific purpose of the Consent Order was to address and resolve the ground water quality standard violation that had resulted from the discharge of hypersaline water from the CCS into ground water.

continued westward migration of the hypersaline plume, threatening drinking water and other ground water-dependent natural resources.<sup>20</sup>

96. The Administrative Petitions and Motion to Intervene also allege that the operational changes authorized by the Renewal Permit will increase nutrient loading, including nitrogen and phosphorus, in Biscayne Bay, thereby disrupting populations of aquatic flora and fauna, in violation of surface water quality standards.

97. The Administrative Petitions and Motion to Intervene allege that FPL has not provided the necessary reasonable assurance that the continued operation of the CCS, through issuance of the Renewal Permit, meets the applicable statutory and rule requirements and standards.

98. Specifically, the Administrative Petitions and Motion to Intervene allege that operation of the CCS, including discharges to ground waters and surface waters, as authorized in the Renewal Permit: (1) will impair designated uses of adjacent surface waters and ground waters, in violation of applicable surface water and ground water rules in chapters 62-302 and 62-520, respectively; (2) will cause or contribute to violations of the surface water quality standards in chapter 62-302; (3) does not adequately protect against discharges of nuisance, acutely toxic, carcinogenic, mutagenic, teratogenic, and dangerous compounds, as required by rules 62-520.400 and 62-520.430; (4) will result in discharges into ground water that will impair contiguous surface waters, in violation of rule 62-520.310(2); (5) will cause a violation of the estuary specific numeric nutrient criteria applicable

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<sup>20</sup> The Petitions also allege that adding water to freshen the CCS will increase the seepage rate of hypersaline water, resulting in maintenance or increase of the westward movement of the hypersaline plume, which will, in turn, result in the alleged harm to drinking water and natural resources. However, as discussed above, the Renewal Permit does not authorize the addition of freshening water to the CCS; that activity is required under the Consent Order—which was not challenged and is in effect—and was authorized by modification of the Certification, which also is in effect, after being unsuccessfully challenged. Therefore, any effects of freshening activities that already have been authorized, or any future freshening that may be authorized pursuant to further modification of the Certification, are not at issue in this proceeding.



to Biscayne Bay which are established in rule 62-302.532(1)(h); (6) will fail to maintain and protect Biscayne Bay National Preserve, as required by rule 62-302.200(27), by virtue of being designated an Outstanding Florida Water ("OFW") and an Outstanding Natural Resource Water ("ONRW")<sup>21</sup>; (7) will fail to protect Biscayne Bay, as an OFW, pursuant to rule 62-302.700(9)(h)5. and 6.; (8) is inconsistent with the anti-degradation policy set forth in rules 62-302.300, 62-302.700, and 62-4.242(1); (9) has not been shown to be necessary or desirable under federal standards or under circumstances which are clearly in the public interest, if it is shown that the discharges from the CCS will result in water quality degradation; (10) is not in the public interest because: it is not important and beneficial to the public health, safety, or welfare, taking into account policies in rules 62-302.300 and 62-302.700; it will adversely affect the conservation of fish and wildlife, including threatened or endangered species, or their habitats; it will adversely affect fishing or water-based recreational values or marine productivity in the vicinity of the proposed discharge; and is not consistent with any applicable surface water improvement and management plan that has been adopted by a water management district and approved by DEP; (11) should be denied on the basis of prior permit violations, pursuant to rules 62-4.070(5) and 62-302.320(7); (12) constitutes a menace to public health; creates a public nuisance; is harmful to wildlife and to fish and other aquatic life; and impairs domestic, agricultural, industrial, recreational, and other beneficial uses of air and water, in violation of section 403.021(1) and implementing rules; (13) is inconsistent with the State of Florida's declared public policy to conserve the waters of the state and to protect, maintain, and improve the quality thereof for public water supplies; the propagation of wildlife, fish, and other aquatic life; and domestic, agricultural, industrial,

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<sup>21</sup> Biscayne Bay has been designated as an ONRW by rule 62-302.700(10)(a); however, that designation is not in effect, and was not in effect at the time of the final hearing, because the Legislature has not enacted legislation specifically authorizing protection and maintenance of ONRWs to the extent required by federal regulation.

recreational, and other beneficial uses; and to provide that no wastes be discharged into any waters of the state without first being given the degree of treatment necessary to protect the beneficial uses of such water, as provided in section 403.021(2) and implementing rules; (14) is inconsistent with the State of Florida's declared public policy, in section 403.012(5), that the prevention, abatement, and control of pollution of the air and waters of this state are affected with a public interest; (15) is inconsistent with rule 62-4.070(1) requirement that a permit shall be issued to the applicant upon such conditions as DEP may direct, only if the applicant affirmatively provides DEP with reasonable assurance, based on plans, test results, installation of pollution control equipment, or other information, that the construction, expansion, modification, operation, or activity of the installation will not discharge, emit, or cause pollution in contravention of DEP standards or rules, and the corresponding requirement, in rule 62-4.070(2), that DEP deny any application where reasonable assurances are not provided; (16) is inconsistent with the requirement in rule 62-4.242(2)(a) that DEP not issue a permit or water quality certification for any proposed activity or discharge in an OFW, or which significantly degrades, either alone or in combination with other stationary installations, any OFWs, unless the applicant affirmatively demonstrates that the proposed activity or discharge is clearly in the public interest, and either a DEP permit for the activity has been issued or an application for such permit was complete on the effective date of the OFW designation, or the existing ambient water quality within OFWs will not be lowered as a result of the proposed activity or discharge, except on a temporary basis during construction for a period not to exceed 30 days; that lowered water quality would occur only within a restricted mixing zone approved by DEP; and that water quality criteria would not be violated outside the mixing zone; (17) will violate the prohibition in rule 62-4.242(3) that all discharges or activities that may cause degradation of water quality in ONRWs are prohibited, other than discharges that are exempted by

statute from DEP permitting or regulation, or discharges or activities described in rules 62-4.242(2)(a)1.b. or c., and 62-4.242(2)(a)2.b.; (18) will violate the anti-degradation policy in rule 62-302.300(14) through (16),<sup>22</sup> that existing uses and the level of water quality necessary to protect the existing uses shall be fully maintained and protected; that pollution which causes or contributes to new violations of water quality standards or to continuation of existing violations is harmful to the waters of this state and shall not be allowed and that waters having water quality below the criteria established for them shall be protected and enhanced, except that DEP shall not strive to abate natural conditions; that if DEP finds that a new or existing discharge will reduce the quality of the receiving waters below the classification established for them or violate any DEP rule or standard, it shall refuse to permit the discharge; that if an applicant for either a general or generic permit or renewal of an existing permit for which no expansion of discharge is proposed is not required to show that any degradation from the discharge is necessary or desirable under federal standards and under circumstances which are clearly in the public interest; and that if DEP determines that the applicant has caused degradation of water quality over and above that allowed by previous permits issued to the applicant, then the applicant shall demonstrate that this lowering of water quality is necessary or desirable under federal standards, or under circumstances which are clearly in the public interest and are limited to cases where it has been demonstrated that degradation of water quality is occurring due to the discharge; (19) will violate the requirement in rule 62-302.500(1)(a)6. and (1)(b) that surface waters remain free from man-induced non-thermal components of discharges which post a serious danger to the public health, safety, and welfare, and/or which produce conditions so as to create a nuisance; (20) will violate the requirement in rule 62-520.400(1)(f) that the permitted discharge from the

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<sup>22</sup> The petitions also allege violations of rule 62-302.300(18)(a) and (b), which have not been specifically cited.

CCS shall not impair the reasonable and beneficial use of adjacent waters beyond the facility boundary; (21) will violate the requirement in rule 62-520.420 that water quality standards for Class G-II and Class G-III ground water shall not be violated; (22) will violate the requirement in rule 62-520.430 that water quality standards for Class G-III ground water shall not be violated; (23) will violate the requirement in rule 62-620.300(5) that the permitted activity is operated consistent with the proposed permit conditions; (24) will violate the requirement in rule 62-620.320(1) that a permit shall only be issued if the applicant affirmatively provides DEP with reasonable assurance, based on a preliminary design report, plans, test results, installation of pollution control equipment, or other information, that the construction, modification, or operation of the wastewater facility or activity will not discharge or cause pollution in contravention of chapter 403 and applicable DEP rules; and (25) will violate the requirement in rule 62-620.320(9) that the permit conditions provide for compliance with chapter 403 and applicable DEP rules.

#### IX. Effect of the CCS on Offsite Surface Waters

##### A. Potential for Seepage of CCS Water into Offsite Surface Waters

99. As previously discussed, there is no direct surface water connection between the canals and water in the CCS and surface waters, including Biscayne Bay. The competent substantial evidence establishes that the berm system, as constructed, creates a relatively impermeable barrier to the direct discharge of CCS water into Biscayne Bay. Moreover, in any event, any net surface flow that could exist between the CCS and Biscayne Bay would predominantly be from east to west—i.e., from Biscayne Bay toward the CCS.

100. Also, as previously discussed, when the CCS was constructed and became operational in the early 1970s, the EIS recognized that there was the potential for some indirect discharge of CCS water into surface waters, including Biscayne Bay, via seepage of CCS water into the ground water

immediately underlying the CCS and seepage of that ground water into surface water.

101. In order for water in the CCS to travel through ground water to surface waters, including to Biscayne Bay, three conditions must collectively exist: a pathway that allows the significant flow of water; a hydraulic gradient—i.e., energy potential difference—between the water levels in the CCS and Biscayne Bay; and sufficient time for the water to flow the distance from the CCS to Biscayne Bay, which, in turn, is dependent on the hydraulic conductivity of the geologic unit through which the water flows. If any of these conditions is not present, then water cannot flow from the CCS to Biscayne Bay or other surface waters.

B. The Evidence Does Not Establish that there is Seepage of CCS Water into Biscayne Bay

102. The competent substantial evidence establishes that these conditions do not collectively exist such that there is little, if any, flow or seepage of water from the CCS, via ground water, into Biscayne Bay.

103. As discussed above, the Biscayne Aquifer generally is highly permeable; however, its permeability—and, therefore, its ability to enable significant water flow—varies at different depths and locations. The upper 20 feet of the Biscayne Aquifer is comparatively less permeable than some of the deeper layers in the aquifer. Thus, the upper portion of the Biscayne Aquifer immediately underlying the CCS does not enable any appreciable flow or seepage of ground water containing CCS water into Biscayne Bay. To this point, a comparison of the height of the water in the CCS relative to that in Biscayne Bay shows that the water height in the CCS remains relatively constant, while the water height in Biscayne Bay fluctuates with tidal cycles. This constitutes strong evidence that CCS water does not enter, or have any appreciable exchange with, Biscayne Bay surface waters through a ground water connection.



104. The evidence also does not bear out that CCS water flows into Biscayne Bay through the more permeable preferential flow zones within the Biscayne Aquifer. CCS water may seep into the Upper Flow Zone, which is a layer of the aquifer located approximately 20 to 30 feet below the land surface that acts as a preferential flow zone; however, the competent, substantial, and persuasive evidence establishes that the Upper Flow Zone does not intersect the bottom of Biscayne Bay at any location, so that a pathway does not exist for CCS water which has seeped into the ground water in the Upper Flow Zone to ultimately seep or flow into Biscayne Bay.

105. The competent, substantial, and persuasive evidence also shows that CCS-origin water does not seep, via ground water, into Biscayne Bay through submarine springs. Some small karst depressions, which Petitioners and Intervenor have characterized as caves,<sup>23</sup> exist in the limestone at the bottom of Biscayne Bay east of the CCS. The competent, substantial, and persuasive evidence establishes that these depressions are not deep enough to intersect the Upper Flow Zone of the Biscayne Aquifer.

106. That CCS water does not seep into Biscayne Bay via these karst depressions is borne out by tritium data from water samples collected at the bottom of the depressions, showing that very little of the water at the bottom of the depressions is CCS-origin water, and that to the extent CCS-origin water is present in the depressions, it can be explained entirely by atmospheric deposition.

107. Tritium is a mildly radioactive isotope of hydrogen that is naturally present in the upper atmosphere and waters distal from the Turkey Point facility at average levels of approximately 6 picocuries per liter ("pCi/L").

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<sup>23</sup> Dr. Mark Stewart, FPL's expert hydrogeologist, testified that "caves" are solution features in limestone large enough for a person to enter, and that the karst depressions at the bottom of Biscayne Bay, immediately east of the CCS, are not large enough to be considered caves.

108. Tritium also is created as a by-product of the nuclear reaction process, and is part of all water in the CCS, at an average level of approximately 6,000 pCi/L.

109. Because tritium is part of the water molecule in all CCS-origin water, it is an excellent tracer for CCS-origin water.

110. The atmospheric background level of tritium in the vicinity of the CCS averages approximately 11.2 pCi/L, due to evaporation of tritium-containing water from the CCS.

111. By comparing tritium levels in surface water and ground water samples collected at, and in the vicinity of, Turkey Point with the natural atmospheric background tritium level, one can ascribe any tritium levels in the samples which exceed the natural background level to CCS-origin water.

112. The level of tritium in water quality monitoring samples taken at the bottom of the karst depressions ranges between approximately 12 and 20 pCi/L, which shows that highly diluted CCS-origin water—i.e., approximately one one-thousandth of the water sample—exists in these depressions.

113. The competent, substantial, and persuasive evidence establishes that if there were any significant groundwater seepage of CCS-origin water, via ground water, into these depressions in Biscayne Bay, the sustained tritium levels in the depressions likely would be comparable to the tritium levels of the water in the CCS. However, nowhere in Biscayne Bay, including at the bottom of these karst depressions, do tritium levels approach the 6,000+ pCi/L tritium levels of CCS-origin water that would exist if there were seepage or flow of CCS water into Biscayne Bay.

114. Surface water samples taken in Biscayne Bay consistently show tritium levels in the range of 11 to 20 pCi/L, which is entirely explained by atmospheric deposition in the form of rainfall or water vapor, rather than by ground water seepage. To this point, Dr. Kip Solomon, FPL's expert on tritium transport in atmospheric and aqueous mediums, persuasively opined



that the overwhelmingly dominant pathway for transport of tritium into Biscayne Bay is via evaporation and atmospheric deposition.

115. This conclusion is supported by the persuasive evidence establishing that neither the karst depressions, nor any other location at the bottom of Biscayne Bay, intersect the Upper Flow Zone or any other deeper preferential flow zones in the Biscayne Aquifer.

116. Additionally, if there were ground water seepage from the CCS into Biscayne Bay, that ground water would enter the bay through the porewater in the sediment at the bottom of the bay. However, porewater sampling in sediment at the bottom of Biscayne Bay consistently shows an average tritium level of approximately 9.3 pCi/L, which is less than the average concentration of tritium in the surface water of Biscayne Bay. This supports the conclusion that tritium likely enters Biscayne Bay at the surface of the water, consistent with an atmospheric deposition source, rather than by ground water seepage from the CCS.

117. Ground water monitoring of tritium levels at various locations under, and in the vicinity of, the CCS, further shows that the predominant movement of tritium-containing water, via seepage from the CCS into ground water, is downward, rather than eastward. These monitoring results further support the conclusion that there is no significant seepage of CCS-origin water, via ground water, into Biscayne Bay.

118. The competent substantial evidence also does not show the existence of a hydraulic gradient that would favor flow of CCS water, via ground water, into Biscayne Bay.

119. The hypersaline water in the CCS is more saline, and, therefore, denser, and heavier per volume, than the seawater in Biscayne Bay, which averages between 34 and 36 PSU. Thus, any hypersaline CCS water in the Upper Flow Zone is generally denser and heavier than the seawater above it, in Biscayne Bay and the uppermost portions of the Biscayne Aquifer. This density and weight difference creates a stable stratification of ground water,

with the denser, heavier hypersaline water sinking to, and present at, the lower levels, and the fresher, lighter seawater floating on the top of the stratified ground water column. This stable stratification prevents any hypersaline water that may move from the CCS eastward under Biscayne Bay from rising in the stratified water column up into the bay.

120. Additionally, as discussed above, the water levels in Biscayne Bay typically are higher than the water levels in the CCS, even at low tide in the bay. The lowest water levels in the CCS are on its eastern side, closest to Biscayne Bay, due to operation of the CCS pumps, which pump the water counterclockwise through the CCS, starting at its northwestern corner and ending at its northeastern corner. The difference in the water levels between the CCS and Biscayne Bay creates a hydraulic gradient that results in a net flow of water from east to west—i.e., toward the CCS, rather than toward Biscayne Bay.

121. FPL's expert hydrogeologist, Stewart, determined that for the period from 2011 to 2018, there was a westward hydraulic gradient, favoring water movement from east to west, 70 to 75 percent of the time, and that in the relatively short period when an eastward gradient existed—in 2015, an outlier period during which the CCS water levels were at historic highs—the duration of that eastward gradient was insufficient to allow CCS-origin water to flow to and reach Biscayne Bay. Thus, the prevailing westward hydraulic gradient significantly limits the potential for CCS-origin water to flow or seep into areas beneath Biscayne Bay or reach surface waters in Biscayne Bay.

122. Additionally, the competent substantial evidence establishes that there is no significant flow of ground water from the CCS into Biscayne Bay via the Turtle Point Canal or Barge Basin Canal. These canals, which are located at the northeast corner of the Turkey Point facility, are remnants of the cooling water pass-through system that existed before construction of the CCS. Pursuant to the Consent Order, FPL filled these canals specifically to reduce the potential for CCS water to flow, via ground water seepage or flow,

into Biscayne Bay. The Turtle Point Canal previously was approximately 20 feet deep, but has been almost completely filled,<sup>24</sup> as required by the Consent Order. The Barge Basin Canal, which provides water access to Turkey Point, previously was approximately 30 feet deep; this canal has been filled, pursuant to the Consent Order, to a depth of approximately nine feet, which is the depth of the channel in Biscayne Bay leading to it.

123. If these canals had constituted a significant source of CCS water discharge into Biscayne Bay before they were filled, a stable, density-stratified, high-salinity and high-tritium layer of water would have filled the canal cuts. However, sampling at the canal sites before they were filled did not indicate the existence of such conditions. This shows that even before the canals were filled, they likely were not a significant source of discharge of CCS-origin water into Biscayne Bay. Moreover, the tritium data collected through water quality monitoring at the Turtle Point and Barge Basin canals shows that tritium levels are very similar to those in the surface water of Biscayne Bay, further indicating that there is no significant flow or seepage of CCS-origin water, via ground water connection through these canals, into Biscayne Bay.

124. In sum, the competent, substantial, and persuasive evidence establishes that there is little, if any, seepage or flow of CCS-origin water into Biscayne Bay.

#### C. The Evidence Does Not Establish that CCS Water Seeps into Offsite Canals

125. Additionally, the competent substantial evidence does not show that CCS-origin water is seeping, via ground water, to offsite canals or surface waters west of the CCS.

126. As discussed above, the Interceptor Ditch is located immediately to the west of the CCS. As previously noted, it was constructed for the purpose

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<sup>24</sup> The Turtle Point Canal also has been plugged with a dam consisting of bentonite clay, which has very low permeability so acts as an effective barrier to water flow or percolation.

of creating a hydraulic barrier between the CCS and the L-31E Canal and lands west of the L-31E Canal. The water level in the Interceptor Canal is maintained at a level that establishes an eastward hydraulic gradient from the L-31E Canal to the CCS, so that shallow surface flow from the CCS to the west is restricted.

127. Tritium analysis of the surface water in the L-31E Canal shows that very little, if any, CCS water is seeping or flowing into the L-31E Canal. The competent substantial evidence further establishes that, since FPL's operation of the RWS beginning in 2018, the hydraulic gradient is toward the wells in the RWS, rendering it highly unlikely that CCS water is seeping or flowing into the L-31E Canal.

128. There are other canals located west and south of the CCS. These include the S-20 Discharge Canal, which is located west and south of the southern end of the CCS, and the Card Sound Road Canal and Sea-Dade Canal, both which are located west and south of the CCS.

129. The same hydrological principles that govern the potential for ground water seepage toward Biscayne Bay govern the potential for ground water seepage to the offsite canals. Specifically, there must be a ground water pathway through which water can readily travel from the CCS to the offsite canals; a hydraulic gradient favoring the movement of water from the CCS toward the offsite canals must exist; and the hydraulic gradient must exist for a sufficient duration to allow water seeping from the CCS to reach the canals.

130. The competent, substantial, and persuasive evidence does not establish that pathway exists for CCS-origin water to seep into the L-31E Canal. The L-31E Canal is approximately 15 to 18 feet deep, so is not deep enough to intersect the Biscayne Aquifer Upper Flow Zone. Additionally, the hydraulic gradient does not favor flow or seepage of ground water from the CCS into the L-31E Canal. As noted above, the water level in the Interceptor Ditch is maintained at a lower water elevation than in the L-31E Canal, so

there is a continual west to east gradient, from the L-31E Canal toward the CCS. Moreover, and importantly, because the RWS has been implemented along the western boundary of the CCS, the hydraulic gradient of ground water is toward the RWS, such that any ground water seeping westward from the CCS is intercepted by the RWS and pumped into the Boulder Zone of the Floridan Aquifer; thus, that water cannot seep into the L-31E Canal.

131. The S-20 Discharge Canal, Card Sound Road Canal, and Sea-Dade Canal are all approximately 18 feet deep—too shallow to intersect the Upper Flow Zone, which would constitute the pathway for CCS-origin water to seep, via ground water, into these canals.

132. Water quality monitoring data in and around the S-20 Discharge Canal, Card Sound Road Canal, and Sea-Dade Canal indicates that little, if any, CCS-origin water reaches these offsite canals via ground water seepage. Additionally, the tritium data does not show significant CCS-origin water seepage or flow, via ground water, into these canals.

133. Water quality data collected in 2015 and 2016 indicates that the Turtle Point Canal and Barge Basin Canal may have intersected the Upper Flow Zone, so that CCS-origin water could have seeped into these canals. However, as discussed above, as required by the Consent Order, these canals have been filled with a bentonite slurry wall down to a depth of approximately 30 feet below land surface, so that they no longer intersect the Upper Flow Zone.

134. In sum, the competent, substantial, and persuasive evidence shows that there is very little, if any, seepage of CCS-origin water, via ground water, into the canals or other surface waters proximate to the Turkey Point facility.

D. The Evidence does not Establish that the CCS Causes Surface Water Quality Violations or Degrades Water Quality in Biscayne Bay

135. Because there is no surface water connection of the CCS to Biscayne Bay, to the extent nutrients—i.e., phosphorus and nitrogen—were to seep or

flow from the CCS into Biscayne Bay, the only mechanism by which these nutrients in CCS water could reach Biscayne Bay would be through seepage of CCS-origin water into ground water, and then up into the bay.

136. Further to this point, dissolved nutrients generally do not travel with water molecules that evaporate. Therefore, unlike tritium, nutrients cannot be atmospherically deposited into Biscayne Bay via water vapor or rain.

137. As discussed above, the competent, substantial, and persuasive evidence establishes that the Upper Flow Zone of the Biscayne Aquifer does not intersect the bottom of Biscayne Bay, so there is no significant pathway for CCS water carrying dissolved nutrients to flow or seep into Biscayne Bay.

138. Additionally, as discussed above, even if a pathway existed for CCS water to flow or seep, via ground water, into Biscayne Bay, the predominant westward hydraulic gradient, which is from Biscayne Bay toward the CCS, significantly limits the potential for CCS-origin water carrying dissolved nutrients to seep or flow, via ground water, into the surface waters of the bay.

139. Also, as discussed above, to the extent a short-lived eastward hydraulic gradient were to exist, the evidence establishes that it is not of sufficient duration to enable CCS water to reach Biscayne Bay surface waters.

140. The competent substantial evidence also establishes that, in any event, the water in the CCS does not contain excessive amounts of phosphorus and nitrogen. As noted above, FPL has implemented a nutrient management plan. Therefore, even if a pathway, hydraulic gradient, and sufficient time for seepage of water from the CCS into Biscayne Bay all existed, the CCS does not constitute a significant potential source of nutrient pollution.

141. Furthermore, because phosphorus is biologically active, and because the movement of nitrogen and phosphorus dissolved in CCS water is retarded by physical and geochemical processes as the water flows through the



sediments comprising the aquifer, to the extent CCS water were to seep, via ground water, into Biscayne Bay, nutrient concentrations in that water would be even less than that of tritium<sup>25</sup>—i.e., less than one-one thousandth of the water sample—so would not constitute a significant source of nutrient input into Biscayne Bay.

i. Compliance with Numeric and Narrative Nutrient Criteria

142. Biscayne Bay is classified as a Class III marine water body, pursuant to rule 62-302.400(1), which means that the specific water quality standards applicable to the water body are established to protect fish consumption, recreation, and the propagation of a healthy, well-balanced population of fish and wildlife.

143. Rule 62-302.530 codifies numeric and narrative surface water quality criteria for a range of constituents. With respect to total phosphorus and total nitrogen, rule 62-302.530(48)(a) and (48)(b) establish narrative criteria.<sup>26</sup>

144. Specifically, rule 62-302.530(48)(a) requires that the discharge of nutrients shall be limited as needed to prevent violations of other standards contained in chapter 62-302, regarding surface water quality standards. The rule further states that man-induced nutrient enrichment (total nitrogen or total phosphorus) shall be considered degradation in relation to the provisions of rules 62-302.300, 62-302.700, and 62-4.242.

145. Additionally, rule 62-302.530(48)(b) provides that "[i]n no case will nutrient concentrations of a body of water be altered so as to cause an imbalance in natural populations of aquatic flora or fauna."

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<sup>25</sup> As discussed above, tritium is an excellent tracer of CCS-origin water because it is part of the water molecule in all CCS-origin water. Because dissolved nitrogen and phosphorus ions are not part of the water molecule, and physically and chemically react with the sediment comprising the aquifer, they would be present in smaller concentrations than tritium in CCS-origin water.

<sup>26</sup> DEP has not adopted generally applicable Class III surface numeric water quality standards for total phosphorus or total nitrogen.



146. Rule 62-302.531, titled Numeric Interpretations of Narrative Nutrient Criteria, requires that the narrative water quality criterion for nutrients set forth in rule 62-302.530(48)(b) be numerically interpreted for nutrients (i.e., total phosphorus and total nitrogen) and nutrient response variables (i.e., chlorophyll-a),<sup>27</sup> in a hierarchical manner. Fla. Admin. Code R. 62-302.531(2). Numeric nutrient criteria generally are developed by determining a threshold level of nutrients in a water body beyond which additional nutrients will cause an imbalance in the flora and fauna.

147. Importantly, the rule provides that when a site-specific interpretation of the narrative criterion in rule 62-302.530(48)(b) has been established, that numeric interpretation will constitute the primary interpretation for that criterion. Fla. Admin. Code R. 62-302.531(2)(a). Thus, pursuant to this rule, for locations for which DEP has adopted site-specific numeric interpretations of the narrative criteria, those site-specific numeric nutrient criteria are used to determine whether there is an exceedance of the narrative nutrient criterion.

148. In rule 62-302.532, titled Estuary Specific Numeric Interpretations of the Narrative Nutrient Criterion, DEP has established site-specific numeric interpretations of the narrative criterion for the estuaries in Florida.

149. With respect to Biscayne Bay, DEP has adopted numeric nutrient criteria for total nitrogen, total phosphorus, and chlorophyll-a that are applicable to specific areas of Biscayne Bay called Estuary Nutrient Regions ("ENRs"). ENRs are regions in the Bay which have similar physical and biological characteristics.

150. The ENR-specific numeric nutrient criteria were adopted to maintain nutrient levels within the ENR at concentrations consistent with the very low nutrient levels that existed in the 1970s, pre-development of much of the area around Biscayne Bay.

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<sup>27</sup> Chlorophyll-a is a nutrient response variable that can be used as an indicator of algal biomass in a water body.

151. In order to maintain healthy conditions in the ENR, the numeric nutrient criteria for nitrogen, phosphorus, and chlorophyll-a all must be met for that ENR. These site-specific numeric nutrient criteria are codified in rule 62-302.532(1)(h), which went into effect on July 3, 2012.

152. To determine compliance with the numeric nutrient criteria adopted for a specific ENR, water quality sampling for each nutrient is conducted in that ENR at least four times per year, with one sampling event in the winter and one in the summer.

153. In order for the water quality within an ENR to be in compliance with the numeric nutrient criteria established for that ENR, the numeric nutrient criterion for the specific nutrient cannot be exceeded more than once in a three-year period.

154. The ENRs that are immediately proximate to the CCS are ENR H1 (Card Sound Estuary), ENR H6 (South Central Inshore Estuary), and ENR H7 (South Central Mid-Bay Estuary).

155. Russell Frydenborg, who served as a water quality program administrator with DEP and had substantial involvement in developing the site-specific numeric nutrient criteria for the ENRs in Biscayne Bay, presented testimony and supporting evidence regarding compliance with the numeric nutrient criteria in these ENRs.

156. The water quality monitoring data for ENRs H1, H6, and H7 show, for the period from 2013 to 2020, there were no exceedances of the total phosphorus numeric nutrient criterion in ENRs H1, H6, and H7. Accordingly, the numeric nutrient criterion for total phosphorus is being met in the ENRs immediately proximate to the CCS.

157. For the period from 2013 to 2020, the water quality monitoring data for ENRs H1, H6, and H7 show that the numeric nutrient criterion for total nitrogen was exceeded once, in 2018, in ENR H6. However, because the criterion was exceeded only once during the sampling period, which is longer than the three-year period necessary for compliance, the water quality within

each of these ENRs was in compliance for total nitrogen over the sampling period. Accordingly, the numeric nutrient criterion for total nitrogen is being met in the ENRs immediately proximate to the CCS.

158. The competent, substantial, and persuasive evidence establishes that the proposed surface water monitoring stations included in the Application for the Renewal Permit are located such that they will accurately detect any potential exceedances of the numeric nutrient criteria in ENRs H1, H6, and H7.

159. The water quality monitoring data for ENRs H1, H6, and H7 show that over the period from 2013 to 2020, the numeric nutrient criterion for chlorophyll-a was exceeded once, in 2017, in ENR H7. Again, because the criterion was exceeded only once during the sampling period—which is longer than the three-year period necessary for compliance—the water quality within each of these ENRs was in compliance for chlorophyll-a over the sampling period.

160. Kenneth Weaver, DEP's program administrator who oversees the development and administration of water quality standards, also testified regarding the results of water quality monitoring for chlorophyll-a, total nitrogen, and total phosphorus conducted over a 20-year period, between 1980 and 2020, in ENRs H1, H6, and H7. The results of his analysis, which were consistent with the evidence presented by Frydenborg, confirm that there currently are no exceedances of the numeric nutrient criteria for chlorophyll-a, total nitrogen, and total phosphorus in ENRs H1, H6, and H7.

161. Weaver's long-term water quality analysis also showed that, for the period between approximately 1970—before the CCS commenced operation—and 2020, salinity levels in ENRs H1, H6, and H7 fluctuated over a range from approximately 25 PSU to 40 PSU, but that there were, and are, no upward trends in salinity levels in these areas of Biscayne Bay. This evidence further supports the conclusion that the CCS is not contributing significant

amounts of water, via surface water or ground water seepage or flow, in these areas of the bay.

162. Additionally, porewater samples taken over a ten-year period at transects proximate to the CCS show lower nutrient levels than at areas distal from potential influence of the CCS. This constitutes further evidence that the CCS is not a significant source of nutrient input into Biscayne Bay.

163. Collectively, this competent, substantial, and persuasive evidence demonstrates that ENRs H1, H6, and H7 are meeting—and, over a substantial period of time, have met—the numeric nutrient criteria established for these parts of the bay.

164. Weaver also testified, persuasively, that there is no evidence of any imbalance of flora or fauna related to nutrient concentrations in ENRs H1, H6, and H7. Rather, over time, the water quality in the areas of Biscayne Bay proximate to the CCS has improved. This is borne out by the competent, substantial, and persuasive evidence, discussed in detail below, showing that the marine ecosystem in the areas of Biscayne Bay proximate to the CCS is in a relatively healthy, high-functioning condition, particularly compared to other areas in the bay.

165. Additionally, Weaver and Frydenborg both explained that the estuary-specific numeric nutrient criteria adopted in rule 62-302.532(1) for Biscayne Bay, including ENRs H1, H6, and H7, are more stringent than the narrative nutrient criteria for those ENRs. The numeric nutrient criteria for Biscayne Bay were developed using a "no observed effect" standard, rather than an imbalance threshold, so that the numeric criteria will be exceeded before an imbalance in natural populations of aquatic flora or fauna occurs. Thus, compliance with the numeric nutrient criteria for the ENR means that the narrative nutrient criteria for the ENR are met.

166. In sum, the competent, substantial, and persuasive evidence establishes that the continued operation of the CCS pursuant to the Renewal Permit will comply with the applicable estuary-specific numeric nutrient

criteria, and, therefore, will comply with the applicable narrative nutrient criteria.

ii. Discharge from the CCS does not Degrade Surface Water Quality in Biscayne Bay

167. As noted above, Biscayne Bay is designated as a Class III marine water body, pursuant to rule 62-302.400(1), which means that the specific water quality standards applicable to the water body are established to protect fish consumption, recreation, and the propagation of a healthy, well-balanced population of fish and wildlife.

168. Florida's anti-degradation policy, codified at rule 62-302.300, states, in pertinent part, that pollution that causes or contributes to new violations of water quality standards or to the continuation of existing violation is harmful to the waters of this State and will not be allowed. Fla. Admin. Code R. 62-302.300(15). The policy further states if DEP finds that a new or existing discharge will reduce the quality of the receiving water below the classification established for that water body—here, the Class III designation—or violate any DEP rule or standard, then DEP shall refuse to permit the discharge. Fla. Admin. Code R. 62-302.300(16).

169. Rule 62-302.300(18) further provides that, with limited exception,<sup>28</sup> an applicant for the renewal of an existing permit for which no expansion of the discharge is proposed is not required to show that any degradation from the discharge is necessary or desirable under federal standards and under circumstances which are clearly in the public interest. Fla. Admin. Code R. 62-302.300(18)(a).

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<sup>28</sup> Under rule 62-302.300(18)(b), if an applicant for the renewal of an existing permit has caused water quality degradation beyond that allowed in the permit, then the applicant must show that the lowering of water quality is necessary or desirable under federal standards and under circumstances that are clearly in the public interest. As discussed below, the competent substantial evidence does not establish that any discharge from the CCS into surface waters has resulted in the degradation of water quality in Biscayne Bay or other surface waters.

170. The anti-degradation permitting requirements, which implement the anti-degradation policy set forth in rule 62-302.300, are codified at rule 62-4.242. This rule authorizes the issuance of permits when consistent with the anti-degradation policy set forth in rule 62-302.300, and, if applicable, rule 62-302.700, regarding OFWs. Fla. Admin. Code R. 62-4.242(1)(a).

171. Rule 62-4.242(1)(b), which—importantly—applies only when a proposed discharge would result in water quality degradation, provides that, in determining whether a proposed discharge which results in water quality degradation is necessary or desirable under federal standards and under circumstances which are clearly in the public interest, DEP will consider and balance four factors: whether the proposed project is beneficial to the public health, safety or welfare, taking into account the policies in rule 62-302.300 and, if applicable, rule 62-302.700; whether the proposed discharge will adversely affect the conservation of fish and wildlife, including threatened or endangered species or their habitats; whether the proposed discharge will adversely affect the fishing or water-based recreational values or marine productivity in the vicinity; and whether the proposed discharge is consistent with any applicable adopted and DEP-approved surface water improvement and management ("SWIM") plan.

172. Additionally, the open surface waters of Biscayne Bay adjacent to the CCS are designated an OFW, pursuant to rule 62-302.700. This designation prohibits discharges which degrade water quality, except as allowed under rule 62-4.242(2), below the ambient water quality that existed in the water body as of the date of its designation as an OFW. Biscayne Bay was designated an OFW in 1979.

173. Rule 62-4.242(2) prohibits DEP from issuing a permit for a proposed activity or discharge within an OFW, or which significantly degrades, either alone or in combination with activities or discharges, any OFW, unless the



applicant affirmatively demonstrates that the proposed activity or discharge is clearly in the public interest.

174. Here, the competent, substantial, and persuasive evidence establishes that, to the extent there may be some indirect discharge or seepage from the CCS, via ground water, into Biscayne Bay, that discharge or seepage does not degrade, and has not degraded, the quality of the surface waters of the Bay.

175. First, as discussed above, the applicable numeric nutrient criteria for Biscayne Bay, including ENRs H1, H6, and H7, are intended to maintain nutrient levels at concentrations necessary to maintain healthy conditions in the ENR. Thus, compliance with the applicable numeric nutrient criteria constitutes compliance with the OFW anti-degradation standard.

176. As discussed above, ENRs H1, H6, and H7 all are in compliance with the applicable estuary-specific numeric nutrient criteria. Therefore, the evidence does not show that there has been any degradation of water quality in these ENRs.

177. Further, the competent substantial evidence shows that, to the extent there may be any discharge of nutrients from the CCS into Biscayne Bay, the nutrient levels in such discharge do not vary from, or exceed, the natural variability of the levels for those nutrients established in the numeric nutrient criteria for ENRs H1, H6, and H7. As discussed above, water quality monitoring over a recent multi-year period (2013 to 2020) establishes that there have not been any exceedances of the numeric nutrient criteria for total phosphorus, total nitrogen, or chlorophyll-a in these areas of the bay, which are closest to the CCS.

178. Additionally, to establish that the water quality in ENRs H1, H6, and H7 has not been degraded by nutrient discharges since 1979, when Biscayne Bay was designated an OFW, Frydenborg presented the results of water quality monitoring conducted between approximately 1970 and 2020, for total phosphorus, total nitrogen, and chlorophyll-a in these ENRs.



179. The water quality monitoring results for total phosphorus for ENR H1 shows that in 1985 and 1988, the level of total phosphorus exceeded the level that has since been established as the numeric nutrient criterion for total phosphorus. However, more recent water quality monitoring shows that since approximately 1993, total phosphorus levels in ENR H1 have not exceeded the level that constitutes the numeric nutrient criterion for that ENR, and, in fact, have declined and remained well below the numeric nutrient criterion for total phosphorus for that ENR through 2020.

180. Water quality monitoring for total phosphorus in ENR H6 shows that in 1971, before the CCS commenced operation, total phosphorus exceeded the level that has since been established as the numeric nutrient criterion for total phosphorus. More recent water quality monitoring shows that since approximately 1993, total phosphorus levels in ENR H6 have not exceeded the level that constitutes the numeric nutrient criterion for that ENR, and have declined and remain well below the numeric nutrient criterion for total phosphorus for that ENR.

181. Water quality monitoring for total phosphorus in ENR H7 shows that in 1970 and 1971, and in 1976 through 1979, total phosphorus exceeded the level that has since been established as the numeric nutrient criterion for total phosphorus. However, starting in 1980, water quality monitoring shows that, with the exception of total phosphorus levels in 1985, 1987, and 1988, total phosphorus has not exceeded the level that has been established as the numeric nutrient criterion for total phosphorus for that ENR. Since 1990, the total phosphorus levels in ENR H7 have declined and remain well below the numeric nutrient criterion for total phosphorus for that ENR.

182. The water quality monitoring results for total nitrogen for ENR H1 shows that in 1970, 1979, and 1981 through 1984, total nitrogen exceeded the level that has since been established as the numeric nutrient criterion for total nitrogen. However, more recent water quality monitoring shows that

between 1993 and 2020, total nitrogen levels in ENR H1 have not exceeded the level that constitutes the numeric nutrient criterion for that ENR.

183. Water quality monitoring for total nitrogen in ENR H6 for the period between 1993 and 2020 shows that the total nitrogen level that has been established as the numeric nutrient criterion has been exceeded twice, in 2008 and 2018. The water quality monitoring results otherwise generally show that since 2009, the total nitrogen level in ENR H6 has been well below that established as the numeric nutrient criterion for that ENR.

184. Water quality monitoring for total nitrogen in ENR H7 for the period between 1970 and 2020 shows five exceedances—in 1970, 1974, 1975, 1981, and 2003—of the total nitrogen level that has been established as the numeric nutrient criterion for that ENR. Recent water quality monitoring results, for the period between 2009 and 2020, show that the total nitrogen level in ENR H7 has remained at or below the level that constitutes the numeric nutrient criterion for total nitrogen for that ENR.

185. Water quality monitoring for chlorophyll-a for ENR H1 for the period between 1979 and 2020 shows that, with the exception of, 1982, 1991, and 2007, the level of chlorophyll-a that has been established as the numeric nutrient criterion for this ENR has not been exceeded. In fact, since 2008, the chlorophyll-a levels in ENR H1 have been well below the level established as the numeric nutrient criterion for this ENR.

186. Water quality monitoring for chlorophyll-a for ENR H6 for the period between 1979 and 2020 show that the level of chlorophyll-a has remained at or below the level that has been established as the numeric nutrient criterion for this ENR.

187. Water quality monitoring results for chlorophyll-a for ENR H7 for the period between 1979 and 2020 show that, with the exception of an exceedance in 2017, the level of chlorophyll-a has remained at or below the level that has been established as the numeric nutrient criterion for this ENR.

188. Collectively, this evidence shows that, to the extent that there may be an indirect discharge from the CCS, via ground water seepage or flow, into Biscayne Bay, that discharge has not caused or contributed to the violation of the applicable estuary-specific numeric nutrient criteria established in rule 62-302.532(1)(h) for the ENRs adjacent to the CCS, and has not caused or contributed to the violation of any applicable Class-III surface water criteria or standards codified in rules 62-302.500 or 62-302.530.

189. This evidence also establishes that, to the extent there is any discharge of water from the CCS into Biscayne Bay, the discharge has not caused or contributed to the degradation of Biscayne Bay below Class-III surface water quality standards, nor has it degraded surface water quality beyond that allowed in the Permit. Thus, FPL is not required to demonstrate, under rule 62-4.242(1)(b), that such discharge is necessary or desirable under federal standards and under circumstances that are clearly in the public interest, pursuant to the factors set forth in that rule. However, even if a discharge from the CCS degraded water quality, that discharge would meet the "necessary and desirable under federal standards" and "clearly in the public interest" requirements of rule 62-4.242(1)(b). Specifically, the Turkey Point electrical generating facility is an essential source of electricity for south Florida and is the only baseload electrical generating facility that serves the critical load area of Miami-Dade County, Florida. Because the CCS dissipates heat from, and serves as a source of cooling water for, the operation of Units 3 and 4, these electrical generating units cannot be operated without the CCS. Closure of Units 3 and 4 would deprive FPL's customers in south Florida, and, particularly, in Miami-Dade County, of an essential source of electricity. Thus, operation of the Turkey Point facility, and, necessarily, the CCS, is important and beneficial to the public health, safety, and welfare.

190. Additionally, as discussed below, the competent, substantial, and persuasive evidence establishes that the CCS does not, and, under the

Renewal Permit, will not, adversely affect the conservation of fish and wildlife, including threatened and endangered species, or fishing or water-based recreational values or marine productivity in the vicinity of the CCS.

191. Moreover, to the extent CCS water were to discharge into Biscayne Bay, and that discharge resulted in water quality degradation for these nutrients—neither of which has been demonstrated by the competent substantial evidence, discussed above—because the CCS was in operation before Biscayne Bay was designated an OFW, FPL would not be required to show that any such degradation was in the public interest unless it proposed to expand its discharge into surface waters. As discussed above, the competent substantial evidence establishes that there is no surface water discharge, and very little, if any, ground water discharge, from the CCS into Biscayne Bay, and no evidence was presented showing that FPL has proposed to expand its discharge from the CCS into surface waters.

192. Finally, *if* FPL were required, pursuant to rule 62-4.242(2), to show that a discharge from the CCS into Biscayne Bay is clearly in the public interest, the competent substantial evidence in the record shows that this standard is met. As discussed above, the Turkey Point electrical generating facility is an essential source of electricity for south Florida, and Units 3 and 4 cannot be operated without the CCS as a source of cooling water and heat dissipation for the thermal discharge from these units. Thus, operation of the Turkey Point facility, and, necessarily, the CCS, is clearly in the public interest.

193. Furthermore, under any circumstances, the competent substantial evidence, discussed above and also addressed below, does not establish that, to the extent there is any discharge of CCS water into Biscayne Bay, that discharge has caused or contributed to degradation of surface water quality in the bay.

194. In sum, the competent, substantial, and persuasive evidence establishes that continued operation of the CCS pursuant to the Renewal Permit will not violate Florida's anti-degradation policies codified in rules 62-302.300 and 62-302.700, and will comply with the applicable anti-degradation permitting provisions in rule 62-4.242.

iii. The CCS has not Adversely Affected the Marine Ecosystem Immediately Offshore of the CCS

195. The existence of a high-functioning marine ecosystem in Biscayne Bay immediately offshore of the CCS constitutes additional, strong evidence that the CCS is not a source of nutrient introduction into Biscayne Bay.

196. FPL's expert marine ecologist, Dr. Jerald Ault, testified regarding the condition and function of the marine ecosystem immediately adjacent to the CCS. Based on his extensive onsite investigations, he opined that the condition and ecological function of this portion of the bay is as good, or better, than at any other location in the bay.

197. Specifically, unlike many other areas in Biscayne Bay, the portion of the bay immediately contiguous to the CCS, including the remnant water intake and discharge canals at Turkey Point, has an undisturbed, healthy mangrove forest and healthy seagrass communities. That the marine ecosystem is functioning at a high level in the vicinity of Turkey Point is evidenced by the substantial abundance and diversity of bait fish species, such as mullet, anchovies, and sardines; the substantial abundance of pink shrimp, which serves as a food source for many marine fish species; the substantial abundance, diversity, and individual size of predator species of fish, such as tarpon, snapper, snook, and schoolmaster; and the presence of many predator species of bird, such as pelicans, cormorants, ospreys, and terns. The presence, abundance, diversity, and individual size of these organisms immediately offshore of Turkey Point evidences the existence of high-quality, high-functioning marine habitat in this area. Additionally, the presence of threatened and endangered species, such as the smalltooth



sawfish, in the portion of Biscayne Bay proximate to the CCS is another indicator of high quality, relatively unstressed marine habitat in this area.<sup>29</sup>

198. The good condition and high-level function of the ecosystem in this part of Biscayne Bay shows that the CCS is not adversely affecting the ecology of this portion of the bay. To this point, if the CCS were a source of nutrient introduction to Biscayne Bay, or were otherwise harming the ecological functioning of this part of the bay, the marine ecosystem in the area closest to the CCS would exhibit stress and degradation—which it does not.

199. Dr. Ault compared the good condition and high-level ecological function of the portion of Biscayne Bay proximate to the CCS with that of other parts of the bay which are suffering significant ecological decline as a result of development, urban and agricultural discharges to the bay, and extensive pressure from recreational overfishing.

200. Historically, Biscayne Bay was a highly productive estuarine ecosystem. Before the network of drainage canals was constructed in south Florida, the bay received diffuse freshwater sheet flow from the Everglades, across the land. Construction and operation of the multiple drainage canals in the area has replaced the diffuse freshwater discharge from sheet flow with intermittent high-volume discharges from the canals, transforming portions of Biscayne Bay from an estuary to a partially-enclosed saltwater lagoon. This transformation has resulted in significant ecological degradation in parts of Biscayne Bay, particularly in those areas proximate to the drainage canals. By contrast, the CCS has not affected the delivery of freshwater to Biscayne Bay.

201. Additionally, much of the shoreline habitat along the littoral edge of Biscayne Bay has been eliminated by seawalls and bulkheads associated with

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<sup>29</sup> Species that have become threatened or endangered often become endangered or threatened because they are particularly sensitive to changes to natural environmental conditions.

urban development. Undisturbed, healthy mangrove shoreline habitat now only exists in the southern portion of Biscayne Bay, including at the shoreline adjacent to Turkey Point. To this point, Turkey Point has essentially functioned as a buffer from development of the shoreline along that portion of Biscayne Bay.

202. Dr. Ault also opined that recreational overfishing and boating, directly related to the substantial population increase of Miami-Dade County, along with the impacts of commercial shrimping operations on seagrass habitat and quantities of shrimp available as a food source for fish species, have substantially contributed to the significant decline of fish populations in Biscayne Bay.

203. Additionally, water quality has significantly declined in the portions of Biscayne Bay closest to the points where the drainage canals, which convey agricultural and urban runoff containing nitrogen, phosphorus, and other pollutants, discharge into the bay. These canals have been established as constituting the primary source of nutrient introduction into Biscayne Bay. The addition of nutrients to historically-oligotrophic Biscayne Bay has degraded the water quality and disrupted the ecology of many portions of the Bay, particularly areas to the north of Turkey Point, where these canals discharge into the bay.

204. Dr. Ault developed, and presented the results of, a hydrodynamic model that he conducted, demonstrating the transport, in Biscayne Bay, of fresh water containing dissolved phosphorus and other nutrients discharged from the drainage canals north of Turkey Point into the bay. This model shows that the net movement of water particles containing dissolved nutrients is from north to south along the western shore of Biscayne Bay. The results of this model constitute strong evidence that, to the extent water quality monitoring in Biscayne Bay in the vicinity of Turkey Point were to show the presence of elevated levels of phosphorus or nitrogen, the discharge



from the drainage canals north of Turkey Point, rather than the CCS, is the source of those nutrients.

205. Dr. David Tomasko, director of the Sarasota Bay Estuary Program, testified regarding the condition of seagrass in Biscayne Bay, including the areas of the bay closest to the CCS.

206. Seagrass meadows are a good indicator of ecosystem health in Florida estuarine ecosystems.

207. The existence and extent of coverage of seagrass meadows in Biscayne Bay are highly variable, and there is not uniform coverage of seagrass at all locations at all times of the year.

208. Based on Tomasko's investigation, in which he analyzed data gathered through FPL's extensive seagrass monitoring program over a ten-year period at 54 locations near the CCS,<sup>30</sup> he opined that the CCS is not having an adverse impact on seagrasses in the vicinity of the CCS.

209. Specifically, he noted that turtlegrass continues to grow at the monitoring sites. While the density of the seagrass is highly variable from site to site, and its distribution is patchy due to shallow bottom sediment depths, there is no underlying trend of seagrass decline or nutrient enrichment at the monitored sites near the CCS. The monitoring information also does not show any increase of macroalgae, or replacement of seagrass by macroalgae, in the immediate vicinity of the CCS.

210. Additionally, unlike the seagrasses at a reference site at Barnes Sound, further south in the bay, the condition of the seagrasses in the vicinity of the CCS generally is good.

211. To this point, Tomasko testified, credibly, that the coverage and condition of the seagrasses along transects in Card Sound proximate to the CCS remain similar to the conditions and coverage that he observed in Card

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<sup>30</sup> FPL's seagrass monitoring program features three pairs of transects located in Biscayne Bay near the CCS, and another reference site south of the CCS, in Barnes Sound, distal from any potential influence from the CCS.

Sound in the 1990s. The evidence does not show that there has been any significant die-off of seagrass in the portion of Biscayne Bay immediately proximate to the CCS.

212. Additionally, the nitrogen-to-phosphorus ratios measured in the leaves of the seagrasses sampled along the transects in the vicinity of the CCS are similar to, or greater than, the nitrogen-to-phosphorus ratios measured in seagrasses at the reference site in Barnes Sound.<sup>31</sup> If the CCS were a localized phosphorus input source, the seagrasses sampled along the transects nearest to the CCS would have lower nitrogen-to-phosphorus ratios than those at the reference site.

213. In formulating his opinion, Tomasko relied on findings in a 2019 DERM comprehensive report regarding the decline of seagrass and hardbottom habitat in Biscayne Bay. Based on many years of water quality and habitat monitoring, the DERM report concluded that the areas experiencing significant seagrass die-off are north of the CCS, in the 79th Street Basin, Julia Tuttle Basin, Venetian Basin, and Rickenbacker Basin; in central Biscayne Bay, where several drainage canals, including the Coral Gables Canal and the Snapper Creek Canal, discharge into the bay; and south of the CCS, in the Barnes Sound/Manatee Bay Basin, where canals discharge stormwater into the bay. As discussed above, the water entering the bay from these canals contains substantial amounts of nutrients, including phosphorus, which causes algal blooms that adversely affect seagrass.

214. In sum, although there is substantial temporal and spatial variability in the density and coverage of seagrass at locations closest to the CCS, the evidence establishes that the seagrass in these areas are in relatively good condition compared to other locations in Biscayne Bay. If the CCS were a

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<sup>31</sup> In nitrogen-to-phosphorus ratios, nitrogen levels constitute the numerator and phosphorus levels constitute the denominator. Therefore, the greater the phosphorus level in the seagrass, the lower the nitrogen-to-phosphorus ratio will be. Conversely, the lower the level of phosphorus in the seagrass, the higher the nitrogen-to-phosphorus ratio will be.

significant source of phosphorus input into Biscayne Bay, the seagrasses proximate to the CCS would likely be in significantly worse condition.

215. Dr. William Nuttle testified on behalf of Petitioners regarding the flow of CCS-origin water, via ground water, into Biscayne Bay.

216. Based on information contained in FPL's annual water quality monitoring reports for the Turkey Point facility, Nuttle analyzed water and salt budgets for the CCS and interaction of the CCS with the Biscayne Aquifer.

217. Based on his analysis of the amounts of inflow of water into, and outflow of water from, the CCS, Nuttle opined that water leaves the CCS at a depth of around ten feet deep, flows easterly through ground water, and reaches the surface water of Biscayne Bay, and vice versa.

218. As a basis for his opinion, he relied on what he characterized as "elevated" salinity levels in water in the karst depressions in the Bottom of Biscayne Bay at the lowest point of low tide, when the hydraulic gradient from the CCS toward the bay would be greatest.

219. However, he did not compare the salinity levels in the karst depressions, which he characterized as elevated, with the average salinity levels in other areas of Biscayne Bay, or with the average salinity level of the bay as a whole.

220. He also acknowledged that he does not know how much water from the CCS flows into Biscayne Bay, and that, consequently, he could not opine as to the effect that any flow from the CCS has on surface water quality in Biscayne Bay.

221. Nuttle conceded that most of the time, the hydraulic gradient favors movement of water from Biscayne Bay to the CCS. He further acknowledged that in formulating his opinion that water leaves the CCS and enters Biscayne Bay through the karst depressions, he did not take into account the or absence of a significant pathway for flow between the CCS and the bay, or

whether there was sufficient time for CCS water to seep or flow into Biscayne Bay.

222. He did not use tritium as a tracer in his investigation of salinity in the karst depressions, so that he was unable to confirm that water in the depressions having what he characterized as "elevated" salinity levels was, in fact, CCS-origin water.

223. Nuttle acknowledged that, to the extent the Turtle Point and Barge Basin canals may previously have been a source of nutrient input into Biscayne Bay, those canals have been filled, creating an impervious barrier to flow or seepage of water from the CCS to the bay. He did not present any evidence showing nutrient levels associated with these remnant canals after they were filled.

224. Petitioners and Intervenor also presented the testimony of Dr. James Fourqurean, who opined that the CCS is adversely affecting the balance of flora and fauna in the region of Biscayne Bay immediately offshore of the CCS.

225. Fourqurean testified regarding the effect of introducing nutrients to seagrass-dominated ecosystems in south Florida. Specifically, when phosphorus is added to sediment in which turtlegrass is growing, the turtlegrass becomes denser, up to the point at which continued addition of phosphorus then favors the growth of benthic macrophyte species, such as shoal grass and widgeon grass. These species outcompete the turtlegrass, thereby causing a decline in the density, coverage, and condition of the turtlegrass. With the continued addition of phosphorus to the system, seagrass communities eventually give way to communities dominated by seaweed and macroalgae, and, ultimately, single-celled microalgae.

226. In 2018 and 2020, Fourqurean conducted investigations of seagrass communities in the offshore areas adjacent to the CCS. In 2018, he found that some turtlegrass beds in the area generally were dense, indicating what he referred to as a phosphorus "sweet spot" for turtlegrass growth. However,

in other turtlegrass beds in the area, he found that macro- and microalgae had overgrown the beds, so that little turtlegrass was left. He ascribed the decline of turtlegrass coverage and density, and the preferred growth of algae to increased levels of phosphorus in the sediment. In 2020, he found that in some areas near the CCS, the turtlegrass beds were still dense, but single-celled microalgae were beginning to grow on the turtlegrass blades, indicating the continued addition of phosphorus to the water in that area.

227. He compared the results of his investigations with historic seagrass coverage maps prepared by DERM from seagrass data collected between the 1980 and 1983, with seagrass coverage in 2020, for the immediate offshore areas of Biscayne Bay north of the CCS, adjacent to the CCS, and south of the CCS. This comparison shows that in 2020, for most, if not all, areas of Biscayne Bay immediately offshore, starting north of the CCS and heading south past the CCS, seagrass coverage has significantly declined. The areas north of the CCS, where urban drainage canals discharge into the bay, show the greatest percentage of increased macroalgal coverage and concomitant decline of seagrass coverage, and increased areas of bare sediment having no seagrass or algal coverage. The areas immediately east of the CCS show also show increased percentage of macroalgal coverage, decreased seagrass coverage, and increased areas having no coverage. The area south of the CCS, where the Sea-Dade Canal discharges into the bay, which historically supported seagrass, now shows mostly macroalgae and bare sediment, with little seagrass coverage.

228. Fourqurean also presented testimony and supporting information showing that over the 20-year period between 1999 and 2020, at all areas of Biscayne Bay, starting north of the CCS and going south of the discharge points of the Sea-Dade Canal, with the exception of one area north of the CCS and immediately east of the Homestead Airforce Base, seagrass coverage has declined at annual rates of between 0.1 and 2.5 percent, with the greatest decreases in coverage occurring southeast and south of the CCS, in relative

proximity to discharge points of the Sea-Dade Canal and the Card Sound Road Canal.

229. He also presented evidence that some of the highest phosphorus levels in seagrasses have been observed immediately east of, and adjacent to, the CCS.

230. Fourqurean also investigated, and presented evidence regarding, the concentration of tritium in the sediment porewater at some locations immediately east of the CCS which exhibited the highest phosphorus levels in seagrasses. His investigation showed the existence of a positive correlation between the highest concentrations of porewater tritium and the greatest amount of phosphorus in seagrasses. His analysis did not take into account any background level of tritium.

231. Based on this evidence, Fourqurean opined that the areas immediately adjacent to the CCS have experienced the greatest seagrass decline over the 20-year period, and he attributed that decline to phosphorus input from the CCS, through ground water seepage, into Biscayne Bay. For several reasons, the undersigned finds his testimony and opinions unpersuasive.

232. First, although his opinion is based on the assumption that CCS-origin water carrying dissolved phosphorus is seeping into Biscayne Bay, he did not know either the quantity of such water, or the concentrations of phosphorus in such water, that he contended seep into the Bay. Furthermore, in developing his opinion, Fourqurean did not take into account the other significant sources of phosphorus input to Biscayne Bay, including urban and agricultural runoff that enters the bay through discharges from canals located to the north and south of the CCS. He acknowledged that his opinion that the CCS was the source of the high phosphorus levels that he observed in seagrasses near the CCS was predicated on the assumption that the CCS was the source of all of the phosphorus that he observed in the seagrasses. Fourqurean's failure to consider other significant sources of phosphorus in



Biscayne Bay while attributing phosphorus levels in seagrass solely to CCS-origin water renders his opinion unpersuasive.

233. Fourqurean also acknowledged that he did not consider hydrodynamic modeling showing that water containing dissolved phosphorus discharged from canals north of the CCS flows south toward the CCS.

234. He also did not take into account geochemical processes, including adsorption, which would attenuate phosphorus levels in CCS-origin water in ground water flowing through a limestone aquifer, which would reduce the amount of phosphorus that may seep into surface water.

235. Additionally, Fourqurean did not take into account natural background tritium levels near the CCS when he developed his opinion that, based on tritium levels in porewater he measured at some locations east of the CCS, where he also observed high phosphorus levels in seagrasses, the phosphorus levels in those seagrasses came from CCS-origin water seeping into Biscayne Bay. Notably, the tritium levels observed in the porewater at the locations that Fourqurean sampled averaged approximately 4.6 pCi/L—far below the 6,000 pCi/L average tritium concentration of CCS water. These tritium levels can entirely be explained by atmospheric deposition into surface waters in the vicinity of the CCS.<sup>32</sup>

236. Fourqurean's analysis of porewater in locations where he also calculated high levels of phosphorus in seagrass showed a positive correlation between the concentration of tritium and higher levels of phosphorus in seagrass; however, he acknowledged that this correlation did not demonstrate a causal relationship between the presence of CCS-origin porewater in sediment and the higher levels of phosphorus in seagrasses at the locations he sampled. Stated succinctly, Fourqurean conceded that the

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<sup>32</sup> Dr. Kip Solomon, FPL's expert on tritium and its transport in the environment, credibly opined that, due to atmospheric deposition, background levels of tritium in surface waters in the area of Biscayne Bay proximate to the CCS consistently range between 11 and 20 pCi/L, and porewater levels of tritium in this area have an average concentration of approximately 9.3 pCi/L.

presence of phosphorus-enriched seagrasses near the CCS did not establish a cause-and-effect relationship between such phosphorus enrichment and seepage of water from the CCS into the bay.

237. Fourqurean included, in his expert report, a graphic depicting areas near the CCS where there was seagrass die-off due to high levels of phosphorus. He acknowledged that when he sampled tritium levels in the porewater at these locations in 2020, the tritium levels at these specific locations were some of the lowest he detected in his porewater sampling investigation, thus indicating that very little, if any, CCS-origin water was the source of the high phosphorus levels in seagrass at these locations. He acknowledged that this evidence did not support his hypothesis that excessive nutrients seeping from the CCS via groundwater caused seagrass die-off at these locations.

238. He also acknowledged that, at specific locations in Biscayne Bay where he contended there was significant seagrass decline and die-off from historic levels that were mapped by DERM in the early 1980s, many factors other than phosphorus input from CCS-origin water seeping into the bay—including guano from roosting birds and numerous other potential sources of phosphorus—could be the cause of such seagrass decline and die-off. He also acknowledged that the areas of Biscayne Bay near the CCS are not the only areas of the bay in which there has been extensive seagrass decline and die-off over the nearly 40-year period between DERM's seagrass mapping and his investigation of the levels and locations of that decline.

239. Fourqurean performed a regression analysis of data on seagrass percent coverage in delineated areas near the CCS in order to determine whether the seagrass decline in those areas was statistically significant; however, he did not perform a similar analysis to determine whether other areas in Biscayne Bay also were experiencing statistically significant levels of decline. He acknowledged that, for the areas of the bay closest to the CCS for which he did perform a regression analysis, the areas showing the greatest

decline were those south of the CCS, near the location where the Card Sound Canal discharges into the bay.

240. Fourqurean acknowledged that some of the areas east of the CCS which had the greatest levels of phosphorus in seagrasses are proximate to islands that provide bird roosting habitat, thus providing a rich source of phosphorus input to the surface water in the area. He also acknowledged that in the areas closest to the CCS, the levels of phosphorus are much lower than the areas closest to the bird roosting habitat.

241. Fourqurean also acknowledged that in the area where the karst depressions that Petitioners and Intervenor have characterized as "caves" are located, near the southeastern end of the CCS, lower levels of phosphorus were detected in the seagrasses than at other locations where Fourqurean analyzed seagrass phosphorus levels. This indicates that these depressions do not constitute a point of phosphorus input into the bay.

242. Fourqurean did not take water or porewater samples in the karst depressions to analyze for tritium levels in the depressions. It is noted that FPL's expert hydrogeologist, Stewart, performed an analysis of tritium levels in water samples taken in the depressions, and concluded that the tritium levels of water sampled in the depressions are similar to those in water samples taken in other open water locations in Biscayne Bay relatively close to the depressions. This indicates that these depressions do not constitute a connection between the CCS and Biscayne Bay.

243. Fourqurean concurred with Tomasko that seagrass communities in Biscayne Bay are highly variable, and that even under natural conditions, seagrass location and coverage changes over time. He also acknowledged that the most accurate way to determine whether there is a trend with respect to seagrass density at a specific location is to sample that specific location over time in order to determine whether there is a change in density. In formulating his opinions, he did not perform such an investigation, nor did he rely on FPL's extensive seagrass transect data, which shows no adverse trend

in seagrass over a ten-year period. He also did not review the 2019 DERM report, which, in part, concluded that the seagrass in areas near Turkey Point are in relatively good condition compared to the seagrasses in areas of the bay north and south of the CCS.

244. In sum, the competent, substantial, and persuasive evidence demonstrates that the continued operation of the CCS will not result in the input of nutrients into Biscayne Bay.

245. Accordingly, the competent, substantial, and persuasive evidence shows that the continued operation of the CCS pursuant to the Renewal Permit will not violate applicable surface water quality criteria and standards in rules 62-302.500, 62-302.530, and 62-302.532, or the anti-degradation policy and permitting standard established in rules 62-302.300, 62-302.700, and 62-4.242, with respect to Biscayne Bay.

iv. The Evidence Does Not Show that the CCS Causes Violations of Surface Water Quality Standards Applicable to Other Offsite Surface Waters

246. As previously discussed, there is no direct surface water connection between the CCS and offsite surface waters, including the L-31E Canal, S-20 Discharge Canal, Sea-Dade Canal, or other offsite canals in the vicinity of the CCS.

247. Additionally, as discussed above, the evidence does not show that there is significant, if any, seepage of CCS-origin water, via ground water seepage, into the L-31E Canal, S-20 Discharge Canal, Sea-Dade Canal, or other offsite canals or surface waters in the vicinity of the CCS, and the evidence does not show that the CCS is a source of nutrient input into these canals or other surface waters.

248. Moreover, the RWS is operating to prevent CCS-origin water that seeps into ground water from moving westward past the boundary of the CCS. Thus, under any circumstances, operation of the RWS ensures that

future operation of the CCS will not cause nutrient input into offsite canals or other offsite surface waters.

249. Petitioners and Intervenor did not present any evidence showing that there are any water quality violations or ecological imbalances resulting from nutrient discharge or seepage from the CCS into offsite canals or other offsite surface waters.

250. To the contrary, the competent substantial evidence established that continued operation of the CCS will not result in any exceedances of surface water quality standards or criteria applicable to the offsite canals or other surface waters, nor will it alter nutrient concentrations so as to cause an imbalance in natural populations of aquatic flora or fauna in these canals or in other offsite surface waters.

251. Accordingly, the competent, substantial, and persuasive evidence shows that the continued operation of the CCS pursuant to the Renewal Permit will not violate applicable surface water quality criteria and standards in rules 62-302.500, 62-302.530, and 62-302.532, or the anti-degradation policy and permitting standard established in rules 62-302.300, 62-302.700, and 62-4.242, with respect to offsite canals and other surface waters.

#### X. Effect of Continued Operation of CCS on Offsite Ground Water

252. The Biscayne Aquifer horizontally extends into western Miami-Dade County. Historically, parts of the Biscayne Aquifer have been naturally saline.

253. As a result of the construction of drainage canals, mining, land development, and ground water withdrawals, and other activities, significant saltwater intrusion has occurred in southeastern Miami-Dade County. As discussed above, by 1955, the location of the saltwater interface in the Model Land area in south Miami-Dade County had moved inland, from its original location near the coastline, to near Florida City, with its greatest landward



extent at the Card Sound Road Canal, which, at the time, was an uncontrolled source of saltwater intrusion inland. A water control structure was installed in the Card Sound Road Canal in approximately 2010, and the evidence shows that, as of 2012, the inland extent of the saltwater interface along the Card Sound Road Canal had retracted slightly eastward.

254. As discussed above, by the time the CCS became operational in 1973, the saltwater interface was located approximately three to three-and-a-half miles inland from the coast in the Model Land area. Since then, the saltwater interface has moved approximately one to one-and-a-half miles further inland in the Model Land area, to where it currently is located, approximately four-and-a-half miles from the coast.

255. The NOV issued by DEP in April 2016 found that the CCS was the major contributing cause of the continued westward movement of the saltwater interface in the Model Land area, and that saltwater intrusion into the area west of the CCS was impairing the reasonable and beneficial use of adjacent Class G-II ground water in that area. To resolve this ground water standard violation, and to prevent future violations of surface water quality standards and criteria, FPL and DEP entered into the Consent Order.

256. Allen Stodghill, a geologist with DEP who has worked on various ground and surface water-related issues for the Turkey Point facility since approximately 2008, and who was involved in drafting the Consent Order, testified regarding FPL's compliance with the Consent Order.<sup>33</sup>

257. As previously discussed, a key objective of the Consent Order was, and is, to cease saline water discharges from the CCS that impair the

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<sup>33</sup> To the extent FPL is implementing, or has implemented, remedial measures imposed in the Consent Order to address past violations of ground water standards and to prevent future violations of surface water quality standards, FPL's compliance with the Consent Order is germane to determining whether FPL has provided reasonable assurance that it is in compliance with applicable surface water and ground water quality standards, and, therefore, is entitled to issuance of the Renewal Permit.



reasonable beneficial use of the adjacent Class G-II ground water to the west. FPL is in compliance with this objective.

258. Although FPL did not achieve a 34 PSU salinity level in the CCS, it submitted a supplemental salinity management plan and also submitted, and is implementing, a thermal efficiency plan to lower the temperature of the cooling water being discharged into the CCS; this will reduce evaporation, which will help reduce the salinity concentration of water in the CCS.

259. As discussed above, FPL also has implemented the RWS, which consists of a series of ten wells located immediately adjacent to the northern and western boundaries of the CCS. These wells collectively pump approximately 15 mgd, or approximately 5.4 billion gallons per year, of water from the Lower Flow Zone of the Biscayne Aquifer, from depths between 70 and 90 feet below land surface. As hypersaline water is withdrawn, the hypersaline plume decreases in vertical and horizontal extent, with the adjacent lower salinity ground water replacing the area formerly containing the hypersaline water that originated from the CCS. As of the final hearing, over 12.5 billion gallons of hypersaline ground water had been extracted from the Biscayne Aquifer by the RWS. The saline water withdrawn through the recovery wells is disposed, through deep underground injection control wells, into the Floridan Aquifer Boulder Zone, approximately 3,000 feet below land surface. The RWS became fully operational in May 2018.

260. The 5.4 billion gallons per year of hypersaline water extracted by the RWS exceeds the approximately four billion gallons per year of water that discharges from the CCS into the ground water beneath the CCS, so that more hypersaline water is being withdrawn by the RWS than is being added to ground water by the CCS.

261. The RWS wells function to withdraw hypersaline water by creating a potentiometric trough, or hydraulic gradient, in the surface of the aquifer. The wells draw water from the hypersaline plume west of the CCS, thereby withdrawing hypersaline water that had migrated west of the CCS before

May 2018, when the RWS was implemented. The wells also draw hypersaline water from the CCS that has seeped into ground water to the east of the RWS, thereby creating a hydraulic barrier such that none of the CCS water that seeps into ground water is able to move westward past the RWS. The extraction of the hypersaline ground water beneath the CCS reduces the driving force that contributed to lateral movement away from the CCS, thereby halting the westward migration of hypersaline water from the CCS. Thus, since May 2018, the RWS has functioned—and continues to function—as a hydrologic barrier that has halted the westward movement of hypersaline water from the CCS.

262. The Consent Order also requires that, by May 2028, the hypersaline plume resulting from historical migration of saline water from the CCS in ground water be retracted back to the L-31E Canal. Based on the results of the RWS operation over the past two-plus years, as determined by CSEM data and water quality monitoring, it is anticipated that the hypersaline plume will be retracted back to the L-31E Canal within the ten-year timeframe established in the Consent Order.

263. Another key objective of the Consent Order was, and is, to prevent releases of ground water from the CCS which violate surface water quality standards in Biscayne Bay. This objective was met by filling the Turtle Point and Barge Basin canals. Thus, to the extent these canals intersected the Upper Flow Zone of the Biscayne Aquifer such that there has been a potential pathway for the migration of nutrients from the CCS, via ground water, into Biscayne Bay, that pathway no longer exists at these locations. Additionally, FPL has submitted and implemented a nutrient management plan, and conducted and completed an inspection of the peripheral impoundment structures.

264. The Consent Order also required FPL to mitigate impacts related to historic operation of the CCS. To meet this objective, FPL completed an analysis, using a variable density three-dimensional ground water model

developed under an agreement with DERM to allocate the relative contributions of other entities and factors to the inland movement of the saltwater interface. FPL also has entered into an agreement regarding the conveyance to SFWMD of FPL properties to facilitate the Comprehensive Everglades Restoration Plan, and has provided \$1.5 million to DEP to be used to finance saltwater intrusion mitigation projects in the Turkey Point region. FPL also conducted, and completed, the surface water quality sampling program to improve trend analysis in Biscayne Bay and Card Sound.

265. FPL also is in compliance with the water quality monitoring requirements imposed in the Consent Order, including conducting the CSEM surveys and monitoring the salinity of ground water in and around the CCS. FPL submits RAASR reports on an annual basis, summarizing activities related to implementing the Consent Order, which contain CSEM survey and water quality monitoring data. As further discussed below, the results of this monitoring provide strong evidence that the RWS has halted the westward migration, via ground water movement, of CCS-origin water.

266. The monitoring wells associated with the RWS consist of a cluster of three wells, one of which samples from the Upper Flow Zone, one of which samples from the Lower Flow Zone, and one that samples the deep aquifer. The results of the ground water monitoring associated with the RWS generally show that the wells are retracting the hypersaline plume. Some deep well monitoring results show an increase in the chloride levels as the RWS extracts the hypersaline water. This is because, as the RWS system draws water from the bottom of the aquifer, the heavier, more saline water sits, and tends to stay, at the bottom of the aquifer, while the less saline water is extracted by the recovery wells. The increase in chloride levels at the deep monitoring wells is expected because the RWS was recently implemented, and as the RWS operates over time, the chloride levels in the deep monitoring wells are anticipated to drop, as the denser, more saline

water located at the bottom of the aquifer ultimately is extracted by the RWS.

267. Based on the foregoing, it is determined that FPL is in compliance with the requirements of the Consent Order.

268. Data collected by CSEM surveys and interpreted by FPL's expert hydrologist, Mark Stewart, confirms that the RWS is functioning effectively to halt the westward migration of the hypersaline plume and to retract the hypersaline plume back to the L-31E Canal, as required by the Consent Order.

269. Using the CSEM data, Stewart conducted ground water modeling for chloride levels for each of 14 layers representing the Biscayne Aquifer at different depths, from land surface down to approximately 99 feet below land surface. Stewart's model, which has been peer-reviewed and accepted as accurate by regulatory agencies, including SFWMD, shows that the RWS is functioning to retract the hypersaline plume eastward to the L-31E Canal.

270. Specifically, for the Upper Flow Zone, which constitutes Layer 7 of Stewart's model and ranges from 7.9 to 9.8 meters (approximately 25.9 to 33 feet) below land surface, the modeling results show significant retraction of the hypersaline plume between 2018, before the RWS became operational, and 2020, after approximately two years of RWS operation.

271. Layer 10 of Stewart's model, which constitutes the Lower Flow Zone and ranges from 14.2 to 16.8 meters (approximately 46.5 to 55 feet) below land surface, also shows significant retraction of the hypersaline between 2018, before the RWS became operational, and 2020, after approximately two years of RWS operation.

272. The accuracy of Stewart's modeling was confirmed by water quality monitoring data for chloride taken at numerous ground water quality monitoring wells west and north of the CCS. Most of these monitoring wells showed a statistically significant decrease in chloride concentration, while others showed decreases that were not statistically significant. Some wells

showed no trend regarding chloride concentration, while a very small number of the wells had an apparent increase in chloride that was not statistically significant.

273. Stewart noted that the hypersaline plume is not being retracted uniformly in each layer of the aquifer, and that in some of the lower layers of his model, which correspond to greater depths below land surface, the extent of retraction of the hypersaline plume has not been as great as that at shallower layers. However, the RWS is reducing the volume of the plume, which, in Stewart's opinion, shows that the RWS is working to retract the hypersaline plume back toward the L-31E Canal.

274. Stewart further noted that, due to operation of the RWS, there is no additional water coming out of the CCS and flowing westward in the aquifer.

275. Based on the conservative assumption that the original position of the saltwater interface originally was located near the current position of the CCS, and that it moved westward to the TPGW-7 monitoring well by 2018, Stewart estimated that the saltwater interface is moving inland at a rate of approximately 450 feet per year. It is noted that this rate is similar to FKAA's 500-feet-per-year rate estimated movement rate for the saltwater interface.

276. Stewart opined, persuasively, that because the RWS has created a hydrologic barrier such that CCS water no longer is flowing into the aquifer west of the CCS boundary, and because water in the CCS is now less saline, due to freshening, than the ground water under the CCS, such that there no longer is a density drive for CCS water to move downward into the aquifer, it is unlikely that CCS water will move to FKAA's Biscayne Aquifer wellfield.

277. E.J. Wexler, a hydrologist whose expertise is in ground water modeling, solute transport modeling, and contaminant hydrogeology, testified on behalf of Petitioners and Intervenor regarding FPL's remedial measures to withdraw the hypersaline plume east to the L-31E Canal by May 2028.

278. Wexler developed a three-dimensional solute transport model in connection with ACI's proposed expansion of its aggregate mining operation. His study entailed an investigation of the hydrogeology of the area around the ACI site and considered the effects of the SFWMD canals, other lakes and discharge canals, municipal water supply wells, agricultural wells, and the CCS. He modeled the area between the Mowry Canal to the north, the C-111 Canal to the west, and the shoreline of Biscayne Bay to the east and southeast, to determine the location of the saltwater interface and the body of hypersaline water in the Biscayne Aquifer, and to predict the movement of both over time.

279. As part of his modeling, Wexler performed an attribution analysis similar to that performed by FPL, pursuant to the Consent Order. Wexler's model confirmed that hypersaline water seeping from the CCS displaced ground water in the Model Land area, and, thus, acted as the main driver of inland movement of the saltwater interface in the Model Land area.

280. Wexler ran predictive modeling simulations for a ten-year period, between 2018 and 2027, taking into account the RWS and freshening of the CCS by the addition of 12 mgd of water from the Floridan Aquifer.<sup>34</sup>

281. The results of his modeling showed that in the shallower layers of the aquifer, the hypersaline plume will mostly have been retracted back to the western edge of the CCS by 2027.

282. His model also shows that at a depth of approximately 65 feet below land surface, the 35 PSU isochlor remains west of the boundary of the CCS at the end of the ten-year model run, in 2027.

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<sup>34</sup> Wexler also testified that his model also showed that existing freshening of the addition of 12.2 mgd per day of Floridan Aquifer water to the CCS will not reduce the salinity of the CCS to approximately 34 PSU, as required by the Consent Order. However, the 34 PSU salinity level target for the CCS is not a rule standard and has not been incorporated into the Renewal Permit. Rather, it is a condition of the Consent Order, which is a final, separately enforceable administrative order that is not at issue in these proceedings.



283. Wexler's modeling also shows that the position of the saltwater interface, which is at the approximately 10,000 mg/L, or 10 PSU isochlor line, shows slight eastward movement over the ten-year period simulated.<sup>35</sup>

284. Based on the results of his modeling, Wexler opined that the RWS will preferentially retract high salinity ground water from the west in the highly permeable layers of the Biscayne Aquifer, but will leave a persistent body of highly saline ground water in the deeper layers of the aquifer west of the L-31E Canal,<sup>36</sup> despite the operation of the RWS.

285. Based on Wexler's modeling simulations for the ten-year period from 2018 to 2027, taking into account the RWS, he opined that the RWS functions more as an interceptor system than a true recovery well system.

286. Specifically, he opined that much of the saline water seeping from the CCS into ground water is intercepted by the RWS, but that the recovery wells comprising the RWS are spaced too far apart, so that when there are high water levels in the CCS, some ground water containing saline CCS-origin water will still seep westward of the CCS in the deep portion of the aquifer. Thus, Wexler opined, the RWS does not create an effective hydrologic barrier to prevent CCS-origin water from continuing to move west of the CCS in the deep aquifer and will not retract hypersaline water back toward the L-31E Canal in the deep aquifer.<sup>37</sup>

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<sup>35</sup> Importantly, the Renewal Permit does not require the *saltwater interface*—which has moved inland due to numerous activities, not just operation of the CCS—to be retracted back to L-31E Canal by May 2028; rather, it requires the *hypersaline plume* caused by hypersaline water seepage from the CCS to be retracted to the L-31E Canal by the end of that period.

<sup>36</sup> This is consistent with Allen Stodghill's and Mark Stewart's testimony that the RWS will draw hypersaline water down into the deeper layers of the aquifer as it operates and that it will take some time for the RWS to withdraw all of that hypersaline water from the bottom of the aquifer.

<sup>37</sup> Wexler also opined that FPL will not meet the requirement, in Condition VI.10 of the Renewal Permit, to retract the hypersaline plume back to the L-31E Canal by 2028. However, Condition VI.10 of the Renewal Permit requires FPL, at the end of the fifth year of operation of the RWS, to evaluate the effectiveness of the RWS in retracting the hypersaline plume to the L-31E Canal within ten years of RWS operation. If this evaluation shows that the RWS will not retract the hypersaline plume to the L-31E Canal by the end of the ten-

287. Nonetheless, Wexler opined that the RWS would function to retract the saltwater interface slightly over the ten-year compliance period for retracting the hypersaline plume.

288. Wexler's model used different aquifer transmissivity values than those used by Stewart, whose transmissivity values were obtained from United States Geological Survey data. Additionally, Wexler's ground water model—unlike the model prepared and run by Stewart—has neither been peer-reviewed nor reviewed or accepted as accurate by any government agencies.

289. Wexler also opined that highly saline water carrying nutrients, that seeps from the CCS into ground water could flow eastward under Biscayne Bay via preferential pathways and discharged directly to Biscayne Bay. However, he did not investigate whether there are any points at which CCS-origin water seeping into ground water can discharge into Biscayne Bay.

290. As previously discussed, the persuasive evidence, consisting of the testimony and supporting evidence presented by Stewart and Stodghill, shows that there is little, if any, hydrologic connection of the CCS to Biscayne Bay, and, therefore, little, if any, seepage of CCS-origin water into Biscayne Bay. As discussed above, the persuasive evidence does not establish that the karst depressions at the bottom of Biscayne Bay are connected to the Upper Flow Zone or any other preferential pathway in the Biscayne Aquifer, such that CCS-origin water has a pathway to flow or seep into Biscayne Bay.

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year period, then FPL must provide an alternative plan for retracting the hypersaline plume by the end of that period. This interim compliance evaluation provides a "safety check" to help ensure that the hypersaline plume is retracted, such that it no longer is a factor in the location of the saltwater interface.

291. Kirk Martin testified on behalf of Petitioners and Intervenor regarding the projected effect of the hypersaline plume and the movement of the saltwater interface<sup>38</sup> on FKAA's Biscayne Aquifer wellfield<sup>39</sup> near Florida City, and FKAA's actions in exploring the development of another wellfield so that it can continue to fulfill its obligations to provide potable water to the Florida Keys.<sup>40</sup>

292. FKAA operates a wellfield that yields approximately 20 million gallons of water per day from the Biscayne Aquifer, which has been as a sole source aquifer by EPA. This designation means that this portion of the Biscayne Aquifer is the sole source of fresh ground water for southeast Florida.

293. The portion of the Biscayne Aquifer below FKAA's wellfield from which it withdraws fresh water is designated by rule 62-520.410 as a Class G-II aquifer, which, as noted above, means that it is designated for potable water use and has a total dissolved solids concentration of less than 10,000 mg/L.

294. As part of his work for FKAA, Martin analyzed several hydrological components, such as sea level rise, rainfall patterns, ground water levels, ground water pumpage, and water control management for the network of canals in the area, and compared each of these components to noted changes in salinity in monitoring wells.

295. He determined that the most substantial contributor to movement of the saltwater interface in what he termed the "southern front"—which is

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<sup>38</sup> As discussed above, the saltwater interface is the intersection of Class G-II and G-III ground waters. Class G-III ground water has a total dissolved solids concentration of 10,000 mg/L or greater, and Class G-II ground water has a total dissolved solids concentration of less than 10,000 mg/L. Ten thousand mg/L is roughly equivalent to a 5,000 to 6,000 mg/L chloride concentration.

<sup>39</sup> FKAA also has a co-located brackish water wellfield that yields approximately six million gallons of water per day from the Upper Floridan Aquifer.

<sup>40</sup> It is important that FKAA monitor for saltwater intrusion because that is the primary threat to the portion of the Biscayne Aquifer from which FKAA withdraws potable water.

located south and east of FKAA's wellfields—is manipulation of canal levels, particularly the level of the C-111 Canal, by SFWMD.

296. He opined that operation of the CCS is the major contributor to movement of the saltwater interface within the Model Land area, west of the CCS, and that the movement of the saltwater interface inland is a threat to the portion of the Biscayne Aquifer from which FKAA obtains its source of potable water.

297. The movement of the saltwater interface inland in the Model Land area has impaired the reasonable beneficial use of the adjacent Class G-II ground water, which consists of the Biscayne Aquifer in this location.

298. Martin opined that because implementation of the RWS only withdraws the hypersaline plume, and does not remediate areas in the Model Land in which the ground water has become more saline but is not hypersaline, the implementation of the RWS does not provide reasonable assurance that the saltwater interface will not continue to move inland due to operation of the CCS, thereby violating Class G-II water quality standards and impairing the reasonable and beneficial use of adjacent ground water.

299. However, because the saltwater interface already was located west of the CCS when it commenced operation in 1973, and has continued to move westward due to many other causes besides those solely attributable to the CCS, the Renewal Permit does not require the saltwater interface to be retracted; rather, it requires the *hypersaline plume* caused by hypersaline water seepage from the CCS to be retracted to the L-31E Canal by May 2028.

300. Additionally, if, as Martin also opined, the hypersaline plume from the CCS is the primary driver of the westward movement of the saltwater interface, and given that westward movement already has been halted by the RWS and that, assuming successful operation of the RWS, the hypersaline plume will be retracted to the L-31E Canal by May 2028, then implementation of the RWS under the Consent Order will stop the westward

movement of the saltwater interface, to the extent such movement is caused by the discharge of hypersaline water from the CCS into ground water.

301. Additionally, as discussed above, the competent, substantial, and persuasive evidence establishes that the operation of the RWS already has halted the westward movement, beyond the boundary of the CCS, of water seeping from the CCS into ground water. Therefore, by definition, the continued operation of the CCS under the Renewal Permit will not result in additional CCS-origin water moving via ground water, westward into the Model Land area or other areas.

302. Martin also opined that FPL's freshening of the CCS, as required by the Consent Order and authorized by the Certification for Turkey Point, increases the hydrostatic head of water seeping from the CCS, and will exacerbate the movement, or increase the size, of the hypersaline plume.

303. This opinion fails to take into account that the RWS is removing the water that seeps from the CCS into ground water. Thus, operation of the RWS prevents any water seeping from the CCS into ground water from moving west of the CCS. Accordingly, water seeping from the CCS will not affect the size of the hypersaline plume; to the contrary, the persuasive evidence shows that the RWS already is significantly retracting the hypersaline plume in the Upper Flow Zone and Lower Flow Zone. As discussed above, it is anticipated that as the RWS operates over time, the chloride levels in the deep monitoring wells will drop as the denser, more saline water sitting at the bottom of the aquifer ultimately is extracted. The persuasive evidence indicates that the hypersaline plume retraction conditions in the Renewal Permit will be met within the timeframe set forth in that condition.

304. Martin also testified that current discharges from the CCS will impact the FKAA's use of the potable water, through reduction of the amount of fresh water available and reduction of the buffer between the saltwater interface and FKAA's wellfield.

305. However, again, Martin's opinion fails to take into account that the operation of the RWS already has halted the migration of CCS-origin water west of the boundary of the CCS, so the *current* operation of the CCS is not affecting the aquifer offsite. To the extent that *past* discharges from the CCS have caused salinity levels to increase in the Class G-II aquifer west of the CCS and have impaired the reasonable and beneficial uses of that ground water, those past discharges are being retracted by the RWS back to the L-31E Canal, pursuant to the Consent Order.

306. Additionally, the Renewal Permit, Condition VI.9, requires that the westward migration of the hypersaline plume must be halted by May 15, 2021, and Condition VI.10 requires that the hypersaline plume must be retracted back to the L-31E Canal by May 2028. Operation of the CCS in compliance with these conditions will ensure that FPL's *future* operation of the CCS pursuant to the Renewal Permit does not violate Class G-II ground water standards or impair the reasonable beneficial use of adjacent ground waters.

307. Martin acknowledged that he does not know the quantities or rates of seepage of water from the CCS into ground water for years 2018, 2019, and 2020, and that he did not consider this information in opining that continued operation of the CCS under the Renewal Permit will result in further westward movement of the saltwater interface. He also acknowledged that he does not know the amount of hypersaline water being extracted by the RWS, which has been in operation since May 2018, and he did not take the operation of the RWS into consideration in formulating his opinion.

308. For these reasons, Martin's opinion regarding the lack of effectiveness of the RWS in halting the westward migration of, and retracting, the hypersaline plume is not supported by the evidence and is unpersuasive.

309. The competent substantial evidence establishes that, assuming the saltwater interface is moving westward at a rate of approximately 500 feet



per year,<sup>41</sup> it would take approximately ten years for the saltwater interface to move one mile westward. At this rate of movement, without any ongoing corrective actions pursuant to the Consent Order, Martin estimates that it would take approximately 40 years for the saltwater interface to reach FKAA's Biscayne Aquifer wellfield. This estimate is consistent with other experts' estimates of the amount of time it will take, if rate of movement of the saltwater interface remains similar to its current rate.

310. Based on the foregoing, it is determined that the continued operation of the CCS under the Renewal Permit will not violate applicable ground water standards.

#### XI. Petitioners' and Intervenor's Standing

##### A. FKAA's Standing

311. JoLynn Reynolds, Director of Engineering for FKAA, testified regarding the FKAA's interest in challenging the Renewal Permit.

312. As noted above, the FKAA was created by chapter 76-441, Laws of Florida. Pursuant to this law, FKAA supplies water to the Monroe County/Florida Keys area, and wastewater services for parts of Monroe County and the Florida Keys. To meet its legal obligations under this law, FKAA has developed, and operates, two potable water wellfields in Florida City. At its Biscayne Aquifer wellfield, FKAA has ten fresh water-producing wells that withdraw water from the Biscayne Aquifer. At its Floridan Aquifer wellfield, FKAA has four brackish water-producing wells that withdraw water from the Floridan Aquifer, and one deep injection well associated with the reverse osmosis plant.

313. FKAA's water supply pipeline leads from Florida City to the Keys, and traverses a route from Ocean Reef to Key West.

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<sup>41</sup> Martin testified that monitoring well measurements show that the saltwater interface is moving as slowly as 280 feet per year, while other wells show it moving as fast as 480 feet per year. Martin testified that assuming a rate of 500 feet per year is reasonable for water supply planning purposes, given the uncertainty of measurement.

314. Currently, FKAA produces approximately 18 mgd to meet the potable water demand of its customers.

315. FKAA prepares a Water System Master Plan ("Master Plan") in order to plan its water demands, projected demands, water supply sources, and capital improvement projects over a 20-year planning horizon. However, the Master Plan is updated every two years in order to stay current.

316. FKAA's current Master Plan covers the 2020 to 2040 planning period. FKAA's existing water production wells have a useful life of approximately 50 years. The wells, which were installed in the 1980s, will reach the end of their service life at the end of the 20-year planning horizon. Currently, FKAA does not anticipate having to upgrade or replace any of its water production wells during its current 20-year planning horizon.

317. FKAA has a lime-softening water treatment plant that treats approximately 23.8 mgd of water withdrawn from the Biscayne Aquifer. In addition, FKAA operates a reverse osmosis brackish water treatment plant that treats Floridan Aquifer water and produces approximately six mgd of potable water. FKAA also operates two emergency reverse osmosis plants: one in Marathon, which produces approximately one mgd of potable water, and one in Stock Island, which produces approximately two mgd of potable water.

318. The lime-softening plant, which is used to treat water withdrawn from the Biscayne Aquifer, cannot be used to treat water withdrawn from another aquifer. This plant must treat the water to the drinking water standards of 160 parts per million of sodium and 250 parts per million of chloride. The lime-softening plant is unable to be used to remove salt from the water produced by the wells; thus, the water that is treated by the lime-softening plant must meet drinking water standards for salinity, even before it is treated by the plant.

319. The reverse osmosis plant has a salinity treatment threshold of 4,000 parts per million for chloride, so it cannot be used to treat hypersaline water.<sup>42</sup>

320. As part of its water use permit, FKAA is required to have a saltwater intrusion monitoring program. This monitoring program currently consists of 15 wells located east, southeast, and south of the Florida City wellfield site. These wells sample water from depths of 35 feet to 80 feet below land surface.

321. Using USGS-developed isochlor lines, FKAA prepared a graphic showing the approximate location of the saltwater interface for the years 2008, 2011, and 2016. This graphic shows that the saltwater interface is closest to—i.e., approximately 2.99 miles east of—the FKAA's Florida City wellfield at the Card Sound Road Canal. Notably, the saltwater interface at this location did not significantly move in the period between 2008 and 2016. As previously discussed, that canal was open to Biscayne Bay until approximately 2010, and provided a direct conduit for saltwater intrusion inland. The graphic shows that, as of 2016, the next closest location of the saltwater interface is in the Model Land area, approximately 4.48 miles east of the Florida City wellfield.

322. Due to the continued inland movement of the saltwater interface inland over time, in 2017, FKAA installed six new saltwater interface monitoring wells, at an estimated cost of approximately \$400,000, to enable continued monitoring of the movement of the saltwater interface.<sup>43</sup>

323. One of the wells installed in 2017, FKS-14, showed sharply rising chloride levels at depths from 55 feet to 80 feet below land surface over the period between approximately February 2018 and July 2018. This well also

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<sup>42</sup> This plant treats water withdrawn from the Floridan Aquifer. There are no allegations in this case that the hypersaline plume has affected, or may affect, any part of the Floridan Aquifer.

<sup>43</sup> Notably, three of FKAA's monitoring wells, FKS-1, FKS-2, and FKS-8, which are located east of the saltwater interface, are located immediately proximate to, respectively, the C-111, C-110, and Card Sound Road canals.

showed chloride levels beginning to rise at the 40 to 45 feet below land surface level starting in approximately April 2018.<sup>44</sup> FKAA's Biscayne Aquifer water production wells withdraw water from between 20 and 60 feet below land surface, so increasing chloride levels have given rise to FKAA's concern regarding the movement of the saltwater interface inland. Based on information showing that the hypersaline plume is pushing the saltwater interface westward toward its Florida City wellfield, FKAA has challenged the Renewal Permit.

324. Currently, FKAA's Biscayne Aquifer wellfield is not contaminated with saline or hypersaline water.

325. However, based on the estimated rate of movement of the saltwater interface of approximately 500 feet per year, the saltwater interface—if its movement is unchecked—is estimated to reach FKAA's Biscayne Aquifer wellfield between 34 and 43 years.

326. As Reynolds explained, FKAA intends to continue producing water from the Biscayne Aquifer because that water already meets drinking water standards for sodium and chlorides, so requires less extensive and expensive treatment than water produced by Floridan Aquifer wells, which would require more costly treatment by reverse osmosis to meet drinking water standards.

327. Thus, in response to its concern that chloride levels may rise in its production wells, FKAA is exploring other locations to which it could relocate its Biscayne Aquifer wellfield if chloride levels continue to rise at accelerated rates in its monitoring wells. To this end, FKAA has retained Kirk Martin, FPL's water supply planning consultant, to identify available properties north/northwest of its Florida City wellfield that may be suitable for relocation of its water production wellfield.

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<sup>44</sup> FKS-14 is located southeast of, and in close proximity to, the ACI quarry.

328. FKAA roughly estimates that it will cost approximately \$4 million to locate and purchase land suitable for development as a wellfield, and it also estimates that installing additional pipeline to transmit water from a new wellfield to the Florida City lime-softening treatment plant would cost between \$1.5 and 2 million dollars per mile. FKAA also would have to install a new pump station, at additional cost, to pump water from a new wellfield to the lime-softening treatment plant.

329. Due to the monitoring results for well FKS-14, which show chloride levels rising sharply once they become elevated, FKAA currently is planning—and incurring cost—in anticipation that it may be required to relocate its wellfield. Reynolds estimated that the process of planning, purchasing, designing, constructing, and commencing operation of a wellfield would take many years. She explained that, given its legal obligation under its special act to provide potable water to the Florida Keys, FKAA does not have the luxury to adopt a wait-and-see approach with respect to preparing for impacts of movement of the saltwater interface on the Biscayne Aquifer.

330. FKAA's water use permit issued by SFWMD grants it the legal right to continue to withdraw from the Biscayne Aquifer up to March 13, 2028.

#### B. FKFGA's Standing

331. Stephen Friedman, Commodore of the FKFGA, testified regarding that entity's interest in the outcome of these proceedings.

332. The FKFGA, which was established in 1956, is a conservation organization having slightly over 100 members, who are professional fishing guides in and around south Florida. Among other things, the FKFGA helps to educate its members and the public regarding best practices on the water in order to preserve and protect fishery resources and habitat. Its members also assist in sampling activity and in conducting censuses related to natural resources in south Florida. Its members engage in fishing activities all over south Florida, including in Biscayne Bay and the Florida Keys.

333. Friedman testified that he and other members fish in the portion of Biscayne Bay east of the CCS, in the vicinity of the Arsenicker Keys.

334. He testified that he has observed changes in the environmental conditions in this area. According to Friedman, when he started fishing in that area, it had good fishing habitat; however, since 2000, he has observed sparse and dead seagrass, and the quality of the fishing has declined. He testified that bonefish and permit, which are the "target" species for his clientele, are not as plentiful. Consequently, he does not fish there as often as he did in the past. He testified that other members of the FKFGA have related similar experiences to him.

335. Friedman stated that the FKFGA and its members' concerns are that

[W]e have a nuclear power plant sitting in between two national parks, and where we're having some environmental difficulties in the Everglades, and we're seeing environmental difficulties in Biscayne Bay National Park. . . . And when we see habitat degrade, and know that it could be prevented, that's where we try to step in and gain as much knowledge as we can, and educate ourselves to find out how we can change something and bring back what used to be great habitat in certain areas. . . . Especially if it's something that we've found that science corroborates our observations.

336. Due to these concerns, as expressed by Friedman, the FKFGA has challenged the Renewal Permit.

337. Benjamin Blanco, a member of the FKFGA, testified regarding his own experiences, as a professional fishing guide and in his personal capacity as a recreational fisherman, regarding fishing in Biscayne Bay and, specifically, in the area offshore of the Turkey Point facility. According to Blanco, he fishes the area offshore of Turkey Point approximately 100 days per year.



338. He testified that, in the past, there were plentiful turtlegrass beds in the area, but that now the bottom of the bay in the area is mostly sand, with no grass.

339. The decline of the abundance and condition of turtlegrass beds in this area has negatively affected the abundance and movement of the game fish species in these areas. As a result, this area no longer supports extensive fishing for these species, and Blanco and other professional fishing guides have had to change their fishing practices.

340. Additionally, as a result of the decline of fish habitat in this area, Blanco no longer engages in personal recreational fishing in this area.

341. He acknowledged that he is not a scientist and has not engaged in any scientific studies on fish populations in Biscayne Bay.

342. He also acknowledged that there are many other factors that are adversely affecting the environment in south Florida, including in Biscayne Bay. Specifically, he acknowledged that the decrease of fresh water flow into Biscayne Bay, the destruction of shoreline habitat, the decline of water quality due to nutrient discharges, and the increase in recreational fishing, all have harmed fish populations in the bay.

#### C. Monroe County's Standing

343. Michael Forster, County Commissioner for Monroe County District 5, testified on behalf of Intervenor Monroe County, Florida, regarding the County's interest in these proceedings.

344. The County, and the municipalities in the County, receive their potable water supply from FKAA. The County has entered into an interlocal agreement with FKAA, establishing the respective roles of FKAA and the County with respect to FKAA's provision of potable water to the County.

345. Additionally, the County has adopted, in the Monroe County, Florida, Comprehensive Plan (hereafter, "County Plan"), a goal, objectives, and

policies recognizing and supporting the role of FKAA in providing the potable water supply to meet the needs of present and future County residents.

346. Under the County Plan, in order for a certificate of occupancy or its functional equivalent to be issued for land development activity for which such approval is required, there must be an adequate potable water supply available to support the development. If a reliable potable water supply is not available to the County, no certificates of occupancy can be issued, thereby severely affecting the County, its economy, and its residents.

347. Forster also testified that the County has an interest in protecting Biscayne Bay as a natural resource. Under the County Plan, the County has planning obligations with respect to, and allocates resources for, the monitoring of environmental and natural resources within its boundaries. In particular, the County is obligated to work cooperatively with various federal and state agencies, including the Florida Keys National Marine Sanctuary ("FKNMS"), which is located in Monroe County, to protect water quality within the FKNMS.

348. Forster testified, credibly, that the County's economy is water-based, and that recreational and commercial fisheries are a major part of that economy. To that end, the County expends resources to monitor the health of fisheries in the County.

349. Ecotourism also constitutes a large part of the County's economic base. Specifically, through the taxes the County collects as a result of tourism, including ecotourism, the County is able to provide a range of local government services to its residents that it otherwise would not be able to provide if it did not have such revenue.

350. The County requested to intervene in these proceedings due to its concerns that the continued operation of the CCS would adversely affect the potable ground water in FKAA's wellfield from which the County obtains its potable water.

351. The County also requested to intervene due to its concerns regarding protecting and maintaining the quality of surface waters in Biscayne Bay, which constitutes an important resource that supports the County's ecotourism.

#### CONCLUSIONS OF LAW

352. DOAH has jurisdiction over the parties to, and subject matter of, this proceeding, pursuant to chapter 403 and sections 120.569 and 120.57(1).

353. These consolidated proceedings are conducted de novo. § 120.57(1)(k), Fla. Stat. As such, they are designed to formulate agency action, not review agency action taken earlier and preliminarily. *See Fla. Dep't of Transp. v. J.W.C. Co., Inc.*, 396 So. 2d 778, 785 (Fla. 1st DCA 1981).

#### I. Burden and Standard of Proof

354. Section 120.569(2)(p) states, in relevant part:

For any proceeding arising under . . . chapter 403, if a nonapplicant petitions as a third party to challenge an agency's issuance of a license, permit, or conceptual approval, the order of presentation in the proceeding is for the permit applicant to present a prima facie case demonstrating entitlement to the license, permit, or conceptual approval, followed by the agency. This demonstration may be made by entering into evidence the application and relevant material submitted to the agency in support of the application, and the agency's staff report or notice of intent to approve the permit, license, or conceptual approval. Subsequent to the presentation of the applicant's prima facie case and any direct evidence submitted by the agency, the petitioner initiating the action challenging the issuance of the license, permit, or conceptual approval has the burden of ultimate persuasion and has the burden of going forward to prove the case in opposition to the license, permit, or conceptual approval through the presentation of competent and substantial evidence.

355. Because this case involves a challenge to a permit issued pursuant to chapter 403, Petitioners and Intervenor bear the ultimate burden of proof in these proceedings, by a preponderance of the evidence, to show that FPL has not provided reasonable assurance that it will meet all applicable statutory and rule requirements entitling it to issuance of the Renewal Permit.

## II. Prima Facie Case of Entitlement to Renewal Permit

356. In proposing to issue the Renewal Permit, DEP determined that the Application and supporting information submitted by FPL provided reasonable assurance that the continued operation of the CCS will meet all applicable statutory and rule requirements, thus entitling FPL to issuance of the Renewal Permit.

357. Pursuant to section 120.569(2)(p), upon admission of the Application and supporting information, along with DEP's Notice of Intent to Issue, into evidence, FPL established a prima facie case of reasonable assurance that it meets all applicable statutory and rule requirements for issuance of the Renewal Permit.

358. Once FPL established its prima facie entitlement to the Renewal Permit, the burden shifted to Petitioners and Intervenor to present competent substantial evidence to prove their case in opposition to the issuance of the Renewal Permit. As discussed above, pursuant to section 120.569(2)(p), Petitioners and Intervenor bear the ultimate burden of proof, by a preponderance of the evidence, to show that FPL has not met the applicable requirements and standards for, and, therefore, is not entitled to, issuance of the Renewal Permit. Thus, absent Petitioners and Intervenor proving, by the preponderance of the competent substantial evidence, that FPL failed to provide reasonable assurance regarding specific statutory and rule requirements, FPL is entitled to issuance of the Renewal Permit.

### III. The Reasonable Assurance Standard

359. As further discussed below, the reasonable assurance standard means that the applicant has demonstrated a substantial likelihood that the project, as proposed, will be successfully implemented. *Metro Dade Cty. v. Coscan Fla., Inc.*, 609 So. 2d 644, 648 (Fla. 3d DCA 1992).

360. This standard is not one of absolute guarantees. *Coscan Fla., Inc.*, 609 So. 2d at 608; *Hamilton Cnty. Bd. of Cnty. Comm'rs v. State, Dep't of Env't Regul.*, 587 So. 2d 1378, 1388 (Fla. 1st DCA 1991). An applicant is not required to eliminate all contrary possibilities, regardless of how remote, or to address impacts that are theoretical. *See Putnam Cnty. Env't Council, Inc. v. Ga.-Pac. Corp.*, Case No. 01-2442 (Fla. DOAH July 3, 2002; Fla. DEP. Aug. 6, 2002); *Crystal Springs Recreational Pres., Inc. v. Sw. Fla. Water Mgmt. Dist.*, Case No. 99-1415 (Fla. DOAH Jan. 27, 2000; SWFWMD Feb. 24, 2000); *Alafia River Basin Stewardship Council, Inc. v. Sw. Fla. Water Mgmt. Dist.*, Case Nos. 98-4925, 98-4926, 98-4930, 98-4931 (Fla. DOAH July 2, 1999; SWFWMD Jul. 29, 1999); *Caloosa Prop. Owners' Ass'n., Inc. v. Dep't of Env't Regul.*, 462 So. 2d 523, 526 (Fla. 1st DCA 1985). An applicant also is not required to "disprove all 'worst case scenarios' . . . raised by objectors." *Ginnie Springs, Inc. v. Craig Watson*, Case Nos. 98-0945, 98-1070, 98-1071 (Fla DOAH Feb. 23, 1999), Case Nos. 98-0258, 98-0265, 98-0266 (Fla. DEP April 8, 1999)(modified on other grounds).

361. Reasonable assurance may be established by presenting competent substantial evidence consisting of detailed plans and engineering studies, coupled with credible expert witness testimony. *In re: Gainesville Renewable Energy Ctr., LLC*, Case No. 09-6641 (Fla. DOAH Nov. 1, 2010), *modified in part*, Case No. 09-4002 (Fla. Siting Bd. Dec. 15, 2010)(citing *Hamilton Cnty. Bd. of Cnty. Comm'rs*, 587 So. 2d at 1388-89).



#### IV. Compliance with Applicable Provisions of Chapter 403

362. Section 403.021, titled "Legislative [D]eclaration; [P]ublic [P]olicy," establishes the public policy for the State of Florida regarding the protection of water, water, air, and related natural resources. This statute states, in pertinent part:

(1) The pollution of the air and waters of this state constitutes a menace to public health and welfare; creates public nuisances; is harmful to wildlife and fish and other aquatic life; and impairs domestic, agricultural, industrial, recreational, and other beneficial uses of air and water.

(2) It is declared to be the public policy of this state to conserve the waters of the state and to protect, maintain, and improve the quality thereof for public water supplies, for the propagation of wildlife and fish and other aquatic life, and for domestic, agricultural, industrial, recreational, and other beneficial uses and to provide that no wastes be discharged into any waters of the state without first being given the degree of treatment necessary to protect the beneficial uses of such water.

\* \* \*

(5) It is hereby declared that the prevention, abatement, and control of the pollution of the air and waters of this state are affected with a public interest, and the provisions of this act are enacted in the exercise of the police powers of this state for the purpose of protecting the health, peace, safety, and general welfare of the people of this state.

363. Petitioners and Intervenor have alleged that the proposed issuance of the Renewal Permit is inconsistent with sections 403.021(1), (2) and (5). However, this statute establishes the state's general environmental protection policy, and does not impose any specific regulatory standards or criteria for issuing or denying permits for facilities and activities that constitute sources of pollution. To this point, the Legislature has enacted other statutes, and DEP has adopted numerous rules, that do establish



specific regulatory standards and requirements for issuing or denying permits for facilities and activities. Many of those statutes and rules apply in these proceedings, and they are specifically addressed below.

364. Moreover, in any event, Petitioners and Intervenor did not prove, by the preponderance of the evidence, that the continued operation of the CCS pursuant to the Renewal Permit will constitute a menace to public health and welfare; will harm wildlife, fish, and other aquatic life; will impair domestic, agricultural, industrial, recreational, and other beneficial uses of air and water; will not conserve the waters of this state and protect, maintain, and improve the quality of such waters for public water supplies, propagation of wildlife, fish, and other aquatic life; will not protect, maintain, and improve the quality of waters of this state for domestic, agricultural, industrial, recreational, and other beneficial uses; will discharge waste into waters of the state without first being treated to protect the beneficial uses of such water; or is contrary to protection of the health, peace, safety, and welfare of the people of this state.

365. Section 403.087, which generally governs permitting of facilities that reasonably are expected to be a source of pollution, states, in pertinent part:

(1) A stationary installation that is reasonably expected to be a source of air or water pollution must not be operated, maintained, constructed, expanded, or modified without an appropriate and currently valid permit issued by the department, unless exempted by department rule.

\* \* \*

(6) The department shall issue permits to construct, operate, maintain, expand, or modify an installation which may reasonably be expected to be a source of pollution only when it determines that the installation is provided or equipped with pollution control facilities that will abate or prevent pollution to the degree that will comply with the

standards or rules adopted by the department,  
except as provided in section 403.088.

366. Section 403.088, which specifically governs water pollution operation  
permitting, states, in pertinent part:

(1) Without the written authorization of the  
department, a person may not discharge any waste  
into the waters of the state which, by itself or in  
combination with the wastes of other sources,  
reduces the quality of the receiving waters below  
the classification established for such waters.

\* \* \*

(2)(a) Any person intending to discharge wastes  
into waters of the state shall make application to  
the department for any appropriate permit  
required by this chapter. Application shall be made  
on a form prescribed by the department and shall  
contain such information as the department  
requires.

\* \* \*

2. If the department finds that the proposed  
discharge will not reduce the quality of the  
receiving waters below the classification  
established for them, it may issue an operation  
permit if it finds that such degradation is necessary  
or desirable under federal standards and under  
circumstances which are clearly in the public  
interest.

\* \* \*

(d) An operation permit may be renewed upon  
application to the department if the discharge  
complies with permit conditions and applicable  
statutes and rules. No operation permit shall be  
renewed or issued if the department finds that the  
discharge will not comply with permit conditions or  
applicable statutes and rules.

(e) However, if the discharge will not meet permit conditions or applicable statutes and rules, the department may issue, renew, revise, or reissue the operation permit if:

1. The applicant is constructing, installing, or placing into operation, or has submitted plans and a reasonable schedule for constructing, installing, or placing into operation, an approved pollution abatement facility or alternative waste disposal system; [or]

\* \* \*

3. There is no present, reasonable, alternative means of disposing of the waste other than by discharging it into the waters of the state; [or]

4. The granting of an operation permit will be in the public interest; [or]

5. The discharge will not be unreasonably destructive to the quality of the receiving waters[.]

\* \* \*

(f) A permit issued, renewed, or reissued pursuant to paragraph (e) shall be accompanied by an order establishing a schedule for achieving compliance with all permit conditions. Such permit may require compliance with the accompanying order.

367. DEP has adopted rules to interpret and implement these statutory policies, requirements, and standards.

368. Based on the competent, substantial, and persuasive evidence, FPL has demonstrated that it complies with each of these rules, as applicable, and, therefore, complies with these provisions of chapter 403.

369. However, even if it were determined that the Renewal Permit did not meet the applicable statute and rules, issuance of the Renewal Permit would still be authorized under section 403.088(2)(e).

370. Specifically, FPL constructed, installed, and placed into operation the RWS, which is an approved pollution abatement facility. As discussed above, the RWS is successfully extracting the hypersaline plume back to the L-31E Canal. Therefore, notwithstanding that past operation of the CCS resulted in hypersaline water moving west of the facility and violating ground water standards, operation of the RWS is abating those violations. Thus, section 403.088(2)(e)1. provides authority for issuance of the Renewal Permit.

371. Additionally, at present, there are no reasonable alternative means, other than operation of the CCS, for cooling the heated water generated by Units 3 and 4. Cooling water is necessary for the operation of the Turkey Point Units 3 and 4, and the CCS provides and treats that cooling water. To this point, the exchange of water between the CCS and ground water has been authorized by industrial wastewater permits since the commencement of operation of the CCS in 1973. Thus, section 403.088(2)(e)3. provides authority for issuance of the Renewal Permit.

372. Issuance of the Renewal Permit for the CCS is in the public interest. As discussed above, the Turkey Point electrical generating facility, and, specifically, Units 3 and 4, are an essential source of electricity for south Florida. Thus, section 403.088(2)(e)4. provides authority for issuance of the Renewal Permit.

373. Additionally, the competent, substantial, and persuasive evidence establishes that discharges from the CCS into ground water, and to surface water to the extent such discharges may occur, are not unreasonably destructive to the quality of receiving waters. As discussed at length above, due to the operation of the RWS, the continued operation of the CCS is not currently adding to the body of hypersaline groundwater west of the facility, and will not do so in the future under the Renewal Permit. Additionally, the evidence did not demonstrate significant, if any, seepage from the CCS into Biscayne Bay, and the areas of the bay near the CCS are meeting the applicable water quality standards, including the minimum and general

criteria in rule 62-302.500, the estuary-specific numeric nutrient criteria established in rule 62-302.532(1)(h), and the antidegradation policies and permitting standards established in rules 62-302.300, 62-302.700, and 62-4.242. Thus, any discharge from the CCS to offsite waters is not unreasonably destructive to the quality of receiving waters. Therefore, issuance of the Renewal Permit is authorized by section 403.088(2)(e)5.

374. Finally, conditions VI.9. and VI.10. of the Renewal Permit impose a compliance schedule, keyed to the remediation schedule established in the Consent Order, for halting the westward migration of the hypersaline plume by May 2021, and retracting the hypersaline plume back to the L-31E Canal by May 2028. These measures have had, and will continue to have, the effect of abating any ground water violations that previously occurred due to past operation of the CCS. Thus, the Renewal Permit complies with the requirement in section 403.088(2)(f) to establish a compliance schedule.

375. In sum, the competent, substantial, and persuasive evidence establishes that the CCS meets all applicable statutory requirements and provisions in chapter 403 for issuance of the Renewal Permit.

#### V. Compliance with Rule 62-4.070

376. Rule 62-4.070, which establishes the standard for issuance or denial of permits under chapter 403, states in pertinent part:

(1) A permit shall be issued to the applicant upon such conditions as the Department may direct, only if the applicant affirmatively provides the Department with reasonable assurance based on plans, test results, installation of pollution control equipment, or other information, that the construction, expansion, modification, operation, or activity of the installation will not discharge, emit, or cause pollution in contravention of Department standards or rules.

\* \* \*

(2) If, after review of the application and all the information, the Department determines that the applicant has not provided reasonable assurance that the construction, modification, expansion, or operation of the installation will be in accord with applicable laws or rules, including rules of approved local programs, the Department shall deny the permit.

\* \* \*

(5) The Department shall take into consideration a permit applicant's violation of any Department rules at any installation when determining whether the applicant has provided reasonable assurances that Department standards will be met.

377. The Petitions allege that issuance of the Renewal Permit is inconsistent with rule 62-4.070(1) and (2).

378. DEP reviewed the Application and supporting information, and determined that FPL had provided reasonable assurance that the continued operation of the CCS meets all applicable statutory and rule requirements for issuance of the Renewal Permit; thus, DEP proposed to issue the Renewal Permit.

379. As discussed above, FPL established its prima facie entitlement to issuance of the Renewal Permit in these proceedings by entering the Application, supporting information, and Notice of Intent into evidence. The burden then shifted to Petitioners and Intervenors in these proceedings to demonstrate, by a preponderance of the evidence, that FPL does not meet the applicable statutes and rules. As found above, and further discussed below, Petitioners and Intervenor did not meet this burden.

380. Accordingly, it is determined that issuance of the Renewal Permit complies with rules 62-4.070(1) and (2).

381. Moreover, as discussed above, to the extent the past operation of the CCS violated applicable ground water rules, the competent, substantial, and



persuasive evidence establishes that, due to the operation of the RWS, the current operation of the CCS is no longer violating ground water standards, and the continued future operation of the CCS under the Renewal Permit will not violate ground water standards in the future.

382. Accordingly, it is concluded that the issuance of the Renewal Permit complies, and is consistent with, rule 62-4.070.

VI. Compliance with Chapter 62-302 and Rule 62-4.242 – Surface Water Quality Standards and Antidegradation Policy and Permitting Requirements

383. Chapter 62-302 establishes surface water quality standards applicable to regulated activities in Florida, including operation of the CCS.

384. Rule 62-302.300, titled Findings, Intent, and Antidegradation for Surface Water Quality, establishes the state antidegradation policy and requirements regarding the protection of surface waters. Pertinent to this case, the rule states as follows:

(14) Existing uses and the level of water quality necessary to protect the existing uses shall be fully maintained and protected. Such uses may be different or more extensive than the designated use.

(15) Pollution which causes or contributes to new violations of water quality standards or to continuation of existing violations is harmful to the waters of this State and shall not be allowed. Waters having water quality below the criteria established for them shall be protected and enhanced. However, the Department shall not strive to abate natural conditions.

(16) If the Department finds that a new or existing discharge will reduce the quality of the receiving waters below the classification established for them or violate any Department rule or standard, it shall refuse to permit the discharge.

\* \* \*

(18)(a) Except as provided in paragraphs (b) and (c), of this subsection, an applicant for either a general or generic permit or renewal of an existing permit for which no expansion of the discharge is proposed is not required to show that any degradation from the discharge is necessary or desirable under federal standards and under circumstances which are clearly in the public interest.

385. Related to this antidegradation policy, rule 62-4.242, which establishes the generally applicable antidegradation permitting requirements, and the specific permitting requirements applicable to OFWs and ONRWs, states, in pertinent part:

(1) Antidegradation Permitting Requirements.

(a) Permits shall be issued when consistent with the antidegradation policy set forth in Rule 62-302.300, F.A.C., and, if applicable, Rule 62-302.700, F.A.C.

(b) In determining whether a proposed discharge which results in water quality degradation is necessary or desirable under federal standards and under circumstances which are clearly in the public interest, the department shall consider and balance the following factors:

1. Whether the proposed project is important to and is beneficial to the public health, safety, or welfare (taking into account the policies set forth in Rule 62-302.300, F.A.C., and, if applicable, Rule 62-302.700, F.A.C.); and,
2. Whether the proposed discharge will adversely affect conservation of fish and wildlife, including endangered or threatened species, or their habitats; and,
3. Whether the proposed discharge will adversely affect the fishing or water-based recreational

values or marine productivity in the vicinity of the proposed discharge; and,

4. Whether the proposed discharge is consistent with any applicable Surface Water Improvement and Management Plan that has been adopted by a Water Management District and approved by the Department.

(2) Standards Applying to Outstanding Florida Waters.

(a) No Department permit or water quality certification shall be issued for any proposed activity or discharge within an Outstanding Florida Waters, or which significantly degrades, either alone or in combination with other stationary installations, any Outstanding Florida Waters, unless the applicant affirmatively demonstrates that:

1. With respect to blowdown from a recirculated cooling water system of a steam electrical generating plant, that the discharge:

a. Meets the applicable limitations of subsection 62-302.520(4), F.A.C., at the point of discharge, or

b. Has a mixing zone established pursuant to paragraph 62-302.520(6)(b), F.A.C., which assures the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife in and on the Outstanding Florida Water, and which is established taking into account the recreational or ecological significance of such water; and,

c. Meets the temperature limits of subsection 62-302.520(4), F.A.C., at the boundary of the mixing zone established pursuant to paragraph 62-302.520(6)(b), F.A.C., or

2. The proposed activity of discharge is clearly in the public interest, and either:

a. A Department permit for the activity has been issued or an application for such permit was complete on the effective date of the Outstanding Florida Water designation.

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(3) Standards Applying to Outstanding National Resource Waters:

(a) All discharges or activities that may cause degradation of water quality in Outstanding National Resource Waters are prohibited, other than:

1. Discharges or activities that are exempted by statute from Department permitting or regulation,
2. Those discharges or activities described in sub-paragraphs 62-4.242(2)(a)1.b., 62-4.242(2)(a)1.c., and 62-4.242(2)(a)2.b., F.A.C.

386. Rule 62-302.500, titled Surface Waters: Minimum Criteria, General Criteria, states in pertinent part:

(1) Minimum Criteria. All surface waters of the State shall at all places and at all times be free from:

(a) Domestic, industrial, agricultural, or other man-induced non-thermal components of discharges which, alone or in combination with other substances or in combination with other components of discharges (whether thermal or non-thermal):

1. Settle to form putrescent deposits or otherwise create a nuisance, or
2. Float as debris, scum, oil, or other matter in such amounts as to form nuisances, or
3. Produce color, odor, taste, turbidity, or other conditions in such degree as to create a nuisance, or

4. Are acutely toxic, or

5. Are present in concentrations which are carcinogenic, mutagenic, or teratogenic to human beings or to significant, locally occurring, wildlife or aquatic species, unless specific standards are established for such components in subsection 62-302.500(2) or Rule 62-302.530, F.A.C., or

6. Pose a serious danger to the public health, safety, or welfare.

(b) Thermal components of discharges which, alone, or in combination with other discharges or components of discharges (whether thermal or non-thermal):

1. Produce conditions so as to create a nuisance, or

2. Do not comply with applicable provisions of Rule 62-302.520, F.A.C.

387. Rule 62-302.530 establishes the numeric and narrative surface water quality criteria applicable to surface waters in Florida, based on the classification of that surface water. The criteria express the maximum of the specified constituent not to be exceeded at any time.<sup>45</sup>

388. Pertinent here, paragraph (48)(a) establishes the following narrative nutrient criterion: "[t]he discharge of nutrients shall continue to be limited as needed to prevent violations of other standards contained in this chapter. Man-induced nutrient enrichment (total nitrogen or total phosphorus) shall be considered degradation in relation to the provisions of Rules 62-302.300, 62-302.700, and 62-4.242, F.A.C."

389. Also pertinent here, paragraph 48(b) establishes the following narrative nutrient criterion: "[i]n no case shall nutrient concentrations of a

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<sup>45</sup> The rule establishes an exception, not applicable here, for exceedances in authorized mixing zones.

body of water be altered so as to cause an imbalance in natural populations of aquatic flora or fauna."

390. As found above, Biscayne Bay is classified as a Class III marine surface water, pursuant to rule 62-302.400(15).

391. Rule 62-532(1)(h) establishes the estuary-specific numeric interpretations of the narrative nutrient criteria in rule 62-302.530(48)(a) and (b) specific to Biscayne Bay.

392. Rule 62-302.700 establishes Florida's water quality protection policy with respect to OFWs and ONRWs. This rule states, in pertinent part:

(1) It shall be the Department policy to afford the highest protection to Outstanding Florida Waters and Outstanding National Resource Waters. No degradation of water quality, other than that allowed in subsections 62-4.242(2) and (3), F.A.C., is to be permitted in Outstanding Florida Waters and Outstanding National Resource Waters, respectively, notwithstanding any other Department rules that allow water quality lowering.

393. Pursuant to rule 62-302.700(9)(h)5. and 6., Biscayne Bay is designated an OFW. Rule 62-302.700(10)(a)1. also designates Biscayne Bay as an ONRW; however, as noted above, because the Legislature has not enacted legislation specifically authorizing protection and maintenance of ONRWs to the extent required by federal regulation, this designation is not in effect. Fla. Admin. Code R. 62-302.700(10)(b).

394. Based on the competent, substantial, and persuasive evidence, it is concluded that the continued operation of the CCS pursuant to the Renewal Permit will not violate any applicable surface water quality standards.

395. Specifically, as discussed at length, above, the evidence shows that, to the extent there is any discharge from the CCS to surface waters, it will not cause or contribute to violations of the Class III surface water quality standards; will not cause or contribute to violations of the minimum and



general surface water quality criteria; will not result in violations of the applicable estuary-specific numeric nutrient criteria; will not impair designated uses of adjacent surface waters and ground water; and will not degrade water quality in Biscayne Bay.

396. Accordingly, FPL has provided reasonable assurance that the continued operation of the CCS, pursuant to the Renewal Permit, will meet all applicable requirements and standards in chapter 62-302 and the antidegradation permitting standard in rule 62-4.242.

#### VII. Compliance with Chapter 62-520 – Ground Water Quality Standards

397. Chapter 62-520 governs the protection of ground water in Florida.

398. Rule 62-520.310(2) states: "[n]otwithstanding the classification and criteria for ground water set forth in this chapter, discharge to ground water shall not impair the designated use of contiguous surface waters."

399. Rule 62-520.400 establishes the minimum criteria for ground water in Florida. This rule states, in pertinent part:

(1) All ground water shall at all places and at all times be free from domestic, industrial, agricultural, or other man-induced non-thermal components of discharges in concentrations which, alone or in combination with other substances, or components of discharges (whether thermal or non-thermal):

(a) Are harmful to plants, animals, or organisms that are native to the soil and responsible for treatment or stabilization of the discharge relied upon by Department permits, or

(b) Are carcinogenic, mutagenic, teratogenic, or toxic to human beings, unless specific criteria are established for such components in Rule 62-520.420, F.A.C., or

(c) Are acutely toxic within surface waters affected by the ground water, or

(d) Pose a serious danger to the public health, safety, or welfare, or

(e) Create or constitute a nuisance, or

(f) Impair the reasonable and beneficial use of adjacent waters.

400. The competent substantial evidence establishes that the continued operation of the CCS, pursuant to the Renewal Permit, will meet these minimum criteria.

401. To the extent Petitioners and Intervenor presented evidence concerning the effect that the continued operation of the CCS under the Renewal Permit will pose a serious danger to the public health, safety, or welfare, or create or constitute a nuisance, that evidence was unpersuasive.<sup>46</sup>

402. As discussed above, the Renewal Permit establishes compliance benchmarks, and a schedule for meeting these benchmarks, for halting the westward migration of the hypersaline plume and retracting it back to the L-31E Canal. The competent, substantial, and persuasive evidence establishes that the RWS is functioning successfully to achieve these compliance benchmarks, which will prevent the CCS from further contributing to the movement of the saltwater interface inland.

403. To the extent Petitioners and Intervenor assert that FPL should be required to provide reasonable assurance that the saltwater interface will be retracted eastward, that assertion disregards the fact that the CCS is not the only contributing source of inland movement of the saltwater interface. The Renewal Permit provides reasonable assurance, through operation of the RWS, that discharges of water from the CCS into ground water will no longer move westward of the CCS boundary, and that the hypersaline plume—which is the primary, but not only—driver of the movement of the saltwater

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<sup>46</sup> Petitioners and Intervenor did not present evidence regarding violations of rule 62-520.400(1)(a), (b), or (c).

interface inland will be retracted back to the L-31E Canal by May 2028. To this point, the competent substantial evidence shows that retracting the hypersaline plume will contribute to movement of the saltwater interface eastward.<sup>47</sup>

404. Additionally, as discussed above, operation of the RWS to halt the westward migration of the hypersaline plume has already ensured, and will continue to provide reasonable assurance, that operation of the CCS pursuant to the Renewal Permit will not impair the reasonable and beneficial use of adjacent waters. The competent, substantial, and persuasive evidence, discussed at length above, shows that, to the extent there is any discharge from the CCS, via ground water, into surface waters in Biscayne Bay or canals in the vicinity, the reasonable and beneficial use of those adjacent waters will not be impaired.

405. Moreover, as discussed above, DEP has established conditions in the Renewal Permit aimed at providing reasonable assurance that the minimum criteria for ground water will be met by continued operation of the CCS. To this point, specific conditions in the Renewal Permit prohibit the discharge from the CCS of nuisance, acutely toxic, carcinogenic, teratogenic, and dangerous compounds. The Renewal Permit also prohibits the discharge of substances regulated under the federal Insecticide, Fungicide, and Rodenticide Act, and waste resulting from combustion of toxic, hazardous, or metal cleaning, into any waste stream that may be released into the CCS or

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<sup>47</sup> As discussed above, the hypersaline plume from past operation of the CCS has been the main cause of the continued movement of the saltwater interface inland, but it is not the only cause. Consistent with the Consent Order—which was not challenged and is in effect—the Renewal Permit contains permit conditions aimed at halting migration of the hypersaline plume and retracting it back to the L-31E Canal, in order to ensure that *the CCS* no longer contributes to the westward movement of the saltwater interface. The CCS is not solely responsible for the inland movement of the saltwater interface, and FPL cannot address the other causes of movement of the saltwater interface inland, such as drainage ditching, mining, consumptive water use, and other activities over which it has no control. In any event, as found above, Petitioners' and Intervenor's expert, E.J. Wexler, acknowledged that the operation of the RWS will retract the saltwater interface back toward the east by May 2028.

into waters of the state. Additionally, the Renewal Permit requires the implementation of best management practices to ensure that wastewater does not come into contact with substances containing mercury or nutrients.

406. Collectively, these conditions provide reasonable assurance that the continued operation of the CCS, pursuant to the Renewal Permit, will not violate the minimum criteria for ground water in rule 62-520.400.

407. Rule 62-520.430, which establishes the standards applicable to Class G-III ground water, states, in pertinent part: "(1) The minimum criteria established in Rule 62-520.400, F.A.C., shall apply to all Class G-III ground water."

408. As found above, the CCS discharges into Class G-III ground water immediately underlying the CCS.

409. As concluded above, the competent substantial evidence shows that continued operation of the CCS, pursuant to the Renewal Permit, will not violate the minimum criteria for ground water in rule 62-520.400, and, therefore, will not violate rule 62-520.430.

410. Rule 62-520.420 establishes the standards for Class G-I and Class G-II Ground Water. This rule states:

(1) In addition to the minimum criteria in Rule 62-520.400, F.A.C., the primary and secondary drinking water quality standards for public water systems established pursuant to the Florida Safe Drinking Water Act, which are listed in Rules 62-550.310 and 62-550.320, F.A.C., shall apply to Class G-I and Class G-II ground water. Exceptions are for existing installations not having to meet secondary standards as provided in Rule 62-520.520, F.A.C., and subsection (4), below; that the total coliform bacteria standard shall be 4 per 100 milliliters; and that the primary drinking water standard for public drinking water systems for asbestos shall not apply as a ground water standard.

(2) If the concentration for any constituent listed in subsection (1), above, in the natural background quality of the ground water is greater than the stated maximum, or in the case of pH is also less than the minimum, the representative natural background quality shall be the prevailing standard for Class G-I and Class G-II ground water.

(3) Where natural background quality of the ground water cannot be determined in the upgradient well, and the concentration for any constituent listed in subsection (1), above, in the background quality of the ground water is greater than the stated maximum, or for pH is also less than the minimum, the representative background quality shall be the prevailing standard for those installations.

(4) These primary and secondary standards shall not apply within a zone of discharge as provided in Rule 62-520.465, F.A.C. The minimum criteria specified in Rule 62-520.400, F.A.C., shall apply within the zone of discharge.

411. As discussed above, under the Renewal Permit, the CCS will continue to discharge to Class G-III ground water immediately underlying the CCS; therefore, rule 62-520.420 does not apply to the discharge of water from the CCS into ground water.

412. Moreover, to the extent that water from the CCS may, *in the past*, have seeped westward and caused or contributed to a violation of the Class G-II ground water standards in the Model Land area, that past violation is being remedied by retraction of the hypersaline plume through operation of the RWS, pursuant to the Consent Order.

413. Additionally, because the RWS is successfully functioning to halt the migration of the hypersaline plume westward beyond the boundary of the CCS, continued operation of the CCS will not cause or contribute to a violation of Class G-II ground water standards.

VIII. Compliance with Chapter 62-620 – Wastewater Facility and Activities Permitting

414. Rule 62-620.300, titled General Prohibitions, states, in pertinent part: "(5) A permitted wastewater facility or activity shall not be operated, maintained, constructed, expanded, or modified in a manner that is inconsistent with the terms of the permit."

415. For the reasons discussed above, it is concluded that FPL has provided reasonable assurance that the continued operation of the CCS will be performed in a manner consistent with the conditions of the Renewal Permit, as required by rule 62-620.300(5).

416. Rule 62-620.320, titled Standards for Issuing or Denying Permits, states, in pertinent part:

(1) A permit shall be issued only if the applicant affirmatively provides the Department with reasonable assurance, based on a preliminary design report, plans, test results, installation of pollution control equipment, or other information, that the construction, modification, or operation of the wastewater facility or activity will not discharge or cause pollution in contravention of Chapter 403, F.S., and applicable Department rules.

(2) If, after review of the application and any pertinent information, the Department determines that the applicant has not provided reasonable assurance that the construction, modification, or operation of the wastewater facility or activity will be in accordance with applicable statutes or rules, including rules of approved local programs under Section 403.182, F.S., the Department shall deny the permit, shall notify the applicant, and specify the reasons for the denial.

(3) A permit issued under this chapter shall be renewed upon timely application to the Department in accordance with Rule 62-620.335, F.A.C., if the



discharge is in compliance with permit conditions and applicable statutes and rules.

(4) The Department shall issue, reissue, or renew a permit which would otherwise be denied if the criteria set forth in Sections 403.088(2)(e) and (f), F.S., are met.

\* \* \*

(6) Any permit that the Department issues shall contain specific conditions necessary to provide reasonable assurance that Department rules will be met.

(7) The Department shall take into consideration a permit applicant's violation of any Department rules at any wastewater facility or activity when determining whether the applicant has provided reasonable assurance that Department standards will be met.

\* \* \*

(10) No permit shall be issued for a discharge of wastes into waters regulated under this chapter pursuant to Section 403.0885, F.S., when:

(a) The conditions of the permit do not provide for compliance with the requirements of Chapter 403, F.S., and Department rules[.]

417. Based on the competent, substantial, and persuasive evidence, it is concluded that continued operation of the CCS pursuant to the Renewal Permit will meet the applicable requirements of rule 62-620.320, such that it should, and must, be issued.

418. Specifically, as discussed above, FPL has provided reasonable assurance, based on its Application, supporting information, and evidence presented at the final hearing, that the continued operation of the CCS will not discharge or cause pollution in contravention of chapter 403 and

applicable DEP rules, as required by rule 62-620.300(1). Therefore, there is no basis, pursuant to rule 62-620.300(2), for denying the Renewal Permit.

419. As previously noted, FPL timely submitted its Application, with supporting information, for the Renewal Permit, and the competent, substantial, and persuasive evidence, discussed above, shows that the continued operation of the CCS, as proposed to be authorized in the Renewal Permit, complies with all applicable statutes and rules. Therefore, pursuant to rule 62-620.320(3), FPL is entitled to issuance of the Renewal Permit.

420. Additionally, as discussed in detail above, the Renewal Permit contains numerous specific conditions necessary to provide reasonable assurance that DEP rules will be met. These conditions include those imposing extensive surface water, ground water, and porewater monitoring and reporting requirements; requiring the compliance with an extensive array of best management practices; ensuring that the structural integrity of the impoundment containing the CCS is maintained, to prevent seepage or flow of CCS water into surface waters; and halting and retracting the hypersaline plume according to schedules specified in the Renewal Permit. Thus, the Renewal Permit complies with rule 62-620.320(6).

421. The competent, substantial, and persuasive evidence establishes that DEP complied with rule 62-620.320(7) in determining that the Renewal Permit should be reissued. Specifically, as discussed above, seepage of hypersaline water from *past* operation of the CCS caused or contributed to the violation of Class G-II ground water standards in the Model Land area. However, that violation is being addressed through FPL's implementation of remediation measures which, in part, already have halted the westward migration of the hypersaline plume beyond the boundary of the CCS. As previously discussed, the Renewal Permit contains numerous conditions aimed at ensuring that the continued operation of the CCS under the Renewal Permit, does not violate any applicable ground water or surface water standards. Based on FPL's demonstrated success in remedying these

past violations, and considering the extensive and stringent new conditions imposed in the Renewal Permit, DEP determined—as it has the authority under rule 62-620.320(7) to do—that FPL has provided reasonable assurance that the continued operation of the CCS will meet all applicable DEP rules and standards.<sup>48</sup> Accordingly, it is concluded that DEP's proposed issuance of the Renewal Permit is consistent with rule 62-620.320(7).<sup>49</sup>

422. Finally, as discussed in detail herein, the conditions of the Renewal Permit provide for compliance with chapter 403 and applicable DEP rules.

423. Accordingly, issuance of the Renewal Permit is consistent with rule 62-620.320(10)(a).<sup>50</sup>

424. Rule 62-620.335, titled Renewals, states, in pertinent part:

(1) A permittee shall submit an application to renew an existing permit at least 180 days before the expiration date of the existing permit or as otherwise specified in the generic permit issued under Chapter 62-621, F.A.C.

\* \* \*

(3) An application filed in accordance with subsections (1) and (2) of this rule, shall be considered timely and sufficient. When an application for renewal of a permit is timely and sufficient, the existing permit shall not expire until the Department has taken final action on the application for renewal or until the last day for seeking judicial review of the agency order or a later date fixed by order of the reviewing court.

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<sup>48</sup> Rule 62-620.330(7) requires DEP to *consider* an applicant's violations in determining whether the applicant has provided the requisite reasonable assurance—which DEP did, as evidenced by the extensive new permit conditions imposed in the Renewal Permit to ensure that the applicable statutes and rules are met. Importantly, the rule does not *mandate* denial on the basis of violations.

<sup>49</sup> Furthermore, under any circumstances, issuance of the Renewal Permit is authorized pursuant to section 403.088(2)(e).

<sup>50</sup> The Petitions contend that issuance of the Renewal Permit does not comply with rule 62-620.320(9)(a); however, the correct citation is to rule 62-620.320(10)(a).

\* \* \*

(5) The following are causes for denying a permit renewal:

(a) Violation by the permittee of any condition of the permit[.]

425. As discussed above, the competent substantial evidence establishes that FPL timely filed the Application to renew the Permit, as required by rule 62-620.335(1); accordingly, pursuant to rule 62-620.320(3), the existing Permit, which was issued in 2005, has not expired and remains in effect pending the outcome of these proceedings challenging the Renewal Permit.

426. While DEP may consider a past violation of a permit in determining whether to renew a wastewater facility permit, the rule does not require FPL to deny the renewal of a permit on the basis of permit violations. Here, FPL's prior violation of a condition of the 2005 Permit was fully addressed through FPL entering into the Consent Order with DEP. DEP determined that the corrective actions imposed in the Consent Order were sufficient to resolve the violations identified in this Consent Order. The competent, substantial, and persuasive evidence establishes that FPL is complying with the conditions of the Consent Order. As such, denial of the Renewal Permit is not justified under rule 62-620.335(5)(a).

427. Petitioners and Intervenor contend that because the remedial actions related to the retraction of the hypersaline plume are ongoing, the Renewal Permit cannot be issued. This contention is incorrect.

428. As stated numerous times herein, to the extent *past* operation of the CCS violated ground water standards, the *current* operation of the CCS is not causing or contributing to ground water violations, due to the operation of the RWS. Further, because the operation of the RWS has halted migration of the hypersaline plume west of the CCS boundary, the *future* operation of the CCS

will not cause or contribute to *future* ground water violations. Accordingly, FPL presently is in compliance with the 2005 Permit.

429. Moreover, as discussed above, even if FPL were continuing to violate the 2005 Permit through continued migration of the hypersaline plume into Class G-II ground water in the Model Land area, section 403.088(2)(e) authorizes issuance of the Renewal Permit because FPL has constructed, and placed into operation, an approved pollution abatement facility—the RWS. The competent, substantial, and persuasive evidence demonstrates that the corrective actions undertaken pursuant to the Consent Order have been effective in halting the migration of the hypersaline plume west of the CCS and, additionally, show that the hypersaline plume is being retracted to the L-31E Canal.

430. Accordingly, it is concluded that no basis exists, pursuant to rule 62-620.335, for DEP to deny the Renewal Permit.

#### IX. Standing

431. As persons asserting party status to challenge proposed agency action in this proceeding, Petitioners and Intervenor have the burden to demonstrate that they have standing to initiate and maintain these proceedings. *Palm Beach Cnty. Env't Coal. v. Dep't of Env't Prot.*, 14 So. 3d 1076, 1078 (Fla. 4th DCA 2009); *Agrico Chem. Co. v. Dep't of Env't Regul.*, 406 So. 2d 478, 482 (Fla. 2d DCA 1981).

432. As a general proposition, “[s]tanding is a legal concept that requires a would-be litigant to demonstrate that he or she reasonably expects to be affected by the outcome of the proceedings, either directly or indirectly.” *Hayes v. Guardianship of Thompson*, 952 So. 2d 498, 505 (Fla.2006); *see also Hutchison v. Chase Manhattan Bank*, 922 So. 2d 311, 315 (Fla. 2d DCA 2006); *Gen. Dev. Corp. v. Kirk*, 251 So. 2d 284, 286 (Fla. 2d DCA 1971) (“Standing is, in the final analysis, that sufficient interest in the outcome of litigation which will warrant the court’s entertaining it.”).



433. In *Agrico*, the court established a two-prong test for standing in administrative proceedings, stating:

We believe that before one can be considered to have a substantial interest in the outcome of the proceeding he must show 1) that he will suffer injury in fact which is of sufficient immediacy to entitle him to a section 120.57 hearing, and 2) that his substantial injury is of a type or nature which the proceeding is designed to protect. The first aspect of the test deals with the degree of injury. The second deals with the nature of the injury.

406 So. 2d at 482.

434. Case law makes clear that the *Agrico* test is not intended as a barrier to participation in proceedings under chapter 120 by persons who are affected by the potential and foreseeable results of agency action. Rather, "[t]he intent of *Agrico* was to preclude parties from intervening in a proceeding where those parties' substantial interests are *totally unrelated* to the issues that are to be resolved in the administrative proceeding." *Mid-Chattahoochee River Users v. Dep't of Env't Prot.*, 948 So. 2d 794, 797 (Fla. 1st DCA 2006) (citing *Gregory v. Indian River Cnty.*, 610 So. 2d 547, 554 (Fla. 1st DCA 1992))(emphasis added).

435. More recent case law has refined the *Agrico* standing test, clarifying that

[s]tanding is a "forward-looking concept" and "cannot disappear" based on the ultimate outcome of the proceeding... .When standing is challenged during an administrative hearing, the petitioner must offer proof of the elements of standing, and it is sufficient that the petitioner demonstrate by such proof that his substantial interests *could* reasonably be affected by ... [the] proposed activities.

*Palm Beach Cnty. Env't Coal.*, 14 So. 3d at 1078 (citing *Peace River /Manasota Reg'l Water Supply Auth. v. IMC Phosphates Co.*, 18 So. 3d 1079,



1084 (Fla. 2d DCA 2009). *See St. Johns Riverkeeper, Inc. v. St. Johns River Water Mgmt.*, 54 So. 3d 1051 (Fla. 5th DCA 2011); *see also Reily Enters., LLC v. Dep't of Env't Prot.*, 990 So. 2d 1248 (Fla. 4th DCA 2008).

436. Additionally, case law makes clear that standing to initiate and maintain an administrative proceeding is not dependent on prevailing on the merits in the proceeding. *Peace River/Manasota Reg'l Water Supply Auth.*, 18 So. 3d at 1084.

#### FKAA's Standing

437. Here, FKAA alleges that issuing the Renewal Permit will allow FPL to continue engaging in an activity—operation of the CCS—that will injure FKAA's legal right to withdraw fresh water from the Biscayne Aquifer to provide potable water to Monroe County, pursuant to its special act, and as authorized under its consumptive water use permit.

438. Although FKAA's potable water wells in its Biscayne Aquifer wellfield at Florida City have not yet become saline, the persuasive evidence shows that several of its saltwater intrusion monitoring wells, which serve as an "early warning system" for future threats to its Biscayne Aquifer wellfield, have become increasingly more saline in a relatively short period, due to westward movement of the saltwater interface, driven in large part, but not exclusively, by the hypersaline plume that resulted from the historic operation of the CCS.

439. Beginning in May 2018, FPL has implemented the RWS, which was designed, and is being operated, to halt the westward migration of hypersaline water from the CCS and to retract the hypersaline plume back to the L-31E Canal within ten years of commencement of operation.

440. FKAA contends, and presented expert testimony and supporting evidence to the effect that, the RWS is not stopping current hypersaline water seepage from the CCS into ground water west of the CCS; that as a result of the continued operation of the CCS under the Renewal Permit, hypersaline water from the CCS will continue to seep west of the CCS

boundary; and that, as a result of such seepage, the hypersaline plume will continue to move westward, driving the saltwater interface further inland, thereby threatening the water quality in FKAA's Biscayne Aquifer wellfield.

441. Although the competent, substantial, and persuasive evidence shows that the RWS is operating effectively, so that hypersaline water from the CCS no longer is seeping west of the CCS boundary, and the hypersaline plume likely will be retracted within the ten-year compliance schedule referenced in the Renewal Permit, FKAA has alleged injury to its potable water supply wells which reasonably could occur if FKAA were correct that the RWS is not effectively functioning to prevent hypersaline CCS water from seeping into ground water west of the CCS boundary.

442. FPL and DEP contend that FKAA's alleged injury is "speculative," because even if the westward movement of the saltwater interface were to continue, unabated, it would take 30 to 40 years, at its current rate of movement, for FKAA's Biscayne Aquifer wellfield to be impacted by the saltwater interface. This argument is unpersuasive.

443. It is undisputed that the hypersaline plume that has moved westward from the CCS into the Model Land area was caused by seepage of saline water from the CCS during FPL's historic operation of the CCS. It is also undisputed that the hypersaline plume created by historic operation of the CCS has been the primary—albeit, not only—driver of the westward movement of the saltwater interface in this area.

444. FKAA has alleged, and presented persuasive evidence showing, that if the westward movement of the saltwater interface continues on its current course and at its current rate, its Biscayne Aquifer wellfield in Florida City *will* be threatened with water quality degradation—albeit some years in the future.

445. Additionally, FKAA has contended, and presented evidence in an effort to show, that the RWS is not functioning as intended, so that continued operation of the CCS under the Renewal Permit will continue to contribute to

the westward movement of the hypersaline plume, which, in turn, will continue to drive the saltwater interface westward toward FKAA's Biscayne Aquifer wellfield. Although the undersigned did not find FKAA's evidence regarding the lack of effectiveness of the RWS persuasive, if FKAA *were* correct, the hypersaline plume resulting from continued operation of the CCS would continue to contribute to the saltwater interface threat to FKAA's wellfield.

446. The term "speculative" is defined as "characterized by ... conjecture; theoretical." "Conjecture" is defined as "the formation or expression of an opinion or theory without sufficient evidence for proof." Dictionary.com, <https://www.dictionary.com> (last visited Feb. 10, 2022).

447. If, as FKAA contends, the RWS does *not* operate as intended, then the hypersaline plume will continue to contribute to movement of the saltwater interface westward, which, in turn, will affect FKAA's Biscayne Aquifer wellfield at some point. Thus, FKAA alleges a real, non-conjectural injury that reasonably could happen at some point in the future, in part due to continued operation of the CCS, if the RWS were unsuccessful in addressing hypersaline water seepage from the CCS and the hypersaline plume. Merely because that injury could reasonably occur at some point in the future does not render the injury theoretical or conjectural.

448. To this point, in *Palm Beach County Environmental Coalition*, 14 So. 3d at 1078, the district court of appeal rejected the conclusion, by an administrative law judge, that even if certain alleged environmental effects *were* to occur as the result of issuance of an injection well permit to FPL, the petitioners lacked standing because the alleged injury "likely" would not occur, "given the extensive period of time involved." *Id.* The court determined that the petitioners had standing to challenge the permit because they "clearly presented evidence—albeit evidence that ultimately was not found sufficient to carry the day on the merits—that they reasonably could be affected by the proposed activities." *Id.* Implicit in the court's holding was

that even if an injury may occur at some distant point in the future, it is sufficient to satisfy the injury-in-fact requirement as long as the injury reasonably could occur as a result of the challenged activity.

449. Additionally, FKAA's alleged injuries fall within the zone of interest of these proceedings, the purpose of which is to ensure that FPL's continued operation of the CCS, pursuant to chapter 403 and various rules, including chapter 62-520, will not, among other things, pose a serious danger to the public health, safety, or welfare, and will not impair the reasonable and beneficial use of adjacent waters.

450. Here, FKAA alleged, and presented evidence to the effect that continued operation of the CCS could reasonably result in its Biscayne Aquifer wellfield being rendered unusable for potable water production due to saltwater intrusion, in part driven by the hypersaline plume from the CCS. This would constitute a serious danger to the health, safety, and welfare of the residents of Monroe County, to whom FKAA is legally obligated to provide potable water. Additionally, FKAA alleged, and presented evidence to the effect that, continued seepage of hypersaline water from the CCS and continued movement of the hypersaline plume westward would impair the reasonable and beneficial use of the Class G-II ground water that is adjacent to the Class G-III ground water into which hypersaline water from the CCS has seeped and moved westward. Thus, even though FKAA's evidence was ultimately not deemed persuasive in these proceedings, FKAA alleged injuries that unquestionably were within the scope of these proceedings.

451. Accordingly, it is determined that FKAA has demonstrated that it has standing to challenge DEP's issuance of the Renewal Permit to FPL.

#### FKFGA's Standing

452. As found above, FKFGA is a non-profit corporate association comprised of approximately 100 professional fishing guides who make their living conducting excursions for persons engaging in recreational fishing in

Biscayne Bay, including near the Turkey Point facility, and other areas in south Florida.

453. FKFGA seeks to represent the interests of its members in these proceedings. Thus, in order to have standing to challenge the Renewal Permit, FKFGA must meet the associational standing test first articulated in *Florida Home Builders Association v. Department of Labor and Employment Security*, 412 So. 2d 351 (Fla. 1982), and subsequently extended to section 120.57 proceedings in *Farmworker Rights Organization, Inc. v. Department of Health and Rehabilitative Services*, 417 So. 2d 753 (Fla. 1st DCA 1982). Under the associational standing test, FKFGA must show that a substantial number, although not necessarily a majority, of its members' substantial interests will be affected by the agency action; that the subject matter of the proceedings is within the association's general scope and purpose; and that the relief requested is of the type appropriate for the association to receive on behalf of its members.

454. As discussed above, Commodore Friedman testified that over the past 20 years, he and other members of FKFGA have observed degraded seagrass beds and declining fisheries in Biscayne Bay, including in the vicinity of Turkey Point, and that these conditions have had a negative effect on their conservation interests and on their fishing excursion businesses. Testimony of an individual member, Benjamin Blanco, confirmed these alleged injuries.

455. Friedman also testified that he and other members of the FKFGA believe that the CCS is, at minimum, a contributing factor to these degraded and declining resource conditions that have caused their alleged injuries.

456. FKFGA has satisfied the first prong of the associational standing test.

457. Specifically, it has alleged, and presented testimony in an effort to show, that its members are suffering injury as a result of degraded seagrass beds and declining natural resources that have negatively affected fisheries



in Biscayne Bay. Although, as discussed above, FKFGA did not ultimately establish that discharges from the CCS are the cause of these injuries, FKFGA alleged an injury that could reasonably be expected to occur if it were correct that the CCS did discharge nutrients into Biscayne Bay. Thus, under *Peace River/Manasota Water Supply Authority*, FKFGA has shown that it meets the injury in fact requirement to show that its members' substantial interests are affected.

458. Additionally, FKFGA's alleged injuries fall within the zone of interest of these proceedings. Chapter 403, chapter 62-302, and rule 62-520.400(1)(f)<sup>51</sup> are specifically designed to protect surface water quality and related resources, which FKFGA has alleged have been injured, and will continue to be injured, by operation of the CCS. Thus, the interests asserted by FKFGA fall squarely within the scope and purpose that the statutes and rules at issue in these proceedings are designed to protect. *See Peace River/Manasota Reg'l Water Supply Auth.*, 18 So. 3d at 1083-84.

459. FKFGA also has satisfied the second prong of the associational standing test. According to its Commodore, Stephen Friedman, who testified regarding FKFGA's interest in these proceedings, one of FKFGA's organizational purposes is to preserve and protect the fisheries and related natural resources in south Florida, where FKFGA members conduct recreational fishing excursions. The subject matter of these proceedings, the purpose of which is to ensure that continued operation of the CCS will meet the applicable statutes and rules such that surface and ground water quality and related resources will not be harmed, is within the FKFGA's scope and purpose to protect and conserve the fishery resources of Biscayne Bay.

460. FKFGA also meets the third prong of the associational standing test. The relief FKFGA seeks is denial of the Renewal Permit. That type of relief is appropriate for FKFGA to seek on behalf of its members in these

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<sup>51</sup> This rule provision prohibits discharges to ground water that will impair the reasonable and beneficial use of adjacent waters. The term "waters" includes surface waters.



administrative proceedings. *See O'Connell v. Fla. Dep't of Cmt'y Affs.*, 874 So. 2d 673, 677 n.3 (Fla. 4th DCA 2004)(an association may seek relief on behalf of its members where neither the claim asserted, nor the relief requested, requires the participation of individual members in the proceeding).

461. Although FKFGA has not ultimately shown, in these proceedings, that the continued operation of the CCS, pursuant to the Renewal Permit, will result in the alleged injuries, its failure to prevail on the merits is immaterial to its standing. *Peace River/Manasota Reg'l Water Supply Auth.*, 18 So. 3d at 1084.

462. Accordingly, it is determined that FKFGA has demonstrated that it has standing, on behalf of its members, to challenge DEP's issuance of the Renewal Permit to FPL.

#### Monroe County

463. In order to have standing to participate as a party to these proceedings, Monroe County must meet the *Agrico* test.

464. As discussed above, Monroe County obtains its potable water from FKAA's Biscayne Aquifer wellfield. Therefore, to the extent FKAA's wellfield may be injured by saltwater intrusion caused, or contributed to, by the seepage of hypersaline water from the CCS, such injury also would inure to the County. As discussed above, this alleged injury is sufficiently real and immediate to afford standing to challenge the Renewal Permit.

465. Additionally, as discussed above, the County has additional legal obligations under chapter 163, Florida Statutes, and its County Plan, to provide potable water to County residents. If the County were unable to fulfill its statutory duty to provide potable water due to saltwater intrusion that may be caused, or contributed to, by the seepage of hypersaline water from the CCS, it would suffer an injury in fact. *See S. Fla. Water Mgmt. Dist. v. City of St. Cloud*, 550 So. 2d 551, 553 (Fla. 5th DCA 1989)(alleged adverse impact to a local government's water supply from issuance of a permit constituted an injury in fact for purposes of the local government's standing

to challenge the permit). Again, this alleged injury is sufficiently real and immediate for purposes of the County's standing to challenge the Renewal Permit.

466. The County also has alleged, and presented evidence aimed at showing, that the discharge of nutrients from the CCS has harmed, and, under the Renewal Permit, will continue to harm, the surface water resources of Biscayne Bay. As discussed above, the County presented evidence showing that it has a statutorily-derived obligation, implemented in the County Plan, to monitor and protect environmental resources within its boundaries, and, in particular, to protect the water quality in the FKNMS.

467. Additionally, the interests the County alleges are within the scope of these proceedings. As discussed above, this proceeding involves the question of whether the Renewal Permit will cause adverse impacts to ground water and surface water that are specifically protected by chapter 403 and rule chapters 62-302 and 62-520. The County has alleged injuries against which the cited statute and rules are designed to protect.

468. Again, the fact that the County has not ultimately shown that operation of the CCS will cause, or contribute to, the alleged injuries, and has not prevailed on the merits of these proceedings, is immaterial to its standing to challenge the Renewal Permit in these proceedings. *Peace River/Manasota Water Supply Auth.*, 18 So. 3d at 1084.

469. Accordingly, it is concluded that Monroe County has demonstrated that it has standing to intervene in, and participate as a party to, these proceedings.

## X. Conclusion

470. Based on the foregoing Findings of Fact and Conclusions of Law, it is determined that Petitioners and Intervenor did not meet their burden in these proceedings, pursuant to section 120.569(2)(p), to demonstrate that FPL has not provided reasonable assurance that it meets all applicable

statutory and rule requirements for issuance of the Renewal Permit to authorize continued operation of the CCS.

471. Pursuant to the foregoing Findings of Fact and Conclusions of Law, it is concluded that FPL has provided reasonable assurance that continued operation of the CCS, pursuant to the Renewal Permit, will meet all applicable requirements of chapters 403, 62-4, 62-302, 62-520, and 62-620, such that it is entitled to issuance of the Renewal Permit.

#### RECOMMENDATION

Based on the foregoing Findings of Fact and Conclusions of Law, it is RECOMMENDED that the Department of Environmental Protection enter a final order granting Permit No. FL0001562-012-IW1N to Florida Power & Light Company.

DONE AND ENTERED this 21st day of February, 2022, in Tallahassee, Leon County, Florida.



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CATHY M. SELLERS  
Administrative Law Judge  
1230 Apalachee Parkway  
Tallahassee, Florida 32399-3060  
(850) 488-9675  
[www.doah.state.fl.us](http://www.doah.state.fl.us)

Filed with the Clerk of the  
Division of Administrative Hearings  
this 21st day of February, 2022.

#### COPIES FURNISHED:

Peter Cocotos, Esquire  
Florida Power & Light Company  
215 South Monroe Street, Suite 810  
Tallahassee, Florida 32301

Brian Stamp  
Florida Power & Light Company  
9760 Southwest 344 Street  
Florida City, Florida 33035

Frederick L. Aschauer, Esquire  
Lewis, Longman & Walker, P.A.  
315 South Calhoun Street, Suite 830  
Tallahassee, Florida 32301

Marianna Sarkisyan, Esquire  
Matthew J. Knoll, Esquire  
Office of the General Counsel  
Department of Environmental Protection  
Douglas Building, Mail Station 35  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

Thomas Neal McAliley, Esquire  
Yolanda P. Strader, Esquire  
Steven M. Blickensderfer, Esquire  
Carlton Fields, P.A.  
100 Southeast Second Street, Suite 4200  
Miami, Florida 33131

Joseph Ianno, Esquire  
Florida Power & Light Company  
700 Universe Boulevard  
Juno Beach, Florida 33408-2657

Justin G. Wolfe, General Counsel  
Department of Environmental Protection  
Legal Department, Suite 1051-J  
Douglas Building, Mail Station 35  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

Andrew J. Baumann, Esquire  
Amy Taylor Petrick, Esquire  
Lewis, Longman & Walker, P.A.  
515 North Flagler Drive, Suite 1500  
West Palm Beach, Florida 33401

Christopher J. Wahl, Esquire  
Abbie Schwaderer Raurell, Esquire  
Miami-Dade County Attorney's Office  
111 Northwest 1st Street, Suite 2810  
Miami, Florida 33128

Lea Crandall, Agency Clerk  
Department of Environmental Protection  
Douglas Building, Mail Station 35  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

Shawn Hamilton, Secretary  
Department of Environmental Protection  
Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

#### NOTICE OF RIGHT TO SUBMIT EXCEPTIONS

All parties have the right to submit written exceptions within 15 days from the date of this Recommended Order. Any exceptions to this Recommended Order should be filed with the agency that will issue the Final Order in this case.