UNITED STATED OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)		
	)	Docket Nos.	52-029-COL
Progress Energy Florida, Inc.	)		52-030-COL
	)		
(Combined License Application for	)		
Levy County Nuclear Plant, Units 1 and 2)	)	ASLBP No.	09-879-04-COL

PROGRESS ENERGY FLORIDA, INC.'S INITIAL STATEMENT OF POSITION IN THE CONTESTED HEARING FOR CONTENTION 4A

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TABLE OF SELECTED ACRONYMS

Acronym	**Definition**
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
ALJ	Administrative Law Judge
AM	Adaptive Management
APT Plan	Aquifer Performance Testing Plan
AWS Plan	Alternative Water Supply Plan
BOR	Basis of Review
CFBC	Cross Florida Barge Canal
C.F.R.	Code of Federal Regulations
CH	CH2M HILL
COC	Conditions of Certification
COL	Combined License
COLA	Combined License Application
CREC	Crystal River Energy Center
DEIS	Draft Environmental Impact Statement
DWRM	District Wide Regulation Model
DWRM2	District Wide Regulation Model Version 2
EIS	Environmental Impact Statement
EMP	Environmental Monitoring Plan
EPA	U.S. Environmental Protection Agency
ER	Environmental Report
FDEP	Florida Department of Environmental Protection
FEIS	Final Environmental Impact Statement
FTMR	Focus Telescopic Mesh Refinement

Acronym	**Definition**
LNP	Levy Nuclear Plant
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
OFW	Outstanding Florida Waters
PEF	Progress Energy Florida, Inc.
PPSA	Power Plant Siting Act
SCA	Site Certification Application
SWFWMD	Southwest Florida Water Management District
TDS	total dissolved solids
TMEM	Technical Memorandum
TM74	CH2M HILL Technical Memorandum No. 74
TM123	CH2M HILL Technical Memorandum No. 123
TMR	Telescopic Mesh Refinement
UFA	Upper Floridan Aquifer
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
WAP	Wetlands Assessment Procedure

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PROGRESS ENERGY FLORIDA, INC.'s INITIAL STATEMENT OF POSITION IN THE CONTESTED HEARING FOR CONTENTION 4A

I. INTRODUCTION

Pursuant to the Atomic Safety and Licensing Board's ("Board") Initial Scheduling Order of August 27, 2009,[1] as revised by the Board's May 23, 2012 Memorandum and Order,[2] Progress Energy Florida, Inc. ("PEF") hereby submits its Initial Statement of Position ("Initial Statement") in the contested hearing regarding Contention 4A. For the reasons set forth below, the April 27, 2012, Final Environmental Impact Statement ("FEIS") prepared by the Nuclear Regulatory Commission ("NRC") Staff regarding PEF's proposed new nuclear plant in Levy County, Florida (the "LNP") specifically and adequately addresses, and appropriately characterizes, the environmental impacts at issue in Contention 4A, as is required under the NRC's regulations at 10 C.F.R. Part 51 and the National Environmental Policy Act ("NEPA").

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[1] Progress Energy Florida, Inc. (Levy County Nuclear Power Plant, Units 1 and 2), LBP-09-22, 70 NRC 640 (2009).

[2] Licensing Board Memorandum and Order (Ruling on Motions for Extension of Time and Motion to Change the Trigger Date for the Evidentiary Hearing) (May 23, 2012) (unpublished).

In general, Contention 4A challenges the FEIS's[3] analysis of, and characterization as SMALL (or in one case, SMALL to MODERATE), certain direct, indirect, and cumulative impacts – and the zone of such impacts – to water resources onsite and offsite at the LNP due to: (1) active and passive dewatering during construction and operation of the LNP; and (2) salt drift from the LNP's cooling towers. However, as demonstrated in this Initial Statement and in the testimony and related exhibits sponsored by PEF's seven expert witnesses, the FEIS has taken the required "hard look" at the "reasonably foreseeable" environmental impacts at issue in Contention 4A. In addition, the FEIS discloses those impacts in great detail, and accurately characterizes them in all cases as less than LARGE. Accordingly, Contention 4A is without merit.

II. BACKGROUND

A. NRC Proceedings and Environmental Review

On July 28, 2008, PEF filed with the NRC an application (the "COLA") seeking combined licenses to construct and operate two Westinghouse AP1000 pressurized water reactors in Levy County, Florida (the "COLs"). The NRC Staff docketed the COLA on October 6, 2008. 73 Fed. Reg. 60,726 (Oct. 14, 2008). On December 8, 2008, the NRC published a Notice of Order, Hearing and Opportunity to Petition for Leave to Intervene in this proceeding. 73 Fed. Reg. 74,532 (Dec. 8, 2008).

On February 6, 2009, The Green Party of Florida,[4] The Ecology Party of Florida, and Nuclear Information and Resource Service (the "Intervenors") collectively filed a "Petition to Intervene and Request for Hearing" in this proceeding ("Petition").[5] The Petition set forth the Intervenors' proposed

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[3] Contention 4A, by its terms, challenges the Draft Environmental Impact Statement ("DEIS") for the LNP issued on August 5, 2010. However, since the FEIS has superseded the DEIS, throughout this Initial Statement PEF will refer to Contention 4A as challenging the FEIS.

[4] The Green Party of Florida has since withdrawn from this proceeding. Notice of Withdrawal (May 17, 2012).

[5] Petition to Intervene and Request for Hearing By The Green Party of Florida, The Ecology Party of Florida, and Nuclear Information and Resource Service (Feb. 6, 2009).

Contentions 1 through 11. PEF filed an answer opposing the Petition on March 3, 2009.[6] The Board held oral argument on April 20 and 21, 2009. On July 8, 2009, the Board issued an Order granting the Petition and admitting three of the Intervenors' Contentions, including environmental "Contention 4," as restated and narrowed by the Board in Attachment A to its Order.[7] The remaining background discussion in this Initial Statement will focus on Contention 4 – as superseded by Contention 4A – since that is the only remaining Contention at issue in this proceeding.

On August 5, 2010, the NRC Staff, along with the U.S. Army Corp. of Engineers ("USACE") as a cooperating agency, issued its DEIS for the LNP.[8] Two public meetings regarding the DEIS were held on September 23, 2010 in Crystal River, Florida. Numerous comments on the DEIS were submitted by the public.[9]

On November 15, 2010, the Joint Intervenors filed a motion seeking to amend Contention 4.[10] The amended contention raised challenges to the DEIS that were similar to the challenges the Intervenors previously had raised in Contention 4 to the environmental report ("ER") PEF submitted as part of the COLA. Over the objections of PEF and the NRC Staff, the Board admitted "Contention 4A" as restated and narrowed in Attachment A to the Board's order.[11] The Board stated that the admitted portions of

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[6] Progress Energy's Answer Opposing Petition for Intervention and Request for Hearing By The Green Party of Florida, The Ecology Party of Florida, and Nuclear Information and Resource Service (Mar. 3, 2009).

[7] Progress Energy Florida, Inc. (Levy County Nuclear Power Plant, Units 1 and 2), LBP-09-10, 70 NRC 51 (2009). On July 20, 2009, PEF appealed LBP-09-10 to the Commission. The Commission denied PEF's appeal. Progress Energy Florida, Inc. (Combined License Application for Levy County Nuclear Power Plant, Units 1 and 2), CLI-10-2, 71 NRC 27 (2010).

[8] Draft Environmental Impact Statement for Combined Licenses (COLs) for Levy Nuclear Plant Units 1 and 2, Draft Report for Comment, NUREG-1941 (Aug. 2010), available at ADAMS Accession Nos. ML102140231, ML102140235.

[9] A list of the comments, the comments themselves, and the NRC Staff's responses are provided in Appendix E of the FEIS.

[10] Ecology Party of Florida, Green Party of Florida, Nuclear Information and Resource Service Amended Contention 4 (Nov. 15, 2010).

[11] Licensing Board Memorandum and Order (Admitting Contention 4A) (Feb. 2, 2011) (unpublished).

Contention 4A superseded the previously admitted counterparts in Contention 4.[12] Contention 4A, as admitted, states:

> The Draft Environmental Impact Statement (DEIS) [FEIS] fails to comply with 10 C.F.R. Part 51 and the National Environmental Policy Act because it fails to specifically and adequately address, and inappropriate characterizes as SMALL, certain direct, indirect, and cumulative impacts, onsite and offsite, of constructing and operating the proposed LNP facility:
>
> A. Impacts to wetlands, floodplains, special aquatic sites, and other waters, associated with dewatering, specifically:
>
> 1. Impacts resulting from active and passive dewatering;
> 2. Impacts resulting from the connection of the site to the underlying Floridan aquifer system;
> 3. Impacts on Outstanding Florida Waters such as the Withlacoochee and Waccasassa Rivers;
> 4. Impacts on water quality and the aquatic environment due to alterations and increases in nutrient concentrations caused by the removal of water; and
> 5. Impacts on water quality and the aquatic environment due to increased nutrients resulting from destructive wildfires resulting from dewatering.
>
> B. Impacts to wetlands, floodplains, special aquatic sites, and other waters, associated with salt drift and salt deposition resulting from cooling towers (that use salt water) being situated in an inland, freshwater wetland area of the LNP site.
>
> C. As a result of the omissions and inadequacies described above, the Draft Environmental Impact Statement also failed to adequately identify, and inappropriately characterizes as SMALL, the proposed project's zone of:
>
> 1. Environmental impacts;
> 2. Impact on Federally listed species;
> 3. Irreversible and irretrievable environmental impacts; and
> 4. Appropriate mitigation measures.[13]

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[12] Id. at 22.

[13] Id. at Attachment A.

On April 27, 2012, the NRC Staff, along with the USACE as a cooperating agency, issued its FEIS regarding the LNP.[14] The FEIS states: "After considering the environmental aspects of the proposed action, the NRC staff's recommendation to the Commission is that the COLs be issued as proposed."[15] The FEIS adds:

> This recommendation is based on (1) the [COLA], including the Environmental Report (ER), submitted by PEF; (2) consultation with Federal, State, Tribal and local agencies; (3) the review team's independent review; (4) the consideration of public scoping and draft EIS comments; and (5) the assessments summarized in this EIS, including the potential mitigation measures identified in the ER and this EIS.[16]

Issuance of the FEIS was the "trigger date" for proceeding with this contested hearing.

B. USACE Environmental Review

Entities other than the NRC have reviewed, and currently are reviewing, aspects of the LNP and its environmental impacts, including its impact on water resources. For example, as set noted above, the USACE served as a cooperating agency with the NRC in preparing the DEIS and the FEIS. The USACE participated as a member of the NRC's FEIS review team. The USACE is also completing an independent evaluation of the LNP project in order to issue a permit pursuant to Section 404 of the Federal Water Pollution Control Act (also known as the Clean Water Act).

In addition, the USACE's permitting efforts regarding wetlands at and around the LNP have been extensive. Among other things, the USACE and the Florida Department of Environmental Protection ("FDEP") have required PEF to prepare a detailed wetlands mitigation plan to address potential wetlands impacts. That plan must be approved by both the USACE and the FDEP. PEF also has developed an Aquifer Performance Testing Plan and an Environmental Monitoring Plan, described further below, which the USACE must approve prior to issuing the Section 404 permit. On June 4, 2012, PEF submitted

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[14] Environmental Impact Statement for Combined Licenses (COLs) for Levy Nuclear Units 1 and 2, Final Report, NUREG-1941 (Apr. 2012), NRC001.

[15] Id., at p. iii.

[16] Id.

to the USACE its final versions of those two plans (PEF304 and PEF305) for USACE approval. The USACE's decision issuing the required Section 404 permit will be documented in a Record of Decision.

C. State and Local Proceedings and Environmental Reviews

Multiple State and local entities within Florida also have extensively examined the LNP project and its environmental impacts during the last four years.

Pursuant to the Florida Electrical Power Plant Siting Act, Fla. Stat. §§ 403.501–518 ("PPSA") (PEF303), applicants seeking to construct large electrical power plants in Florida are required to submit a Site Certification Application ("SCA"). PEF submitted its SCA for the LNP on June 2, 2008. On August 26, 2009, the Governor and Cabinet of the State of Florida, sitting as a siting board, issued a Final Order Approving Certification of the LNP project ("Final Order"). PEF004. The Final Order adopted and incorporated by reference a Florida administrative law judge's ("ALJ") Recommended Order (PEF004 at Exhibit A) approving PEF's SCA to build, operate, and maintain the LNP, including a heavy haul road, site access roads, and cooling water intake and discharge pipelines.

The Final Order approved siting of the LNP in Florida subject to certain Conditions of Certification ("COC") established by the FDEP. PEF004 at p. 18. The FDEP issued its most recent version of the COC on January 25, 2011. PEF005. The COC set forth the substantive requirements of State, regional, and local permitting authorities. Among other things, the COC address the monitoring and mitigation of the LNP's potential impacts on water resources in Florida (including requiring PEF to develop an Aquifer Performance Testing Plan and an Environmental Monitoring Plan). As part of the PPSA process, the Southwest Florida Water Management District ("SWFWMD") recommended approval of the LNP's proposed groundwater withdrawal. The terms of the water use authorization for the LNP project are found in Section C.II. of the COC. Id. at pp. 41-55.

The FDEP also is responsible for oversight in connection with the following approvals, conditions and requirements for the LNP: (1) an Environmental Resources Permit (which is a combined

State of Florida stormwater and wetland permit, and which includes conditions to address impacts to State-regulated wetlands and for management of stormwater); (2) sovereign land use authorizations, such as easements to use or cross Waters of the State of Florida for works in waters such as for the pipeline crossing and the LNP's cooling water intake structure (an easement has already been obtained for the haul road bridge and barge slip); (3) an air construction permit (which PEF has obtained); (4) an NPDES discharge permit; and (5) potable water treatment system and sanitary wastewater system design approval pursuant to the COC. PEF001 at pp. 32-33.

The LNP project has been approved by the Florida Department of Transportation and by Levy County for ingress and egress on highways. Levy County also has issued a special use zoning permit for the power plant, with limiting conditions. The Florida Department of State required PEF to perform cultural resource surveys before construction, which have been completed for the LNP site. The Withlacoochee Regional Planning Council has reviewed the LNP project's consistency with the Council's regional plan. Finally, the Florida Fish and Wildlife Conservation Commission has reviewed and approved three monitoring plans to establish baseline and operational monitoring of the Cross Florida Barge Canal ("CFBC") and the near-shore Gulf of Mexico environment for fish, invertebrates, plankton, organisms living at the seabed, sea grasses, oysters, hard bottom habitats, impingement and entrainment, flow currents, and water quality. Id. at 33.

Accordingly, the potential impacts of the LNP project on Florida's water resources (and the environment as a whole) have been given the required "hard look" by multiple local, State and Federal agencies. Those impacts have been characterized in great detail in the FEIS. They also have been carefully evaluated and disclosed to the public and to those with decision-making authority over the LNP. See id. at p. 34.

III. PEF'S EXPERTS

This Initial Statement is supported by Pre-Filed Direct Testimony (including related exhibits) from the following PEF expert witnesses:

A. Dr. Mitchell L. Griffin

- Dr. Griffin's testimony addresses passive dewatering during construction and operation of the LNP, as well as active dewatering during the LNP's construction. In addition, he describes as background: (1) the LNP site; (2) the relevant water bodies; and (3) the State and local approvals and permits that the LNP must obtain.

- Dr. Griffin is a Principal Technologist in Water Resources with CH2M HILL, Inc. in Gainesville, Florida. He holds a Ph.D. from Purdue University, and a B.S. in Civil Engineering and M.S. from the University of Kentucky. He is a registered Professional Engineer in the States of Florida, Georgia, and Louisiana. Dr. Griffin has addressed water issues relating to the LNP for approximately six years. He has more than 30 years of experience in the field of water resources engineering. He has extensive experience in the State of Florida, including numerous engineering projects on behalf of Florida water management districts and municipalities.

- Dr. Griffin's testimony is set forth in Exhibit No. PEF001, and he sponsors Exhibit Nos. PEF002 through PEF015.[17]

B. James O. Rumbaugh, P.G.

- Mr. Rumbaugh's testimony addresses the design and calibration of the regional computer model used in predicting the impact on water resources from groundwater withdrawals during construction and operation of the LNP.

- Mr. Rumbaugh holds an M.S. in Geology from Penn State and a B.S. in Geology from Susquehanna University. He is a licensed Professional Geologist in Florida and Pennsylvania, and has worked as a consulting hydrogeologist for almost 30 years. Mr. Rumbaugh specializes in groundwater modeling. He designed and calibrated the regional groundwater model used by the SWFWMD in evaluating water use permit applications. His clients include Florida water management districts and Federal agencies, as well as companies in the private sector.

- Mr. Rumbaugh's testimony is set forth in Exhibit No. PEF100, and he sponsors Exhibit Nos. PEF101 through PEF103.

C. Jeffrey D. Lehnen, P.G.

- Mr. Lehnen's testimony addresses computer modeling of the effects on water resources from active groundwater withdrawals during construction and operation of the LNP.

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[17] A complete list of PEF's Exhibits is included as Exhibit PEF000.

- Mr. Lehnen is a Senior Hydrogeologist with CH2M HILL, Inc. in Gainesville, Florida. He holds a B.S. degree in Geology from the University of Florida, and is licensed by the State of Florida as a Professional Geologist. He has more than 34 years of research and practical experience in hydrogeology and water resource evaluation and planning in Florida. Mr. Lehnen and his team performed the groundwater modeling supporting the COLA and the FEIS.

- Mr. Lehnen's testimony is set forth in Exhibit No. PEF200, and he sponsors Exhibit Nos. PEF201 through PEF217.

D. Dr. William J. Dunn

- Dr. Dunn's testimony addresses the potential direct, indirect and cumulative impacts on water resources from active dewatering during operation of the LNP and from active dewatering during construction of the LNP. He also addresses issues regarding the LNP's zone of impacts, including impacts on Federally listed species.

- Dr. Dunn is a founder and partner with Dunn, Salsano & Vergara Consulting, LLC, in Gainesville, Florida, where he is the firm's principal scientist. He holds a Ph.D. in Systems Ecology from the University of Florida. He also holds an M.S. in Botany from the University of Florida and a B.S. in Biology from Tufts University. Dr. Dunn has 35 years of experience as an environmental scientist and project manager for environmental and water resource management projects.

- Dr. Dunn's testimony is set forth in Exhibit PEF300, and he sponsors Exhibit Nos. PEF301 through PEF314.

E. Dr. Kevin M. Robertson

- Dr. Robertson's testimony addresses whether wildfires will be caused by active and passive dewatering during construction and operation of the LNP, as well as the potential impacts on water quality and the aquatic environment due to increased nutrients allegedly resulting from such wildfires.

- Dr. Robertson is a Fire Ecology Research Scientist and the Fire Ecology Program Director at Tall Timbers Research Station and Land Conservancy in Tallahassee, Florida. Dr. Robertson holds a Ph.D. and M.S. in Plant Biology from the University of Illinois at Urbana-Champaign. He also holds a B.S. in Botany from Louisiana State University, and is a Certified Prescribed Fire Practitioner in Florida, Georgia, and Mississippi. Dr. Robertson has more than 20 years of experience researching, studying and publishing about the ecological impacts of fire.

- Dr. Robertson's testimony is set forth in Exhibit No. PEF400, and he sponsors Exhibit Nos. PEF401 through PEF403.

F. Dr. George Howroyd

- Dr. Howroyd's testimony addresses the maximum amount and dispersion of salt deposition from the LNP's mechanical draft cooling towers.

- Dr. Howroyd is a Vice President and Technology Fellow at CH2M HILL, Inc. in Atlanta, Georgia. He holds a Ph.D. in Mechanical Engineering, an M.S. in Mechanical Engineering, and a B.S. in Mechanical Engineering, all from the University of Waterloo, in Ontario, Canada. He is licensed as a Professional Engineer in Georgia and Mississippi. He also is certified by the American Meteorological Society as a Certified Consulting Meteorologist. Dr. Howroyd has 30 years of experience as an environmental and engineering consultant performing air quality and environmental evaluations and assessments of industrial facilities. Dr. Howroyd and his team performed the salt drift dispersion modeling supporting the COLA.

- Dr. Howroyd's testimony is set forth in Exhibit No. PEF500, and he sponsors Exhibit Nos. PEF501 through PEF505.

G. Dr. Eldon C. Blancher

- Dr. Blancher's testimony addresses the impact on water resources of salt deposition from the LNP's mechanical draft cooling towers.

- Dr. Blancher is Chief Scientist and CEO of Sustainable Ecosystem Restoration in Mobile, Alabama. He holds a Ph.D. in Environmental Engineering Sciences from the University of Florida, an M.S. in Zoology and Physiology from Louisiana State University, and a B.S. in biological sciences from the University of New Orleans. He is certified by the American Academy of Environmental Engineers as an Environmental Scientist in Biology. For more than 30 years, he has specialized in assessing the impacts of the discharges of various substances on wetland and aquatic systems, including habitats throughout Florida.

- Dr. Blancher's testimony is set forth in Exhibit No. PEF600, and he sponsors Exhibit Nos. PEF601 through PEF607.

IV. APPLICABLE LEGAL STANDARDS

Section 102 of NEPA, as amended, directs that an Environmental Impact Statement ("EIS") be prepared for all Federal Actions that significantly affect the quality of the human environment. 42 U.S.C. § 4332(C)(i). The NRC has implemented Section 102 of NEPA in Title 10 of the Code of Federal Regulations ("C.F.R.") Part 51. In 10 C.F.R. § 51.20, the NRC has determined that issuance of a COL under 10 C.F.R. Part 52 is an action that requires preparation of an EIS.

The Commission has found that NEPA serves a dual purpose: to ensure that Federal officials fully take into account the environmental consequences of a Federal action before reaching major decisions, and to inform the public, Congress, and other agencies of those consequences. Private Fuel

Storage L.L.C. (Independent Spent Fuel Storage Installation), CLI-02-25, 56 NRC 340, 347 (2002). According to the U.S. Supreme Court, an EIS:

> ensures that the agency, in reaching its decision, will have available, and will carefully consider, detailed information concerning *significant* environmental impacts; it also guarantees that the relevant information will be made available to the larger audience that may also play a role in both the decisionmaking process and the implementation of that decision.

Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 349 (1989) (emphasis added). NEPA itself does not mandate particular results, but prescribes the necessary process. Id. at 350 (citing Strycker's Bay Neighborhood Council, Inc. v. Karlen, 444 U.S. 223, 227-28 (1980) (per curium) and Vermont Yankee Nuclear Power Corp. v. Natural Res. Def. Council, Inc., 435 U.S. 519, 558 (1978)). If the adverse environmental effects of the proposed action are adequately identified and evaluated, the agency is not constrained by NEPA from deciding that other values outweigh the environmental costs. Robertson, 490 U.S. at 350. "Other statutes may impose substantive environmental obligations on federal agencies, but NEPA merely prohibits uninformed . . . agency action." Id. at 351 (footnote omitted). Indeed, although "one important ingredient of an EIS is the discussion of steps that can be taken to mitigate adverse environmental consequences" to "ensure that environmental consequences have been fairly evaluated," there is no "substantive requirement that a complete mitigation plan be actually formulated and adopted . . . ." Id. at 351-52 (footnote omitted).

In addition, it is well-established that NEPA requires that an EIS discuss only a project's "reasonably foreseeable impacts." Private Fuel Storage, CLI-02-25, 56 NRC at 348 (footnote omitted); Wyoming Outdoor Council v. U.S. Forest Serv., 165 F.3d 43, 49 (D.C. Cir. 1999). This concept has been described by the courts as a "rule of reason." Private Fuel Storage, CLI-02-25, 56 NRC at 347; Davis v. Latschar, 202 F.3d 359, 368 (D.C. Cir. 2000); San Luis Obispo Mothers for Peace v. NRC, 751 F.2d 1287, 1300-01 (D.C. Cir. 1984), vacated on other grounds, 760 F.2d 1320 (D.C. Cir. 1985), cert. denied, 479 U.S. 923 (1986). Thus, while NEPA requires Federal agencies to take a "hard look" at the environmental impacts of a proposed action, see Louisiana Energy Services, L.P. (Claiborne Enrichment

Center), CLI-98-3, 47 NRC 77, 87-88 (1998), that requirement is subject to a rule of reason such that the consideration of environmental impacts "need not address every impact that could possibly result, but rather only those that are reasonably foreseeable or have some likelihood of occurring." Southern Nuclear Operating Co. (Early Site Permit for Vogtle ESP Site), LBP-09-7, 69 NRC 613, 631 (2009) (citing Long Island Lighting Co. (Shoreham Nuclear Power Station), ALAB-156, 6 AEC 831, 836 (1973)).

The likelihood that the event in question will occur is the important issue for NEPA purposes. Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), CLI-90-4, 31 NRC 333, 334-35 (1990). If a contention claims that an EIS is inadequate in some respect, "the 'rule of reason' by which NEPA is to be interpreted provides that agencies need not consider 'remote and speculative' risks or 'events whose probabilities they believe to be inconsequentially small.'" Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), ALAB-919, 30 NRC 29, 44 (1989) (citation omitted).

Moreover, an EIS is not intended to be a research document. Entergy Nuclear Generation Co. (Pilgrim Nuclear Power Station), CLI-10-22, 72 NRC 202, 208 (2010). "NEPA does not call for 'examination of every conceivable aspect of federally licensed projects.'" Private Fuel Storage, CLI-02-25, 56 NRC at 349 (footnote omitted); Louisiana Energy Services, CLI-98-3, 47 NRC at 102-03. Although "there 'will always be more data that could be gathered,'" agencies "'must have some discretion to draw the line and move forward with decisionmaking.'" Entergy Nuclear Generation Co. (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC 287, 315 (2010) (footnote omitted). NEPA does not demand virtually infinite study and resources. Id. at 315. It also does not require a "worst case" analysis. Vermont Yankee, CLI-90-4, 31 NRC at 334; Vermont Yankee, ALAB-919, 30 NRC at 51.

The NRC has established three levels of "significance" for disclosing in an EIS the level of environmental impacts of a proposed action.[18] They are:

- SMALL – Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.
- MODERATE – Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.
- LARGE – Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.[19]

Judged against these principles, as required under NEPA and the Commission's regulations, the FEIS specifically and adequately addresses – and appropriately characterizes as less than LARGE – the environmental impacts at issue in Contention 4A.

V. SUMMARY OF ARGUMENT

Contention 4A alleges that the FEIS fails to comply with NRC regulations and NEPA because it does not specifically and adequately address – and inappropriately characterizes as SMALL – certain environmental impacts relating to LNP dewatering and salt drift. Those allegations are without merit. The FEIS is a lengthy, comprehensive document that was prepared by the NRC Staff in conjunction with the USACE. As required under NEPA, the FEIS thoroughly analyzes, and correctly characterizes, the environmental impacts at issue in Contention 4A.

The FEIS is the product of years of study by the NRC Staff and the USACE. That study included an extensive, independent evaluation and analysis of, among other things: the LNP's Environmental Report; PEF's responses to approximately 150 requests for additional information from the NRC Staff regarding environmental issues; NRC Staff visits to the LNP site; interactions with State and Federal agencies; the results of the public scoping process including review of written comments by the public on

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[18] NRC001, Section 1.1.1.1, at pp. 1-3 through 1-4. These definitions are set forth in Table B-1 of 10 C.F.R. Part 51, Subpart A, Appendix B and are based on Council on Environmental Quality Guidance (40 C.F.R. § 1508.27). NRC001, Section 1.1.1.1 at p. 1-3.

[19] Id.

the DEIS; the LNP's State of Florida Site Certification Application; the State of Florida Siting Board's Final Order approving the LNP's site certification; the comprehensive Conditions of Certification imposed on the LNP by the Florida Department of Environmental Protection; and PEF's Aquifer Performance Testing and Environmental Monitoring Plans. Accordingly, the FEIS reflects the required "hard look" at the LNP's reasonably foreseeable environmental impacts at issue in Contention 4A, and provides the public with detailed notice of those impacts. The FEIS clearly satisfies NEPA's "rule of reason."

Specifically, Part A of Contention 4A alleges that the FEIS inappropriately characterizes as SMALL impacts on various water resources associated with active dewatering during construction and operation of the LNP. That allegation is meritless. Groundwater modeling shows that, during plant operations, the LNP will withdraw only a small fraction of the hundreds of millions of gallons of fresh water that flow each day through the Floridan aquifer system in the relevant area. Construction of the LNP will result in much less water withdrawal than plant operation, over a shorter period of time. Accordingly, the impacts of LNP dewatering on groundwater supply will be SMALL.

Given the limited extent to which the LNP will withdraw water from the aquifer system over both the short and long term, the impacts of LNP dewatering on wetlands and other surface waters also will be SMALL – or, according to the FEIS in one case, SMALL to MODERATE. Moreover, pursuant to detailed plans developed by PEF (as required by the State of Florida and the USACE), the actual impact of LNP dewatering on groundwater, wetlands, and other surface waters will be thoroughly tested and monitored. Those plans require PEF to mitigate unacceptable adverse impacts, if any. As a result of this comprehensive adaptive management strategy, which includes modeling, testing, monitoring and mitigation, the FEIS correctly concludes that the impacts of active dewatering due to construction and operation of the LNP will be less than LARGE in all cases.

In addition, contrary to the allegations in Contention 4A, Part A, LNP dewatering will not cause increased nutrient concentrations that would impact water quality or the aquatic environment onsite or offsite at the LNP. There is no credible scientific link between LNP dewatering and increases in the frequency or severity of wildfires. Even if there were increased wildfires due to dewatering, the topography of the LNP site and its vicinity – as well as the type of vegetation present there – would resist the lateral transport of nutrients to surface waters or groundwater. Nor is there any other mechanism by which LNP dewatering will increase nutrient concentrations in water resources.

Contention 4A, Part A, also claims that the impacts of passive dewatering will be greater than SMALL. However, in compliance with requirements of the State of Florida, the LNP is specifically designed to avoid passive dewatering. Indeed, the LNP project includes the construction of stormwater ponds that will recharge the aquifers, resulting in no net passive dewatering. Any minimal passive dewatering that may occur during periods of drought will have minor, if any, environmental impacts.

Contrary to the claims of Contention 4A, Part B, the impacts of salt drift from the LNP's cooling towers also will be SMALL. Even the worst-case predicted salt deposition rates under 100-year drought conditions in Levy County will result in salt concentrations onsite and offsite at the LNP that will be far too low to adversely impact water resources and the aquatic environment, including flora and fauna.

Finally, contrary to the claims in Contention 4A, Part C, the FEIS correctly characterizes the LNP's zone of impacts as SMALL. Because Contention 4A, Parts A and B are without merit, the "consequential" claims in Contention 4A, Part C also are without merit. In any event, the FEIS analyzes the zone of reasonably foreseeable environmental impacts, as is required under NEPA.

For these reasons, the Board should find that the FEIS satisfies the Commission's regulations and NEPA with respect to the allegations raised by Contention 4A. Accordingly – as the FEIS concludes – the LNP's COLs should be issued as proposed.

VI. STATEMENT OF POSITION

A. Description of LNP Site and Related Waters

Contention 4A challenges the sufficiency and accuracy of the FEIS's impacts analysis of LNP dewatering and cooling tower salt drift on a broad range of water resources: "wetlands, floodplains, special aquatic sites, and other waters;" "the Floridan aquifer system;" and "Outstanding Florida Waters such as the Withlacoochee and Waccasassa Rivers." The FEIS, however, need only address those water resources to which impacts from the LNP are reasonably foreseeable. Private Fuel Storage, CLI-02-25, 56 NRC at 348; Vogtle, LBP-09-7, 69 NRC at 631 (citing Shoreham, ALAB-156, 6 AEC at 836). Accordingly, a description of the LNP site and water resources in its proximity will help establish the proper context for Contention 4A.

The LNP lies in a rural portion of Levy County, Florida. The power plant will be located in the middle of a former pine plantation. The parcel of land on which the power plant will be located is 3,105 acres, and it is sometimes called the "north property." PEF001 at p. 4. PEF also owns a contiguous parcel of land to the south, which is sometimes called the "south property." Id. at p. 4. The north property, which PEF will refer to throughout this Initial Statement as the "LNP site," is outlined in yellow on BRD001 at p. 2. The south property is outlined in blue on the lower half of that same Exhibit.

The LNP is located within a limestone plain overlain by silty fine-sand dunes, ridges, and coast-parallel sand belts and clay. NRC001, Fig. 2-30, at p. 2-178; PEF200 at p. 8. Geological data has identified at the site an average 30 foot-deep layer of sand and clay deposits overlying the Avon Park Formation, which is a rock formation whose top 100 feet consist of limestone before becoming harder dolomite at greater depths. PEF200 at p. 8. Unlike much of the surrounding region, the LNP site does not overlay the clay and silt of the so-called "Hawthorn Group," or the relatively easily-dissolved limestone and phosphorus deposits within the Suwannee and Ocala rock formations. Id. at p. 8.

The hydrogeology of the LNP site and surrounding region is characterized by two aquifers – the surficial aquifer and the Upper Floridan Aquifer ("UFA"). Id. at p. 10. The surficial aquifer lies directly over the UFA in the vicinity of the LNP, and there is good hydraulic connection between the two aquifers. Id. The UFA flows mostly west by southwest, directly to the Gulf of Mexico, or toward the lower Withlacoochee River or Lake Rousseau. BRD001 at p. 1; PEF001 at p. 7. Because of the prevailing water flow pattern, waters further away to the north and east of the LNP site, or south of Lake Rousseau, are not relevant to Contention 4A. PEF001 at p. 6.

The surficial aquifer contains freshwater and occurs from between 1 to 5 feet below land surface, extending to a depth of between approximately 30 to 40 feet below land surface. PEF200 at p. 10. The UFA is reported to be approximately 500 to 800 feet thick in the vicinity of the LNP site. Id. The UFA is hydraulically separated from the more saline Lower Floridan Aquifer by low-permeability rock. Id. The UFA in the vicinity of the LNP site has ancient cavities, fractures and solution channels within the limestone and dolomite of the Avon Park Formation. Id. These features result in high hydraulic conductivity and transmissivity within the UFA.[20] This means that water moves relatively freely through the UFA, thereby minimizing the effects on water levels from active groundwater withdrawals, such as from pumping by production wells. Id. at pp. 10-12.

The LNP's main power generation facilities will be located on the LNP site. BRD001 at p. 4. Those facilities will be elevated above the natural ground surface by approximately 8 feet. NRC001, Section 4.1.1 at p. 4-4. This will create a higher "island" that raises the power block, cooling towers, and associated service buildings above the 100-year floodplain. Id. There will be three stormwater ponds around the raised power plant to collect stormwater runoff for treatment and limited retention and attenuation prior to release back into the ground. PEF001 at p. 5.

[20] Aquifer transmissivity is a measure of the three-dimensional flow regime of the respective geologic unit and is the product of the hydraulic conductivity and thickness of the aquifer unit.

The LNP's freshwater water supply will come from wells located in the south property, as shown on BRD001 at p. 2. The LNP's heavy haul road, pipelines, and transmission corridors pass through the south property. PEF001 at p. 4. The LNP's supply of water for its mechanical draft cooling towers will come from the CFBC, which can be seen on BRD001 at p. 1.

The LNP site and the south property are considered a flatwoods ecological community that has been altered by many years of pine tree cultivation and harvesting (also known as "silviculture"). The landscape is mostly flat. Surface water moves from the site by overland flow. Approximately 54% of the LNP site and the south property are considered to be wetlands. Runoff often gathers in the shallow wetlands and overflows the landscape during wet weather. There are no creeks, streams, ditches or channels on the LNP site or the south property that lead off those parcels. Accordingly, only stormwater runoff by overland flow is pertinent to a discussion of surface water impacts from the LNP. Roads are, and will be, elevated somewhat, which is a customary practice on flat Florida landscapes. Stormwater flow paths will be maintained by culverts located at existing low areas. PEF001 at pp. 5-6.

Contention 4A alleges that the FEIS failed to properly analyze impacts attributable to the LNP from dewatering to various water resources, namely wetlands, floodplains, special aquatic sites, other waters, the Floridan aquifer and Outstanding Florida Waters (including the Withlacoochee and the Waccasassa Rivers). The United States Environmental Protection Agency ("EPA") identifies six categories of "special aquatic sites": sanctuaries and refuges; wetlands; mudflats; vegetated shallows; coral reefs; riffle and pool complexes. Of these six, only wetlands are present in the vicinity of the LNP. Moreover, all wetlands on the LNP site and the south property are "Class III waters," which are not considered "special aquatic sites" under Florida surface water quality standards. Id. at p. 7. Accordingly, there are no "special aquatic sites" that could be impacted by dewatering attributable to the LNP.

In addition, PEF witness Dr. Griffin developed a figure showing all of the Outstanding Florida Waters ("OFW") and lands with OFWs in the vicinity of the LNP site. BRD002. As Dr. Griffin testifies,

the only OFW in the vicinity of the LNP – and therefore the only OFW relevant to Contention 4A – is the lower Withlacoochee River from the Gulf of Mexico to the Inglis Lock Bypass Channel ("Bypass Channel"), excluding the isolated segment of that river that is located between Lake Rousseau and the CFBC. PEF001 at pp.7-8; see NRC001, Figures 2-6 and 2-9, at pp. 2-15 and 2-20. Most of the LNP site and the south property drain into three smaller sub-basins: Spring Run Creek, Direct Runoff to Gulf, and the Withlacoochee River. The Waccasassa River – an OFW referenced by Contention 4A – is north of the Spring Run Creek sub-basin; surface water from the LNP site and the south property will not reach that River. Nor will water from the LNP site or the south property reach any other OFW that lies outside of these three drainage sub-basins. In addition, because surface water will not flow back to the east, waters in the Goethe State Forest (located north and east of the site) could not be affected by the LNP. PEF001 at p. 8.

B. Contention 4A, Part A – Impacts On Water Resources Due To Active Dewatering During Plant Construction And Operations

Contention 4A, Part A states:

> The Draft Environmental Impact Statement (DEIS) [FEIS] fails to comply with 10 C.F.R. Part 51 and the National Environmental Policy Act because it fails to specifically and adequately address, and inappropriately characterizes as SMALL, certain direct, indirect and cumulative impacts, onsite and offsite, of constructing and operating the proposed LNP facility:
>
> A. Impacts to wetlands, floodplains, special aquatic sites, and other waters, associated with dewatering, specifically:
>
> 1. Impacts resulting from active and passive dewatering;
>
> 2. Impacts resulting from the connection of the site to the underlying Floridan aquifer system;
>
> 3. Impacts on Outstanding Florida Waters such as the Withlacoochee and Waccasassa Rivers;
>
> 4. Impacts on water quality and the aquatic environment due to alterations and increases in nutrient concentrations caused by the removal of water; and

5. Impacts on water quality and the aquatic environment due to increased nutrients from destructive wildfires resulting from dewatering.

This portion of Contention 4A raises a number of distinct issues – with various subparts – regarding the impacts of LNP dewatering. The discussion immediately below in Section VI.B.1 sets forth PEF's position regarding issues throughout Contention 4A, Part A, that relate to impacts on all relevant water resources from active dewatering during LNP operations. Subsequent parts of Section VI.B. will address those portions of Contention 4A, Part A, that relate to impacts on all relevant water resources due to: active dewatering during construction of the LNP (Section VI.B.2); passive dewatering during LNP construction and operation (Section VI.B.3); alleged increases in nutrient concentrations caused by the LNP's removal of water (Section VI.B.4); and alleged wildfire increases resulting from LNP dewatering (Section VI.B.5).

1. The FEIS Specifically And Adequately Addresses, And Appropriately Characterizes, Impacts From The LNP Associated With Active Dewatering During Plant Operations

Contention 4A, Part A, states that the FEIS fails to specifically and adequately address, and inappropriately characterizes as SMALL, impacts associated with active dewatering during operation of the LNP. That portion of Contention 4A is without merit.

As described fully in the following sections, the FEIS's characterization of the impacts of active dewatering[21] by the LNP are supported by groundwater modeling that PEF originally relied upon when it prepared the ER (the "ER Model"), and by groundwater modeling in which CH2M HILL ("CH") "recalibrated" the ER Model for PEF at the request of the NRC Staff (the "Recalibrated Model"). According to the FEIS, the Recalibrated Model shows that the impacts of LNP active dewatering on groundwater use will be SMALL (NRC001, Section 5.2.2.2, at p. 5-8); the impacts of active dewatering on groundwater quality will be SMALL (NRC001, Section 5.2.3.2, at p. 5-16); and the impacts of active

[21] For purposes of this proceeding, PEF defines active dewatering as the removal of water through pumping or other mechanical methods. PEF001 at pp. 9-10; PEF300 at p. 11.

dewatering on "terrestrial ecological resources" (which the FEIS states include wetlands and listed species) will be SMALL to MODERATE (NRC001, Section 5.3.1.6, at p. 5-47).

As also described below, PEF believes that the ER Model – which shows SMALL impacts from active dewatering in all cases – produced more realistic results than the Recalibrated Model. In any event, regardless of what level of impacts the groundwater modeling shows, the FEIS fully analyzes and discloses all potential impacts. The FEIS also recognizes that the State of Florida has required PEF to establish three detailed and comprehensive environmental testing, monitoring and mitigation plans which will "ensure that the proposed use of groundwater for the LNP project does not cause adverse impacts on wetlands and surface waters . . . ." NRC001, Section 5.3.1.1, at p. 5-30; see also id. at p. 5-47. For these reasons, the FEIS satisfies the NEPA requirement that the NRC take a "hard look" at the environmental impacts of active dewatering resulting from operation of the LNP.

a. The Conclusions Of The FEIS And The ER Regarding Active Dewatering Impacts Are Supported By Groundwater Modeling

The LNP will obtain groundwater for its operations from four production wells to be constructed on PEF's south property. BRD001 at p. 2; PEF200 at p. 13. PEF selected that location for its wells to take advantage of the relatively high transmissivity of the UFA in that area, and to minimize environmental impacts to wetlands. PEF200 at p. 13. Groundwater from the wells will supply water to the LNP for general plant operations, including service-water cooling, potable water supply, raw water to the LNP's demineralizer, fire protection, and media filter backwash. NRC001, Section 5.2.2.2, at p. 5-7; PEF200 at p. 14. Operation of the LNP is conservatively assumed to require: (1) an annual average pumping day withdrawal (from all four wells combined) of 1.58 million gallons per day ("mgd")[22] of

[22] Westinghouse, the manufacturer of the AP1000, has calculated that the wellfield will need to supply approximately 1.26 mgd of freshwater on an annual average day. PEF adjusted that figure in order to include a 25% contingency. PEF200 at p. 14.

groundwater from the UFA; and (2) a potential maximum withdrawal of 5.8 mgd[23] from the UFA for one week. NRC001, Section 5.2.2.2, at p. 5-7; PEF200 at pp. 14-15.

To better understand and analyze the potential impacts on groundwater due to withdrawals from the production wells, PEF developed a groundwater flow model as part of the LNP's Florida Site Certification process described above. That model was based on the SWFWMD's pre-existing District-Wide Regulation Model, Version 2, regional groundwater flow model ("DWRM2").[24] PEF200 at pp. 21-22. PEF's expert witness James Rumbaugh designed and calibrated the DWRM2 for the SWFWMD.[25] PEF100 at p. 3. Mr. Rumbaugh built the DWRM2 according to specifications provided by the SWFWMD, and in a manner consistent with American Society for Testing and Materials specifications. Id. at pp. 12, 16, 20. Mr. Rumbaugh's testimony describes in detail how he designed and calibrated the DWRM2. Id. at pp. 12-15; see also PEF103.

The SWFWMD uses the DWRM2 to evaluate the impact of proposed water use permits within the SWFWMD's jurisdiction. PEF100 at pp 13-15; PEF200 at pp. 20, 27. More specifically, in order to evaluate individual permits, a subregional model must be extracted from the larger DRWM2 through a process called "telescopic mesh refinement" ("TMR"). The resulting subregional model is then used to predict the effects on local and regional waters from the withdrawal of water under the proposed permit.

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[23] The 5.8 mgd figure very conservatively assumes a week-long maintenance period where both reactors at the LNP site are shutdown (which is unlikely), as well as the simultaneous occurrence of maximum cool down demand on the service cooling tower by each reactor, continued use of the demineralizer system by both reactors, and a fire that requires maximum pumping flow of 1,250 gallons per minute to replenish the fire water storage tanks associated with each reactor. It is highly unlikely that all of these events would occur at the same time. PEF200 at pp. 14-15.

[24] The DRWM2 was developed from the United States Geological Survey's ("USGS") MODFLOW-2000 groundwater model software.

[25] The SWFWMD requested that the original District Wide Regulation Model ("DRWM") be developed so that the SWFWMD would have one model covering its entire district, with some overlap with adjacent water management districts. It was designed to predict both incremental and cumulative impacts arising from a new or modified existing permit. The DRWM was first released by the SWFWMD in 2004; the SWFWMD released the DWRM2 in 2007. The DRWM2 includes data from permits issued through 2006. Data from newer permits have been added on a case-by-case basis as determined by the SWFWMD. PEF100 at pp. 11-12.

Mr. Rumbaugh created a special version of the TMR – called the Focus Telescopic Mesh Refinement ("FTMR") – to be used by the SWFWMD to evaluate the incremental and cumulative effects on local groundwater users from a proposed withdrawal.

Under the direction of Mr. Lehnen, CH used a subregional model extracted from the larger DRWM2 through the FTMR process to create the ER Model. PEF100 at p. 15; PEF200 at pp. 21-22. CH's Technical Memorandum No. 74 ("TM74") (PEF212) describes that process in detail. TM74 also describes how CH ran the ER Model. Based upon his review of TM74 and his discussions with Mr. Lehnen, it is Mr. Rumbaugh's professional opinion that the predicted drawdown values and regional aquifer flow rates obtained from the ER Model are realistic. PEF100 at pp. 17-18. Mr. Rumbaugh testifies that the ER Model relies on the DWRM2's existing calibration and, therefore, is based on "an exhaustive characterization of local conditions." Id. at p. 16. Thus, the ER Model's application by CH was "consistent with the SWFWMD's recommended practice for groundwater use permit applicants within [the SWFWMD's] jurisdiction." Id.

When performing its review of the LNP's COLA, the NRC Staff requested that PEF recalibrate the ER Model against certain site-specific and 2007 USGS potentiometric data. PEF200 at pp. 24-25. PEF directed CH, again under Mr. Lehnen's supervision, to comply with that request. Technical Memorandum 123 ("TM123") (PEF210), and Mr. Lehnen's testimony (PEF200 at pp. 24-27), describe in detail how CH created and ran the Recalibrated Model.

Both Mr. Rumbaugh and Mr. Lehnen testify that they prefer the ER Model over the Recalibrated Model. Mr. Rumbaugh believes that the recalibration requested by the NRC was unnecessary, since the DWRM2's calibration to local conditions is "exhaustive and proven." PEF100 at p. 17. He also testifies that the recalibration was "noteworthy in several respects" because:

- the recalibration was performed in the extracted FTMR model, rather than in the larger DWRM2 regional groundwater model;

- the recalibration was performed against some unusual calibration targets obtained from 2007 USGS potentiometric data (including (a) synthetic calibration targets based on water level estimates rather than actual measurements, and (b) one well – the T&J Ranch Well – that Mr. Rumbaugh had considered and rejected as a calibration target in his original calibration of the DWRM2 because the water level measured at that well was so high that it might not have been representative of the regional UFA flow system); and

- recalibration to the high water levels at those targets required CH to make additional adjustments to aquifer parameters (including hydraulic conductivity and recharge) within the Recalibrated Model.

Id. at pp. 17-18.[26] For all of these reasons, Mr. Rumbaugh believes that "the drawdown values and regional aquifer flow rates obtained from the [Recalibrated Model] . . . are not as realistic as those obtained from the ER Model." PEF100 at p. 18; see also id. at p. 21.

Mr. Lehnen agrees with Mr. Rumbaugh's assessment of the Recalibrated Model, stating: "the calibration against 2007 USGS data requested by the NRC Staff resulted in less realistic predictions of drawdown impacts and the regional aquifer flowrates." PEF200 at p. 30. As Mr. Lehnen further explains:

> The calibration targets used in the recalibration effort – in particular the high water-level associated with the T&J Ranch Well – created a steep groundwater gradient along the eastern boundary of the model that in turn required my CH2M HILL team to make a series of adjustments to boundary conditions and aquifer performance parameters inhibiting flow from the high points of the groundwater gradient to other areas.

Id. Mr. Lehnen testifies that these adjustments gave rise to potential inconsistencies between the Recalibrated Model's predictions and hydrogeologists' general understanding of the hydrogeological characteristics of the LNP site and surrounding area. Id. at pp. 30-31.

Both Mr. Lehnen and Mr. Rumbaugh, however, believe that the values obtained from the Recalibrated Model have some predictive value. PEF100 at pp. 19, 21; PEF200 at pp. 31, 33. Indeed,

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[26] In fact, Mr. Rumbaugh testifies that the SWFWMD does not recommend any recalibration of FTMR models created from the DWRM2 because "the existing calibration of the DWRM2 represents the SWFWMD's conceptual model of the aquifer systems in their area, incorporates an exhaustive set of data that was thoroughly reviewed by SWFWMD Staff for data quality, and has resulted in reliable predictions since the model's introduction in 2007." PEF100 at pp. 14-15.

both witnesses point out that the ER Model and the Recalibrated Model produced aquifer flow rates within an order of magnitude of each other, and that the two models had similar drawdown values despite their different calibrations. PEF100 at p. 19; PEF200 at p. 31. Accordingly, the groundwater modeling performed in connection with both the ER and the FEIS supports those documents' respective conclusions that the direct, indirect, and cumulative impacts resulting from active groundwater withdrawal during construction and operation of the LNP are less than LARGE. PEF100 at p. 20; PEF200 at p. 32.

b. The LNP Will Withdraw Only A Small Fraction Of The Total Amount Of Water Flowing Through The UFA

Based upon either the ER Model or the Recalibrated Model, the FEIS appropriately characterizes as SMALL the impacts on groundwater supply from active dewatering withdrawals during LNP operation. NRC001, Section 5.2.2.2, at p. 5-8. This is the case because the maximum amount of water that the LNP may use during operation is only a fraction of the total flow through the UFA in the 400 square miles around the LNP site.

As set forth above, the annual average withdrawal rate for the LNP is conservatively 1.58 mgd, and the maximum pumping week rate is conservatively 5.8 mgd. Based on the ER Model, flow of freshwater through the 400 square mile modeled area is expected to be 450 mgd. Using that flow rate, withdrawals from the LNP wellfield will be extremely small – approximately 0.35% (average day) and 1.3% (maximum day) of the daily water flux through the UFA in that area. PEF200 at p. 15. Even if one were to consider the Recalibrated Model's predicted flow rate of 208 mgd, the LNP withdrawal rates are still only 0.76% (average day) and 2.8% (maximum day) – again just small fractions of the daily water flux. NRC001, Section 5.2.2.2, at p. 5-8; PEF200 at p. 15 n.6. Impacts on the flow regime in the UFA from such withdrawals will be SMALL. PEF300 at p. 14.

Moreover, the cumulative impact of groundwater use by the LNP and other permitted users in the modeled area also is SMALL. Existing daily cumulative groundwater withdrawals in the area

incorporated into the DWRM2 model represent approximately 1.4% of the ER Model flow rate and 2.9% of the Recalibrated Model flow rate. PEF200 at pp. 16-17. Given that these existing daily cumulative groundwater withdrawals in the modeled area are greater than the average (and the maximum) withdrawal rates associated with the LNP, and have not resulted in discernible detrimental impacts to local water resources, the LNP's withdrawals will result in SMALL direct, indirect, and cumulative effects on local and regional water resources. Id. Indeed, combining the current daily cumulative withdrawals with the LNP average daily withdrawal rates still amounts to an extremely small portion (1.7% under the ER Model and 3.7% under the Recalibrated Model) of the total daily water flux.

In addition, the projected impacts of LNP groundwater withdrawals on water flowing through the UFA continue to be SMALL even if the proposed Tarmac Road Limestone Mine is also considered. That mine, which will be located approximately 2 miles west of the LNP and 4.5 miles from the LNP's nearest production well, is expected to use roughly 13 mgd of water during processing. However, because the vast majority of that water will be continually re-circulated through the mine excavations, there will be no net groundwater withdrawal, except for evaporation and loss of water in the rock that is produced. Id. at p. 17. The SWFWMD has granted the Tarmac Mine a permit to withdraw water from the UFA at an average rate of 0.123 mgd and a maximum rate of 0.137 mgd. Id.[27] These withdrawal rates correspond roughly to only 0.03% of the ER Model's UFA flow rate of 450 mgd, and only 0.06% of the Recalibrated Model's UFA flow rate of 208 mgd. Id. In addition, based on groundwater modeling supporting the Tarmac Mine water permit, the 0.1 foot drawdown curve for the Tarmac Mine overlaps only a portion of the LNP site. Id. Therefore, as Mr. Lehnen concludes:

> Given the relatively small magnitude of the additional groundwater withdrawals associated with the Tarmac Mine, operation of that mine should not disturb the conclusions of the ER and FEIS that the direct, indirect, and cumulative impacts on water resources from active dewatering during operation and construction of the LNP will be SMALL.

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[27] This actual permitted rate is much lower than the estimated rate of 1.0 mgd that appears in the FEIS. NRC001, Section 4.2.1, at p. 4-24.

Id. at pp. 17-18. Dr. Dunn agrees with Mr. Lehnen. Based on the dewatering withdrawal rates discussed above, Dr. Dunn finds:

> it is my professional opinion that the groundwater use associated with the Tarmac Mine does not change the characterization within the FEIS that the direct, indirect, and cumulative impacts on water resources from active dewatering during operation and construction of the LNP are SMALL.

PEF300 at p. 43.

Accordingly, due to the significant water flux through the UFA in the vicinity of the LNP, under either the ER Model or the Recalibrated Model, the LNP will have SMALL impacts on groundwater use, even if those impacts are combined with current groundwater withdrawals and with the Tarmac Mine's permitted withdrawal.

c. Groundwater Withdrawals Due To Active Dewatering During Operation Of The LNP Will Have, At Most, SMALL Impacts On The Water Resources Described In Contention 4A Part A, On And Off The LNP Site

(i) The Modeled Groundwater Drawdowns Will Have SMALL Environmental Impacts On Wetlands And Other Water Resources

Both the ER Model and the Recalibrated Model also show that drawdowns of groundwater to operate the LNP will have minimal impacts on onsite and offsite surface water resources, including wetlands.

Based on the average annual pumping day rate of 1.58 mgd, the ER Model shows incremental (LNP only) and cumulative (LNP plus all permitted users) drawdown of no more than 0.5 feet in the surficial aquifer and the UFA over 1-year and 60-year[28] modeling periods throughout the vast majority of the wellfield.[29] PEF200 at pp. 22-23; PEF212 at pp. 7, 16-19. Indeed, under the ER Model, no wetlands within the 400 square-mile model domain exhibited an incremental or cumulative groundwater drawdown

[28] Sixty years was used to reflect the expected lifetime of the facility. PEF200 at p. 22.

[29] Cumulative groundwater drawdown near a single production well was 0.6 feet in the UFA after sixty years of pumping. Id. at pp. 22-23; PEF212 at p. 5.

of greater than 0.5 feet within the modeling periods. PEF200 at p. 23; PEF212 at pp. 7, 22-23. The ER Model also predicts that no permitted water user would see greater than a cumulative 0.2 foot drawdown over the LNP's anticipated lifetime. PEF200 at p. 23; PEF212 at pp. 5, 18-19.[30]

The Recalibrated Model showed somewhat different – but still inconsequential – impacts on wetlands and other water resources. With respect to incremental impacts based on the LNP's annual average pumping day rate, the Recalibrated Model shows a 0.5-foot groundwater drawdown over approximately a 1-mile radius from the center of the wellfield during a 1-year period, increasing to approximately a 3-mile radius from the center of the wellfield after 60 years. PEF200 at p. 28; PEF210, Figs. 20-21, 26-27, 30-31, at pp. 8-9, 36-37, 42-43, 46-47. Regarding cumulative impacts, the Recalibrated Model shows a 0.5-foot drawdown in the surficial aquifer and the UFA over an approximately 1.5 mile radius around each production well during a 1-year period, increasing to approximately a 5.5 mile radius around each production well after 60 years. PEF200 at p. 28; PEF210, Figs. 22-23, 28-29, at pp. 38-39, 44-45. The Recalibrated Model also indicates that the surficial aquifer beneath some wetlands could experience more than 0.5-foot of drawdown within the 1-year and 60-year modeled pumping periods. PEF200 at p. 28.[31] The FEIS discusses all of these results in its analysis of the impacts on wetlands and surface waters from groundwater withdrawals. NRC001, Section 5.3.1.1, at pp. 5-26 through 5-29.

[30] Based on the maximum pumping week withdrawal rate of 5.8 mgd modeled for one week, the ER Model shows an approximately 0.7 to 0.8-foot groundwater drawdown in the immediate vicinity of each well. The magnitude of the drawdown diminishes quickly, with the area greater than one mile from the center of the wellfield experiencing no more than a 0.1-foot drawdown. The closest permitted users to the LNP wellfield would not be expected to experience more than a 0.2-foot drawdown during a maximum pumping week. PEF200 at pp. 23-24; PEF212 at pp. 6-7, 21. Because of these limited drawdowns and the short duration of the drawdown period, no impacts to wetlands and surface waters during a maximum pumping week would be expected. PEF200 at p. 24; PEF300 at p. 16.

[31] Based on the maximum pumping week withdrawal rate, the Recalibrated Model yielded a 0.5-foot drawdown in the surficial aquifer over a radius extending a maximum of 0.2 miles from each production well, and a 0.5-foot drawdown within the UFA across a radius extending 0.6 miles from each production well. PEF200 at p. 29; PEF210, Figs. 32-33, at pp. 48-49. That small increase in drawdown over one week would not be expected to affect wetlands or other surface water levels in any meaningful way. PEF200 at p. 29.

As Dr. Dunn testifies, based on these drawdown curves from either the ER Model or the Recalibrated Model, active dewatering from the LNP will result in no more than SMALL impacts on wetlands, floodplains, special aquatic sites, OFWs and other waters.[32] As an initial matter, drawdowns of less than 0.5 feet are not of concern in this proceeding because adverse impacts from such drawdowns are not reasonably foreseeable. A 0.5 foot drawdown level is "widely applied" as a screening tool to establish a threshold at which a proposed groundwater withdrawal may cause unacceptable harm to water dependent systems such as wetlands, lakes, streams, springs and rivers. PEF300 at pp. 19-20. A drawdown of less than 0.5 feet is presumed not to cause adverse impacts. Id.; NRC001, Section 5.3.1.1, at p. 5-27. Dr. Dunn's testimony describes in detail the rationale and empirical data supporting that presumption. PEF300 at pp. 16-20. Given that the ER Model's predicted drawdowns are less than the 0.5 foot threshold, the ER Model identifies no concern regarding adverse impacts from dewatering. Id. at p. 19.

Drawdowns greater than 0.5 feet, as shown by the Recalibrated Model in limited circumstances, "will not necessarily result in adverse impacts." Id. at p. 20. Rather, the potential for drawdowns exceeding 0.5 feet warrant closer scrutiny, and may necessitate additional actions to ensure that such withdrawals do not cause harm. These actions typically include monitoring of the groundwater withdrawal's actual impact, as well as implementing mitigation measures if unacceptable impacts are indeed projected to occur. Id. at pp. 19-20. As described in the following section of this Initial Statement, both the FEIS and Dr. Dunn conclude that the LNP will have testing, monitoring and

[32] Dr. Dunn's testimony focuses primarily on wetlands, aquatic ecosystems, and their underlying aquifers that could be impacted by the modeled drawdowns. He notes that, as Dr. Griffin testifies, there are no "special aquatic sites" at issue, and the only relevant OFW in the vicinity of the LNP site is the lower Withlacoochee River from the Gulf of Mexico to the Ingliss Lock Bypass Channel (excluding the isolated segment of that river between Lake Rousseau and the CFBC). Dr. Dunn states that, under both groundwater models, the impact of dewatering on the flow of groundwater to the Withlacoohee River is SMALL. He also finds that dewatering caused by the LNP will not alter the surface water hydrology of either the Withlacoochee River or the Waccasassa River (which is referenced in Contention 4A, Part A.3). PEF300 at pp. 23-24.

mitigation measures in place to ensure there will be no unacceptable adverse impacts on wetlands and other waters due to the LNP's active dewatering.

(ii) The FEIS Correctly Concludes That Testing, Monitoring, And Mitigation Plans Required By The COC Will Ensure That Active Dewatering Will Not Result In Unacceptable Adverse Impacts To Wetlands And Other Waters

According to the FEIS, although groundwater models "provide an objective means of predicting the effects of water withdrawal on groundwater resources, which, in turn, can be used to infer potential wetland impacts from groundwater pumping," such models "are subject to many limitations and their results should be viewed with a degree of uncertainty." NRC001, Section 5.3.1.1, at p. 5-27. The FEIS points out that, due to this inherent uncertainty, the State of Florida in the COC imposed on the LNP conditions "to ensure that the proposed use of groundwater for the LNP project does not cause adverse impacts on wetlands and surface waters . . . ." Id. at p. 5-30. These conditions include requiring PEF to establish an Aquifer Performance Testing Plan ("APT Plan"), an Environmental Monitoring Plan ("EMP"), and, if necessary, an Alternative Water Supply Plan ("AWS Plan"). Id. The FEIS accurately states that, under these plans, if adverse environmental impacts on wetlands and other waters are predicted or detected, "PEF would be required either to mitigate the adverse impacts or implement an approved alternative water-supply project." Id.

In order to specifically "account for the uncertainty that exists regarding the potential effects of groundwater withdrawal on wetlands and associated biota," the FEIS also states that the impacts from operation of the LNP on "terrestrial ecological resources" – which the FEIS defines as including wetlands and listed species – would be SMALL to MODERATE. Id. at p. 5-47. The FEIS concludes, however, that complying with the State of Florida's (and the USACE's) requirements in the COC regarding testing, monitoring and mitigation will ensure that "any possible effects of groundwater withdrawals on wetlands would be temporary and localized." Id. PEF witness Dr. Dunn concurs that the COC program of testing, monitoring and mitigation is an appropriate strategy for addressing potential wetland impacts.

Dr. Dunn's testimony describes the EMP, the APT Plan, and the potential AWS Plan in detail. PEF300 at pp. 27-38. They are briefly summarized below.

The first plan – the APT – is designed to improve the accuracy of the groundwater modeling based on actual usage. Under the APT Plan, PEF will conduct step-drawdown[33] and multi-well constant-rate[34] pumping tests within the later of 6 months after completion of the LNP's production wells or the SWFWMD's final approval of the APT Plan. These tests must be completed at least 5 years prior to initial use of the first production well in excess of 100,000 gallons per day. The APT Plan also requires PEF to install observation wells to monitor the UFA and the surficial aquifer. If this testing and monitoring shows transmissivity or leakance values[35] that differ by more than 20% from those values as included in the ER Model, the COC require PEF to perform revised groundwater modeling to confirm that the withdrawals meet the SWFWMD's conditions for issuing water use permits. Id. at pp. 28-29.

PEF has fully developed for the LNP an APT Plan in conjunction with the SWFWMD, the USACE, and the NRC. Id. at pp. 27-30. Indeed, the USACE has made issuance of its Section 404 permit for the LNP contingent upon its approval of the APT Plan. On June 4, 2012, PEF submitted the APT Plan to the USACE for approval, as well as to the SWFWMD and the NRC. Id. at p. 29. That version of the APT Plan is included as Exhibit PEF304.

The second plan – the EMP – provides a framework for monitoring the hydrology and ecology in the vicinity of the LNP site that could potentially be affected by operation of the LNP's wellfield. PEF prepared the EMP using a guidance document (the Wetland Assessment Procedure ("WAP") Instruction Manual for Isolated Wetlands) that was developed by the SWFWMD and Tampa Bay Water with the

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[33] A step-drawdown test is a well-pumping test performed at four different pumping rates. Id. at p. 28, n.8.

[34] A multi-well constant-rate pumping test is a well-pumping test performed at a constant rate, with a series of monitoring wells designed to measure the resulting drawdown. Id. at p. 28, n.9.

[35] Leakance is a measure of the ease with which water can move vertically from one aquifer to another through the pore spaces or fractures within and between geologic formations. Id. at p. 27.

specific purpose of evaluating the potential for adverse impacts and/or harm to wetlands from groundwater withdrawals. The EMP requires field-sampling from seven monitoring zones located within 2,000 feet of the production wells, two monitoring zones located within 2,000 to 5,000 feet of the production wells, and a minimum of three monitoring zones located outside of the area that will be influenced by the modeled drawdown. The EMP sets forth data monitoring parameters (covering hydrological monitoring and wetland ecological monitoring) and reporting frequencies. PEF must provide an annual monitoring report summary to the SWFWMD and the USACE by January 1 of each year. Id. at pp. 30-32.

As described in detail by Dr. Dunn (id. at pp. 32-34), the EMP implements an adaptive management ("AM") strategy that sets forth a step-by-step process under which PEF's monitoring and data collection are linked to implementing specific management strategies to prevent wetland functional losses, if any, due to dewatering. The adaptive management portion of the EMP outlines the mitigation actions that PEF must consider if the data show that adverse impacts to wetlands are predicted to occur. The general sequence of such mitigation is:

> (1) Reduce groundwater withdrawals or modify pumpage rotation between the production wells.
>
> (2) Evaluate the feasibility of using reuse water to reduce groundwater withdrawals.
>
> (3) Manage water use in the facility to improve efficiency.
>
> (4) Revise the wellfield layout.
>
> (5) Deepen production wells to withdraw from deeper intervals of the aquifer to moderate SAS drawdown, if suitable water quality is found.
>
> (6) Transition to alternative water supply strategies.

Id. at p. 34.

PEF has fully developed for the LNP an EMP in conjunction with the SWFWMD, the USACE, and the NRC. Id. at p. 30. The EMP – like the APT Plan – must be approved by the USACE before it

grants the LNP's Section 404 permit. On June 4, 2012, PEF submitted the EMP to the USACE for approval, as well as to the SWFWMD and the NRC. Id. The EMP is included as Exhibit PEF305.

In Dr. Dunn's opinion, the EMP "is based on accepted protocols that conform to decades of wetland studies and regulatory program development," "conforms with, or exceeds, the [SWFWMD's] WAP and accepted management strategies," and represents a "practicable and cost-effective approach that will best support actionable decision-making if adverse impacts occur or are predicted to occur." PEF300 at pp. 34-35. Since the EMP's design provides for a comparison of wetlands during baseline and operational periods, and for comparisons between wetlands near the wells and offsite, the EMP "will allow the detection of changes to wetlands beyond natural fluctuations." Id. at p. 35. Moreover, the EMP will allow the timely prevention of harm to wetlands, since hydrologic changes to wetlands "of a magnitude sufficient to induce long-term harm will be detectable well before the wetland exhibits indicators of harm, or is subject to loss of structures, species or functions." Id.

The third plan – the AWS – would become relevant in the event the data acquired from the APT Plan or the EMP detect or predict unacceptable adverse impacts, and such impacts cannot be mitigated. The COC require PEF to identify and provide a design for a contingent AWS Plan to offset all or part of the groundwater use authorized by the SWFWMD, if it is determined that the magnitude of actual water table drawdown would exceed environmental thresholds such that unacceptable changes in wetlands or aquatic ecosystems would likely occur. The COC establish detailed activities and a timetable for PEF's development of an AWS Plan, as well as for PEF's selection and implementation of an alternate water supply if necessary. Id. at pp. 36-37. As the FEIS states, PEF has analyzed various alternate sources of water, including seawater desalination, stormwater, reclaimed municipal wastewater, municipal water supply, recycling of process water, and brackish water from deep underground wells. NRC001, Section 5.3.1.1, at pp. 5-30 through 5-31.

The three plans described above are consistent with AM strategies that are commonly employed by environmental scientists. See PEF300 at pp. 38-41. According to Dr. Dunn, AM strategies "have been developed over the last several decades specifically to deal with the effects of uncertainty in making and implementing resource management decisions, such as the management of resources on and in the vicinity of the LNP site under the conditions proposed by PEF." Id. at p. 39. He finds that the review and permitting process followed by the SWFWMD (for the LNP's water use authorization in the COC) and by the USACE (for issuance of the LNP's Section 404 permit), follow the "classic" AM approach, thereby providing an appropriate framework for prudent use of water resources by the LNP in a manner that will not have unacceptable adverse impacts on wetlands and aquatic ecosystems. Id. at p. 40.

Indeed, by requiring PEF to establish testing, monitoring, and mitigation plans, the COC are specifically designed to prevent greater than SMALL impacts from occurring due to the operation of the LNP's wellfield. Id. Accordingly, Dr. Dunn concurs with the FEIS's analysis and characterization of the magnitude, extent and duration of the direct, indirect, and cumulative environmental impacts from active dewatering during operation of the LNP. Id. at p. 8. He concludes:

> I agree with the FEIS's assessment that the testing, monitoring, and mitigation requirements of the COC, specifically the APT Plan, the EMP, and the potential implementation of an AWS, ensure that active dewatering during operation of the LNP will not have greater than SMALL impacts on wetlands, or on aquatic ecosystems or their underlying aquifers, no matter what the groundwater modeling results are. NRC001, Section 9.4.3., at p. 9-250. The NRC Staff concluded, and I concur, that additional mitigation measures beyond those in the COC are not warranted. NRC001, Section 5.3.1.6., at p. 5-47.

Id. at pp. 37-38; see also id. at p. 8.

d. It Was Appropriate For The NRC Staff To Consider The COC – Including The APT Plan, The EMP, And The AWS Plan – When Evaluating The Potential Impacts Of LNP Dewatering

When it admitted Contention 4A, the Board stated: "it is clear that, in the DEIS, the NRC is entitled to refer to 'data, analyses, or reports prepared by . . . competent state authorities' so long as the NRC Staff conducts an independent evaluation and takes responsibility for that information before relying

on it in an EIS."[36] The Board, however, declined to determine the extent to which the NRC was permitted to rely on the COC, or whether the NRC independently assessed the LNP's expected environmental impacts in the DEIS.[37] In fact, the Board commented that Contention 4A raises the issue of whether the NRC Staff's findings in the DEIS relied too heavily on the COC.[38]

Commission precedent is unequivocal that, when conducting environmental reviews, the NRC is entitled to give "substantial weight" to environmental studies and analyses prepared by competent state authorities. As the Commission has long held:

> [t]he fact that a competent and responsible state authority has approved the environmental acceptability of a site or a project after extensive and thorough environmentally sensitive hearings is properly entitled to '*substantial weight*' in the conduct of [its] own NEPA analysis.

Public Service Co. of New Hampshire (Seabrook Station, Units 1 and 2), CLI-77-8, 5 NRC 503, 527 (1977) (emphasis added) (quoting Virginia Electric & Power Co. (North Anna Nuclear Power Station, Units 1 and 2), LBP-75-70, 2 NRC 879, 890 (1975), aff'd ALAB-325, 3 NRC 404 (1976), aff'd sub nom., Culpeper League for Envtl. Prot. v. NRC, 574 F.2d 633 (D.C. Cir. 1978).[39] In Seabrook, the Commission accorded substantial weight to the State's conclusion that "construction of the facility 'will not have an unreasonable adverse effect on esthetics[sic], historic sites, air and water quality, the natural environment,

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[36] Licensing Board Memorandum and Order (Admitting Contention 4A) at p. 18 (Feb. 2, 2011) (unpublished).

[37] Id. at 19.

[38] Id.

[39] In a subsequent decision in the Seabrook proceeding, the Commission further elaborated on its rationale for providing "substantial weight" to a competent authority's determinations of environmental impact – to avoid protracted relitigation of factual issues. The Commission explained:

> Where litigants have one full and fair opportunity to contest a particular issue, they need not be given a second opportunity to reopen the whole matter before another tribunal where the same issue is relevant.

Public Service Co. of New Hampshire (Seabrook Station, Units 1 and 2), CLI-78-1, 7 NRC 1, 26 (1978) (giving substantial weight to determinations of aquatic impact made by the EPA). Although Intervenors did not participate in the proceedings that led to the COC, they certainly had the opportunity to do so, and need not be provided an additional opportunity to attempt to challenge the COC.

and public health and safety.'" Seabrook, CLI-77-8, 5 NRC at 526-27 (citation omitted). Similarly, in the North Anna decision that was affirmed by the Appeal Board and the D.C. Circuit – and that was approvingly cited to by the Commission in Seabrook – the licensing board gave "substantial weight" to State agencies' determinations that the applicant's proposed transmission line route "'. . . will reasonably minimize adverse impact on the scenic and environmental assets of the area concerned'" and was "'the least damaging to the environment.'" North Anna, LBP-75-70, 2 NRC 890-91. The State agencies' determinations resulted from "extensive proceedings." Id. at 890.

In light of this precedent, it is clear that the FEIS is entitled to accord "substantial weight" to the environmental analyses and mitigation strategies adopted by the State of Florida during the site certification proceeding (and by the USACE during its Section 404 water permit proceeding). First, the proceeding that led to the COC certainly involved "extensive and thorough environmentally sensitive hearings." As explained in the August 26, 2009 Final Order for the LNP, the certification proceeding involved over 20 State agencies, 8 days of public hearings, 30 hours of public comment from approximately 85 individuals, and numerous exhibits. PEF004 at pp. 4-5, 10. Second, that proceeding considered a host of potential water-use impacts and imposed conditions to mitigate those impacts where needed. Just as in Seabrook and North Anna, the State certification proceedings for the LNP were extensive and resulted in an order finding that construction and operation of the facility will "minimize, through the use of reasonable and available methods, the adverse effects on . . . the ecology of state waters and their aquatic life," including adverse impacts relevant to the claims raised in Contention 4A. PEF004 at p. 14; see Seabrook, CLI-77-8, 5 NRC at 526-27.

In addition, it is clear that the NRC Staff review team that prepared the FEIS independently evaluated each expected impact, determined its significance, and found that further mitigation of the impact was not warranted because of the mitigation measures imposed by the COC. The NRC Staff did not merely accept the ER Model that was utilized by the State of Florida and the SWFWMD in granting the LNP's State water use permit. Rather, based on its independent review, the NRC Staff required PEF

to recalibrate the ER Model and considered the results of the Recalibrated Model when reaching its conclusions regarding the impacts of LNP dewatering on groundwater use, wetlands, and other surface waters. See, e.g., NRC001, Section 5.2.2.2, at pp. 5-7 and 5-8; NRC001, Section, 5.3.1.6, at pp. 5-46 to 5-47. As the NRC states, its conclusions in the FEIS are based on a variety of factors, such as "the review team's independent evaluation of the LNP project, including the ER, the Site Certification Application, PEF's responses to the review team's RAIs, interactions with State and Federal agencies, the public scoping process, and the identified mitigation measures and [Best Management Practices] . . . ." Id. at p. 5-47.

Accordingly, the NRC Staff review team independently evaluated impacts to water resources from LNP dewatering based on a variety of data, including but not limited to, the State of Florida and USACE analyses. The NRC Staff properly considered the COC – particularly the testing, monitoring and mitigation measures prescribed therein – which provide further assurance that substantial environmental impacts would not result from the LNP's operation. In essence, the NRC Staff credited the COC to the extent that the COC will bound expected operational environmental impacts. If results from testing and monitoring show substantial impact, PEF will be required to mitigate those impacts. As the Board noted earlier in this proceeding, NEPA "assumes that, in due course, the applicant will . . . comply with otherwise applicable laws and regulations (environmental or otherwise)." Levy, LBP-09-10, 70 NRC at 106. The COC are State requirements with which the Staff appropriately assumed PEF would comply. Any claim that the NRC Staff somehow sidestepped its obligation to conduct an independent review – or relied too heavily on the COC – simply cannot be squared with Commission precedent and the detailed discussion and analyses contained in the FEIS.

2. Contention 4A, Part A – Impacts On Water Resources From Active Dewatering During Construction Of The LNP

a. The FEIS Adequately Addresses And Appropriately Characterizes As SMALL Impacts Of Groundwater Usage From Active Dewatering During Construction Of The LNP

Contention 4A, Part A, claims, in part, that the FEIS fails to specifically and adequately address, and inappropriately characterizes as SMALL, impacts to wetlands, floodplains, special aquatic sites and other waters resulting from dewatering during *construction* of the LNP.[40] As set forth below, impacts on water resources from active dewatering during construction of the LNP, if any, will be extremely minor and short-lived. Accordingly, the FEIS appropriately analyzes and accurately characterizes those impacts as SMALL.

In order to construct new facilities at and around the LNP site, active dewatering will occur on a temporary basis. There are two potential primary sources of active dewatering during construction that merit discussion: (1) excavation of the corridor for cooling water pipelines; and (2) excavation of the LNP reactors' foundations.[41]

As Dr. Griffin testifies, PEF will excavate a corridor for the LNP's cooling tower pipelines that will extend from the raised nuclear island to the CFBC. The corridor will have multiple pipes in one trench. Some pipes will used to transport cooling water supply from the CFBC to the LNP. Other pipes will be used to discharge blowdown from the cooling towers to the Crystal River Energy Center ("CREC") discharge canal. The trench for the pipelines will be 12 feet deep, which requires reducing the water table at the trench to approximately 14 to 15 feet deep during construction. Reducing the water table will require mechanical pumping. The dewatering rate for such pumping is estimated to be

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[40] Construction impacts could relate to active or passive dewatering. The impacts of active dewatering during construction are discussed in this section of PEF's Initial Statement. The impacts of passive dewatering during construction are discussed in the section of this Initial Statement below that addresses passive dewatering generally.

[41] Construction of most of the other buildings and roads will require only shallow and short-term dewatering, if any, with such water most likely discharged to nearby wetlands. Impacts from such shallow dewatering are negligible and therefore will not be discussed. PEF001 at p. 29.

approximately 2 gallons per minute ("gpm") per linear foot of trench. Since the pipeline will be constructed in segments of approximately 400 to 500-feet long, the dewatering rate will be approximately 1,000 gpm per 500 feet of trench. Each segment will take approximately 8 weeks for trench dewatering, excavation, pipe installation and backfill. Water pumped out of the pipeline trench, or out of well points, will be discharged in nearby infiltration trenches, and eventually discharged to local uplands. PEF001 at pp. 29-30.

Although active dewatering will be required to excavate the pipeline corridors, the impacts of such dewatering will be minimal. Indeed, the change in groundwater levels due to dewatering of the pipeline corridor trench will have no long-term cumulative effects because: (1) the drawdown is relatively short term; (2) the groundwater levels will recover quickly (to within about 6 inches of the original surface near the trench within 2 or 3 months, under very conservative assumptions); (3) the period of drawdown is within a normal range of seasonal variability; (4) the wetlands are not isolated but are part of a large complex of similar systems; and (5) groundwater monitoring and local infiltration trenches will be used to allow adaptive management during construction as needed. Id.

Active dewatering relating to construction of the LNP reactors' foundations also will be necessary. The reactors' foundations will have low-permeability grouted diaphragm walls. Although the grouting will create conditions similar to a "bathtub" to restrict flow of groundwater into the foundation holes, some seepage will occur. Water from that seepage will need to be mechanically removed. Groundwater modeling was performed for PEF in order to analyze various seepage rate scenarios.[42] Regardless of the actual seepage rate, however, water pumped out of the foundation excavation will be

[42] The first scenario conservatively concluded that a total of approximately 7.72 million gallons of water would need to be removed from the soil inside the bathtub after the grout wall is constructed. The second scenario conservatively estimated groundwater flow, including from rainwater, into a completely empty hole to be approximately 67 gpm. The third scenario estimated a flow rate of 94 gpm if there was an approximately three foot-wide rupture of the grout wall. Additional simulations were conducted where the maximum seepage into the excavation was estimated to be 452 gpm. Id. at p. 31.

placed into holding ponds and allowed to percolate back into the groundwater system, such that there will be limited, if any, dewatering. Id. at pp. 30-31.

For these reasons, active dewatering during construction of the pipeline trench and the foundation holes will, at most, have a very small net reduction in groundwater levels or volumes. In addition, Dr. Griffin adds that the maximum amount of water that could be withdrawn during construction of the LNP is considerably smaller than the amount of water that will be used during operation of the LNP. Furthermore, that smaller amount of groundwater will be withdrawn for a much shorter duration than water used during plant operation. Given Dr. Dunn's testimony that the environmental impacts of active dewatering during operations will be SMALL (see, e.g., PEF300 at p. 7), Dr. Griffin concludes that the environmental impacts of the much smaller and shorter-term active dewatering during construction must necessarily be much less than the SMALL impacts of dewatering during LNP operations. PEF001 at p. 31.

The Pre-Filed Direct Testimonies of Mr. Lehnen and Dr. Dunn support that conclusion. Those witnesses point out that construction activities at the LNP site will require an annual average withdrawal rate of 0.275 mgd and a maximum withdrawal rate of 0.55 mgd. PEF200 at pp. 15-16; PEF300 at p. 12. These amounts represent only 0.06% mgd (average) and 0.12% mgd (maximum), respectively, of the 450 mgd regional flow through the UFA as obtained from the ER Model, or only 0.13% mgd (average) and 0.26% mgd (maximum), of the 208 mgd regional flow through the UFA as obtained from the Recalibrated Model. PEF200 at pp. 15-16. These minor and short term withdrawals will result in impacts that are, at most, SMALL. Id. As Dr. Dunn states: "it is my professional opinion that construction dewatering will not adversely impact the wetlands and aquatic ecosystems on or in the vicinity of the LNP site and South Property. Neither will it have an adverse impact on any other water resources or ecosystems." PEF300 at p. 12. As a result, the direct, indirect, and cumulative impacts of active dewatering on wetlands, floodplains, special aquatic sites, and other waters, during construction of the LNP and associated facilities will be SMALL. Id.

The FEIS reaches the same conclusion. Section 4.2.2 of the FEIS states:

> Because groundwater usage while building the proposed units is expected to be less than half that used during plant operations and the review team concludes that impacts of operational groundwater usage would be minor, building-related groundwater-use impacts are also expected to be minor.

NRC001 at p. 4-25. The FEIS adds that "the water-use impacts of construction and preconstruction activities would be SMALL," based on information provided by PEF and the NRC review team's independent evaluation. Id.

Accordingly, the FEIS has adequately analyzed, and appropriately characterized as SMALL, the impacts on water resources from active dewatering due to construction of the LNP. Intervenors' claims to the contrary, therefore, are without merit.

3. Contention 4A, Part A – Impacts On Water Resources Due To Passive Dewatering During Construction And Operation Of The LNP

a. Impacts Of Passive Dewatering During Construction And Operation Of The LNP Will Be, At Most, SMALL

Regarding passive dewatering during construction and operation of the LNP, Contention 4A, Part A, states:

> The [FEIS] fails to comply with 10 C.F.R. Part 51 and the National Environmental Policy Act because it fails to specifically and adequately address, and inappropriately characterizes as SMALL, certain direct, indirect, and cumulative impacts, onsite and offsite, of constructing and operating the proposed LNP facility [including]
>
> A. Impacts to wetlands, floodplains, special aquatic sites, and other waters associated with dewatering, specifically:
>
> 1. Impacts resulting from . . . *passive dewatering*.

(emphasis added). As set forth below, any passive dewatering resulting from construction and operation of the LNP will have minor, if any, environmental impacts. Accordingly, those impacts are properly characterized as, at most, SMALL.

(i) The LNP Is Specifically Designed To Avoid Passive Dewatering

As an initial matter, Dr. Griffin testifies that "passive dewatering" is not a term normally used by water resource engineers. However, in order to address Contention 4A as drafted, Dr. Griffin and PEF's other experts define passive dewatering as the removal of site water through non-mechanical means (*i.e.*, without pumping). As Dr. Griffin explains, "[p]assive dewatering most often occurs from manmade drainage infrastructure (*e.g.*, ditches and pipes) designed to remove water to facilitate a new land use." PEF001 at pp. 9-11. Because stormwater will not be removed from the LNP site with pumping, stormwater is the primary focus of passive dewatering in this proceeding. Id. at p. 10.

Regarding the substantive issue, contrary to the allegations in Contention 4A, any passive dewatering resulting from the LNP will have inconsequential environmental impacts because the LNP project includes features specifically designed to avoid the types of activities that would cause such dewatering. For example, surface water will not be ditched offsite through channels that would cause rain runoff. Nor will open mine pits will be used. There will be no landscape profile modifications associated with the LNP that could lead to passive dewatering. Id. at p. 11.

In addition, the proposed new power plant will be built on a raised "island," approximately eight feet above ground. Stormwater from the new facilities will be piped or ditched to collect in three stormwater ponds totaling 105 acres.[43] Those ponds will capture stormwater to reduce peak runoff rates. They also will treat the quality of the stormwater before it is released. Id. at pp. 5, 11-13, 17-18, 34. The ponds will have raised dikes surrounding them to hold water at, or above, the natural ground level. The dikes will have a spillway that will overflow into 12-inch pipes. Those pipes will slowly release water to

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[43] The stormwater ponds are known as "wet ponds," whose bottoms will be below the natural seasonal high groundwater level, so there will be open water in the ponds most of the year. Wet ponds have become the preferred stormwater treatment method in Florida in locations with high groundwater conditions because they have a proven track record of nutrient and sediment removal, as well as mitigating peak runoff rates. PEF001 at pp. 12-13.

the natural wetlands and pine plantation downhill from the site into the same systems where the natural drainage currently moves. Id. at pp. 13-14, 34.

In addition, roadways to the LNP site will be elevated above natural grade. Stormwater from the roads will be treated in swales adjacent to the roads and discharged into surrounding wetlands. Culverts will be installed under the roads to allow stormwater to drain from higher elevations in the east to lower elevations in the west. This will preserve the existing natural flow patterns of the landscape and avoid having to redirect site water to other locations. The culverts also will avoid reducing the volume of runoff to existing downstream wetlands before that runoff drains offsite, thereby minimizing the effect of new roadways on surface water flow. Id. at pp. 13-14, 16-18, 34.

As Dr. Griffin testifies, all of the features described above "will minimize the offsite stormwater effects from the LNP project and constitute the current standard of best practices for stormwater management in Florida." Id. at p. 13.

(ii) The LNP's Drainage Facilities Must Satisfy State Requirements That Regulate Passive Dewatering

The LNP must satisfy the State of Florida's requirements regarding stormwater impacts from new construction. The LNP's drainage facilities must meet criteria set forth in the SWFWMD Environmental Review Plan's Basis of Review ("BOR") (PEF006), which was incorporated into the COC. Those criteria are designed to ensure that the LNP will have no adverse offsite impacts or passive dewatering. For example, the BOR criteria provide that: (1) it is permissible to allow onsite wetlands to receive stormwater and to consider the compensating storage effect when estimating impacts; (2) no offsite impacts can result during a 100-year storm, which is 11.3 inches of rainfall in 24 hours at the LNP site; and (3) if fill is placed in low lands, including wetlands, the stormwater volume that would have stayed onsite prior to development must be replaced by new retention storage onsite. Id. at pp. 15-16. Given that the LNP project is designed to satisfy these and other BOR criteria, "no adverse offsite impacts will

occur and the recharge of stormwater into the underlying aquifer system will not be reduced." Id. at p. 16.

In addition, the BOR requires that peak runoff rates on a site following new construction must be less than or equal to pre-development peak runoff rates, in order to prevent an increase in offsite flooding. PEF006 at Chp. 4, p. 1. The LNP will meet that requirement because stormwater will be directed from the new facilities to the stormwater ponds or the swales described above. Indeed, the three stormwater ponds were sized in order to collect and retain the entire runoff from a 25-year, 24-hour storm, and to prevent erosion from the runoff associated with a 100-year storm. PEF001 at p. 16; NRC001, Section 3.4.2.4, at p. 3-30. The ponds will capture and release stormwater slowly, in order to meet the pre-development peak run-off rate. PEF001 at p. 16. The roadway swales described above also will help to reduce stormwater runoff, by detaining some stormwater prior to its release to the natural landscape. Id. In addition, given that the LNP facilities are located in the center of the site, the peak runoff rate will be further reduced as water flows into the landscape and wetlands surrounding the facilities. Id. at pp. 16-17. For all of these reasons, Dr. Griffin concludes that – as required by the BOR – "runoff flow rates at the LNP site and South Property boundary will not exceed existing runoff rates." Id. at 17.

(iii) The Stormwater Ponds At The LNP Will Recharge The Aquifer, Which Will More Than Offset Any Passive Dewatering That Results From Direct Filling Of Wetlands

Direct filling of certain wetlands at the LNP will occur. However, the fill will not result in net passive dewatering because the stormwater ponds will more than compensate for any lost water storage.

The SWFWMD requires that "historic basin storage" (defined by the SWFWMD as the volume of water that is retained below the discharge level of floodplain storage) that is lost due to fill from development must be replaced so that opportunities for groundwater recharge are maintained. Id. at p. 21. The LNP will satisfy that requirement. Id. The LNP's three stormwater ponds will cover approximately 105 acres and will have an average depth of approximately 6 to 8 feet. The ponds, therefore, will

generate approximately 630 acre-feet of compensating water storage. The "Floodplain Bounding Analysis," performed under Dr. Griffin's direction to quantify the amount of fill that could displace stormwater on the site within the 100-year floodplain, estimated the potential loss of historic basin storage at 74-acre feet. Id. at p. 21. Accordingly, construction and operation of the LNP will not decrease the amount of stormwater reaching the groundwater under the site because water far in excess of the lost 74-acre feet of storage will be captured and stored in the ponds. Id. Indeed, as discussed below, rather than resulting in passive dewatering, the LNP will increase the site's ability to recharge the surficial aquifer and the UFA.

Dr. Griffin acknowledges that there could be occasions during droughts when evaporation from the open water surface of the ponds will exceed the amount of evapotranspiration[44] that would have occurred if the site were to remain a managed pine plantation. However, as Dr. Griffin testifies, when evaluating long-term impacts it is customary to look at average conditions, given that environmental inputs are highly variable. Id. at p. 22. Examining those conditions, the annual rate of evaporation of the stormwater ponds will be approximately the same as the historic annual direct precipitation on the ponds.[45] Direct participation, therefore, will offset evaporation on average. Given the runoff that will accumulate in the stormwater ponds from the approximately 175-acre raised power block – which runoff would not otherwise be captured for recharge to the aquifer under current conditions – additional volumes of runoff will be available for percolation into the surficial aquifer and the UFA, especially when the groundwater levels are below the grade of the natural landscape. Id. at pp. 22-24. Therefore, the series of stormwater ditches that direct stormwater from the LNP plant to the stormwater ponds "will be a source of net recharge to the aquifer and cannot reasonably be foreseen to cause net passive dewatering." Id. at p. 24.

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[44] Evapotranspiration is the transport of water into the atmosphere from surfaces, including from soil (soil evaporation) and vegetation (transpiration).

[45] Dr. Griffin notes that the future effects of long-term climate change on historic rainfall data are too speculative to be considered in the FEIS, because "there is inadequate agreement to support any one hypothesis." PEF001 at 25.

(iv) Passive Dewatering Will Not Impact Offsite Surface Waters

Any passive dewatering that does occur at the LNP will not impact offsite surface waters. Id. at pp. 25-27. As a general matter, passive dewatering could potentially impact surface waters through a lowering of surface water levels or by secondary effects caused by lowering the water table. However, as described above, no net passive dewatering will occur at the LNP site. But, even assuming for the sake of argument that net passive dewatering were to occur (for example during certain drought conditions), that dewatering would have a negligible effect on adjacent (or any) water bodies.

The LNP site comprises less than seven percent of the pertinent drainage sub-basins. Thus, any net passive dewatering from the 105-acre ponds (which comprise only a fraction of the LNP site) would "have an undetectable impact on surface water flow water balance to the lower Withlacoochee River and Gulf [of Mexico] because [the stormwater ponds will] affect only about 0.2 percent of the contributing drainage area to the local sub-basins." Id. at p. 26. Indeed, the watershed contributing to the lower Withlacoochee River (which is the only flowing OFW water body near the LNP site that could possibly be affected by changes in surface water discharges caused by the LNP) is about 400 times larger than the LNP site, and groundwater levels near the river are controlled by the elevation of Lake Rousseau (which historically maintains a nearly constant water level). Id. at p. 27. In addition, the LNP reactors' foundations will have little, if any, impact on groundwater flow through the site, because the aquifers are much deeper than the foundations. Id. at pp. 27-29, 35.

While "passive dewatering" is not a term that appears in the FEIS per se, the FEIS concludes that operational impacts of LNP on water quality and quantity on both surface and groundwater resources are SMALL. NRC001, Section 5.13, at p. 5-135. Dr. Griffin agrees that "any impacts related to non-mechanical or 'passive' dewatering . . . will be negligible and would be properly characterized as SMALL in the context of the FEIS. There will be no measurable offsite environmental impacts, direct or indirect, including cumulative impacts, from passive . . . dewatering to wetlands, floodplains, special aquatic sites, and other waters." PEF001 at p. 36. As a result,

> The FEIS has correctly characterized the impacts as SMALL and the LNP project has been thoroughly evaluated by the NRC Staff and multiple local, regional, State, and Federal agencies that have issued a variety of design, monitoring, and permitting requirements to ensure that all potential impacts have been avoided or mitigated as needed.

Id.

Accordingly, Contention 4A's claims regarding passive dewatering are without merit.

4. Contention 4A, Part A – Impact On Water Resources Due To Alterations And Increases In Nutrient Concentrations Caused By The Removal Of Water

a. There Will Be No Impact On Water Resources Due To Increased Nutrients Resulting From Dewatering

Contention 4A, Part A, Section 4 states:

> The Draft Environmental Impact Statement (DEIS) [FEIS] fails to comply with 10 C.F.R. Part 51 and the National Environmental Policy Act because it fails to specifically and adequately address, and inappropriately characterizes as SMALL, certain direct, indirect, and cumulative impacts, onsite and offsite, of constructing and operating the proposed LNP facility, [including] . . .
>
> A. Impacts to wetlands, floodplains, special aquatic sites, and other waters, associated with dewatering, specifically . . .
>
> 4. Impacts on water quality and the aquatic environment due to alterations and increases in nutrient concentrations caused by the removal of water.

There is no basis for claiming that LNP dewatering will result in more than SMALL, if any, impacts on nutrient concentrations in waters or the aquatic environment.

As Dr. Dunn explains, nutrient concentrations in surface water or groundwater are a function of the mass of nutrients available, the amount of water, the solubility of the nutrient, and input and output changes to the amount of water and nutrients. Regarding surface waters, the nutrients of concern are nitrogen and phosphorus. Nitrogen and phosphorus are deposited through atmospheric deposition,

rainfall, and runoff from surrounding uplands. Nitrogen is also deposited through biological fixation[46] within the wetlands. The nutrients are exported through surface outflow and downward seepage (for both nitrogen and phosphorus), and biological denitrification[47] for nitrogen. The nutrient inputs – atmospheric disposition, rainfall and runoff from surrounding uplands – obviously will not change due to LNP dewatering. PEF300 at p. 41. Accordingly, "[t]here is no clear mechanism for increasing nutrient concentrations within wetlands and aquatic ecosystems and their underlying aquifers on or in the vicinity of the LNP site without adding an external source depositing additional nutrients on the properties and thereby increasing the input side of the equation. ... No such external sources exist on and in the vicinity of the LNP site." Id. at pp. 41-42.

Regarding groundwater, the only component that will change slightly from the current nutrient and water mass balance due to operation of the LNP wellfield is that groundwater seepage from the surficial aquifer to the UFA will be slightly higher than it is currently. That would result in a slight increase in the mass of nitrogen and phosphorus moving from the surficial aquifer to the UFA, as measured by the amount of nitrogen and phosphorus in the increased seepage. However, the UFA's modeled groundwater flow in the area of the LNP is 164 billion gallons per year under the ER Model, and 75.9 billion gallons per year under the Recalibrated Model. Given this massive flow of water underneath the LNP site – from which the LNP will be removing a miniscule amount – Dr. Dunn finds that it is "improbable" that *any* additional nutrients entering the UFA due to a slight increase in seepage flux from the surficial aquifer would ever be detectable in the UFA. Id. at p. 42.

For these reasons, in Dr. Dunn's professional opinion, "there will be no measurable alterations or increases in nutrient concentrations caused by active dewatering during construction and operation of the

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[46] Biological fixation is a process in the nitrogen cycle whereby atmospheric nitrogen gas is converted to organic nitrogen by the action of certain microorganisms in wetland soils. PEF300 at p. 41, n.11.

[47] Biological denitrification is a process in the nitrogen cycle in which microorganisms in anaerobic wetland soils are able to convert organic and inorganic forms of nitrogen into nitrous oxide or nitrogen gas, with ultimate release back into the atmosphere. Id. at p. 41, n.12.

LNP." Id. at p. 42. Furthermore, the FEIS generally concludes that "operational groundwater-quality impacts would be SMALL, and mitigation beyond the . . . [COC] would not be warranted." NRC001, Section 5.2.3.2, at p. 5-16. Accordingly, Contention 4A, Part A, Section 4 is without merit.

5. Contention 4A, Part A – Impacts On Water Resources Due To Wildfires Resulting From Dewatering

a. Dewatering By The LNP Will Not Increase Wildfires, Nor Will There Be Adverse Impacts On Water Quality And The Aquatic Environment Due To Increased Nutrients From Wildfires

Contention 4A, Part A, Section 5 states:

> The Draft Environmental Impact Statement (DEIS) [FEIS] fails to comply with 10 C.F.R. Part 51 and the National Environmental Policy Act because it fails to specifically and adequately address, and inappropriately characterizes as SMALL, certain direct, indirect, and cumulative impacts, onsite and offsite, of constructing and operating the proposed LNP facility, [including] …
>
> A. Impacts to wetlands, floodplains, special aquatic sites, and other waters, associated with dewatering, specifically…
>
> 5. Impacts on water quality and the aquatic environment due to increased nutrients resulting from destructive wildfires resulting from dewatering.

Contrary to the implication of this Contention, as explained in the testimony of Dr. Robertson, there is no credible scientific link between the predicted levels of dewatering (either active or passive) at the LNP and an increase in wildfire frequency or severity. PEF400 at pp. 4-5. As Dr. Robertson also explains, even if there were an increase in wildfires due to dewatering caused by the LNP, the specific characteristics of the LNP site would prevent any associated increase in nutrient concentrations in waters and the aquatic environment. Id. For these reasons, impacts on water quality and the aquatic environment (including impacts on wetlands, floodplains, special aquatic sites, OFW and other waters) from wildfires due to dewatering caused by construction or operation of the LNP are not reasonably foreseeable and, at most, are SMALL.

(i) Wildfire Frequency And Severity At The LNP Will Not Change

The key factors influencing the frequency and severity of wildfires are the number of ignitions and the ability of the fire to spread from the ignition point. The number of ignitions depends on the ignition sources (such as lightning strikes, automobile exhaust, campfires, or cigarette butts) and the characteristics of the fuel source. The extent to which wildfires spread depends on weather conditions, topography, natural and man-made barriers to spread, fire suppression, and fuel characteristics. The presence of ignition sources, weather conditions, topography, barriers to fire spread, and fire suppression, obviously would not be impacted by LNP dewatering. Id. at pp. 5-6. As set forth below, Dr. Robertson notes that fuel characteristics may change minimally due to dewatering. He concludes, however, that such changes will not impact fire frequency or the severity of fires at the LNP.

For purposes of evaluating potential onsite and offsite impacts on wildfires due to LNP dewatering, Dr. Robertson analyzed as a worst case scenario the approximately 7,300 acres that the FEIS identifies could experience a drawdown of up to 0.5 feet[48] under the Recalibrated Model.[49] Id. at pp. 3-4; NRC001, Section 5.3.1.1, at p. 5-31. In his testimony, Dr. Robertson refers to that area as the "worst case drawdown area." PEF400 at p. 4.

82% of the worst case drawdown area is comprised of a sandy soil structure which is characterized by deep sands with little to no organic material. That portion of the worst case drawdown area is topographically flat, represents the highest surface elevations within and surrounding the LNP, and does not include local surface depressions (e.g., cypress depressions). The sandy soil neither retains nor

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[48] Dr. Robertson notes that the FEIS does not report as an impact drawdowns less than 0.5 feet. It is his professional opinion that average drawdowns less than 0.5 feet will not impact wildfire frequency or severity given the small magnitude of such drawdowns relative to natural fluctuations, and, therefore, such drawdowns need not be specifically analyzed with respect to impacts on wildfires. PEF400 at p. 4.

[49] As explained in his testimony, Dr. Robertson is not endorsing the Recalibrated Model's results, but merely uses those results as a worst case scenario to evaluate the impact of dewatering on wildfires offsite and onsite at the LNP. Id.

wicks up moisture from the water table. Accordingly, when the water table is below the soil surface in the sandy soil areas (and there has been no recent precipitation), the surface soils and associated fuels are dry and available for combustion regardless of the water table's depth. Id. at pp. 7-8.

Dr. Robertson testifies that the water table is at or above the sandy soil surface for a very small portion of the year. He adds that a decrease to the period of time that the water is at or above the water table due to dewatering would negligibly increase the portion of the year when fuels in the sandy soil area are available for ignition. Accordingly, changes in the water table attributable to dewatering from the LNP "would not impact fire *frequency*" in the 82% of the worst case drawdown area that is composed of sandy soil. Id. at p. 7 (emphasis added). For the same reasons, LNP dewatering will not increase the *severity* of wildfires in the sandy soil areas. Id. at pp. 7-8.

The remaining 18% of the worst case drawdown area is comprised of organic soil,[50] in which the fuel bed is organic soil, herbs, and a mixture of needle and broadleaf litter of various thickness. Id. at p. 8. Dr. Robertson believes it would be "extremely unlikely" for LNP dewatering to change the frequency of wildfires in the organic soil areas. Id. at p. 9.

Organic soils are rarely the location of fire ignition. Those soils are generally combusted from fires that originate in adjacent areas. Since Dr. Robertson does not expect fire frequency in adjacent sandy soil areas to change, he does not expect fire frequency in the organic soil areas to noticeably change. And, even if lowering the water table in the organic soil area were to increase the ability of a fire to spread, such an impact is "minimized" because: (1) the depth of the organic soil in most places is very shallow (thus limiting the amount of soil available for consumption); (2) organic soil structures dry very slowly; (3) there are times of year when the soil would be wet or dry regardless of LNP dewatering due to natural fluctuations; and (4) precipitation will wet the soil making it unavailable for combustion independent of the water table. Id. at p. 9. Moreover, the organic soil areas are small and spatially

[50] Even less than 18% of these areas is actually composed of organic soil, since the organic soil occurs within areas that are a mixture of sandy and organic soils. Id. at p. 8.

isolated within the larger worst case drawdown area. Therefore, an increase in the frequency that a wildfire would spread over these small areas would have little influence on wildfire frequency in the area of interest as a whole. Id.

Dr. Robertson does note that fire severity in organic soil areas varies with the depth to which the soil is dried out at the time of the fire. Therefore, he believes that a decrease in the water table elevation, followed by a sufficient period of time for the organic soil to dry out, might increase consumption of organic soil in the event of a wildfire. However, this effect also would be "minimized" because of the factors mentioned above, namely, the shallow depth of the organic soil; the fact that organic soils dry very slowly; the fact that natural fluctuations will keep the organic soil wet or dry regardless of LNP dewatering due to natural fluctuations; and the fact that precipitation will wet the soil independent of the water table's level. Thus, changes in the water table due to dewatering in the organic soil areas would have "minimal, isolated, and infrequent effects on fire severity [in the organic soil areas], and any effects would be within the range of the natural ecosystem cycle of organic soil consumption." Id. at p. 8.

(ii) Even If There Were Increases In Wildfires Due To LNP Dewatering, Nutrient Concentrations In Waters And The Aquatic Environment Would Not Be Noticeably Impacted, If At All

Even assuming *arguendo* that there will be wildfire increases due to LNP dewatering, nutrient concentrations in waters and the aquatic environment at and around the LNP site would not be noticeably impacted. Nutrients can be mobilized through wildfires when the consumed fuel is converted to mineralized nutrients. There are no streams within the worst case drawdown area that could transport nutrients to adjacent waters. Nutrients nevertheless could be laterally transported to adjacent water bodies by other surface water flows. Or, nutrients could leach into groundwater and then be transported to

adjacent water bodies through the flow of groundwater.[51] Id. at p. 10. As described below, however, the geography of the LNP site does not support spread of nutrients by those methods.

Lateral transport of nutrients from wildfires by surface water flow in the vicinity of the LNP site is not likely because the worst case drawdown area is flat, contains highly permeable sandy soils (even in the organic soil areas where the organic material overlays sandy soil), and has no streams to facilitate transport of nutrients. Sandy soils also quickly absorb water during drought conditions – when wildfires are likely to occur – thus further reducing the likelihood that nutrients from such wildfires would be transported to adjacent waters. In addition, the large amount of water required to transport the nutrients to adjacent water bodies would result in extreme dilution of the nutrients. Furthermore, overland transport in the organic soil areas to water bodies outside of those areas generally will not occur because those soils are located in isolated depressions that have no outlet. Id. at pp. 10-11.

Similarly, the spread of nutrients from wildfires through vertical leaching and subsequent transportation by subsurface groundwater also is highly unlikely. The vegetation in pine flatwoods are not conducive to vertical leaching of nitrates. The roots of vegetation in pine flatwoods are well-adapted to surviving fire or re-sprouting roots immediately after a fire. That allows rapid uptake of mineralized nutrients into those roots after fires to prevent nitrates from leaching into the groundwater. In organic soil areas, microbial activity in the organic soil layers not consumed by fire also should resist leaching because organic matter in the soil efficiently traps nutrients. Indeed, rather than leaching through the soil, nutrients from wildfires are quickly taken up by such vegetation, leading to rapid restoration of the burned area. This effect was demonstrated, for example, in an area of the LNP site that was subject to a wildfire on March 30, 2011. Id. at pp. 11-12.

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[51] Nutrients can be mobilized through airborne ash, but such products of fires are extremely thinly dispersed such that nutrient additions are extremely small on a per unit basis. Id. at p. 11.

For the reasons set forth above, in Dr. Robertson's professional opinion, "there will be no increase in wildfire frequency attributable to dewatering (active and/or passive) from construction and operation of the LNP . . . ." Id. at p. 12. Dr. Robertson also concludes that:

> although fire severity in the form of organic soil consumption could be increased under limited circumstances, there will not be a noticeable increase in, or addition of new, nutrients to the water and aquatic environment because of the relatively small area where fire severity could potentially increase and because the physical and vegetative conditions of the worst case drawdown area resist lateral transport of nutrients.

Id. Accordingly, there are no reasonably foreseeable adverse impacts from wildfires onsite or offsite at the LNP due to dewatering. Therefore, such impacts need not even be discussed in the FEIS,[52] and Contention 4A, Part A, Section 5 is without merit.

The FEIS states that it "is unlikely that . . . hydrological alterations would contribute to an increased risk of wildfire in the LNP vicinity." NRC001, Section 5.3.1.1 at p. 5-31. The FEIS adds that the risk of wildfires in the relevant area would actually be *reduced* by the LNP because the LNP's presence would introduce a more natural fire regime that would consist of controlled burns. Id. According to the FEIS, rapid fire response around the LNP also would be expected, from both onsite and offsite fire-protection resources, which would further reduce the historical impacts of fire in the area. Id. Although Dr. Robertson did not credit such impacts for purposes of his analysis, he agrees with the FEIS that "restoration of a more natural (frequent) fire regime and the associated reduction in fuel load and ability to contain and suppress unplanned fires would greatly reduce any likelihood of increased fire severity associated with water table drawdowns." PEF400 at p. 12. Thus, to the extent that wildfire impacts caused by LNP dewatering must be addressed in the FEIS, contrary to the claims of Contention 4A those impacts are adequately analyzed and appropriately characterized.

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[52] See Private Fuel Storage, CLI-02-25, 56 NRC at 348; Wyoming Outdoor Council, 165 F.3d at 49; Davis, 202 F.3d at 368; San Luis Obispo Mothers for Peace, 751 F.2d at 1300-01.

C. Contention 4A, Part B – Impacts On Water Resources Associated With Salt Drift And Salt Deposition

Contention 4A, Part B, states:

> The Draft Environmental Impact Statement (DEIS) [FEIS] fails to comply with 10 C.F.R. Part 51 and the National Environmental Policy Act because it fails to specifically and adequately address, and inappropriately characterizes as SMALL, certain direct, indirect and cumulative impacts, onsite and offsite, of constructing and operating the proposed LNP facility [including] …
>
> B. Impacts to wetlands, floodplains, special aquatic sites, and other waters associated with salt drift and salt deposition resulting from cooling towers (that use salt water) being situated in an inland, freshwater wetland area of the LNP site.

As set forth below, relying on the maximum salt deposition rates calculated by PEF, the FEIS adequately addresses, and properly characterizes as minor, impacts of salt drift from the LNP on water resources onsite and offsite at the LNP. See NRC001, Section 5.3.1.1, at pp. 5-20 through 5-25.

1. The Salt Deposition Rates Calculated By PEF And Discussed In The FEIS Are Reliable

As the testimony of PEF witness Dr. Howroyd explains, the LNP will utilize two banks of low profile mechanical draft cooling towers to cool the steam condensers in each of the LNP's nuclear units. Water for the LNP's cooling towers will be pumped from the CFBC, which is directly connected to the ultimate source of cooling water for the plant – the Gulf of Mexico. Cooling water for the LNP is expected to have a salt content that is less than the salinity of water in the Gulf.[53] PEF500 at pp. 4-5.

Cooling towers such as those to be used at the LNP emit water vapor and a very small quantity of "cooling tower drift," which consists of water droplets that are entrained into the air steam exiting the cooling tower. In addition to pure water, that drift will contain solids consisting of inert material and naturally occurring minerals and salts. PEF's operators will be able to control the concentration of those solids through balancing makeup water and blowdown water flow rates. Id. at pp. 2-3, 5.

[53] Deviations from the salinity of water in the Gulf of Mexico would depend upon the rate of infiltration of fresh water into the CFBC, the rate of pumping, and the corresponding flow of salt water into the CFBC from the Gulf. PEF500 at p. 5.

The amount of drift from the LNP cooling towers is limited under conditions imposed by the State of Florida when it certified the LNP site. Specifically, the COC – in conjunction with the State-issued permit for the Prevention of Significant Deterioration (Federal Air Permit No. PSD-FL-03) – limit the amount of cooling tower drift that the LNP can emit to 0.0005% of the cooling towers' circulating water flow rate. Id. at p. 6; PEF504 at p. 4 of 5. The LNP cooling towers will each circulate up to 531,000 gpm of water during normal maximum operation (PEF503 at p. 5-37), with up to 600,000 gpm for short terms (PEF505 at p. 4 of 75). PEF500 at p. 6. Applying the 0.0005% limit to those flow rates, results in the emission of up to 2.66 gpm of drift per cooling tower during maximum operating water flow, and up to 3.0 gpm during short-term, maximum-operating water flow. Id. at p. 6.

In conjunction with preparing the LNP's ER, Dr. Howroyd and his team performed dispersion modeling of the LNP cooling tower drift. The modeling was designed to predict the maximum potential rate for deposition of salts to the ground area on and off the LNP site. Dr. Howroyd utilized a publicly-available EPA dispersion model (the American Meteorological Society/Environmental Protection Agency Regulatory Model, or "AERMOD") and EPA-recommended modeling procedures. EPA developed the model for performing air quality impact evaluations of industrial facilities, including deposition analyses. Id. at pp. 6-7. As Dr. Howroyd testifies, the AERMOD is "a widely used tool for predicting ambient air concentrations and deposition rates from sources of air emissions." Id. at p. 7.

Dr. Howroyd and his team entered data into the model that included the design parameters for the cooling towers, estimates of drift emissions, and 5 years (2001-2005) of hourly meteorological data. Less than 1 year of meteorological data were available from the LNP site itself. Using that data could have resulted in seasonally biased modeling results. Accordingly, Dr. Howroyd used meteorological data from Gainesville, Florida, which he obtained from the National Oceanic and Atmospheric Administration's National Climatic Data Center. Those data were used because the Gainesville location is the nearest and

most representative National Weather Service Weather Station to the LNP site.[54] Id. at pp. 7-8; PEF505 at p. 2 of 75.

In addition, for modeling purposes, Dr. Howroyd conservatively assumed that *all* cooling water withdrawn from the CFBC was saltwater with a total dissolved solids ("TDS") concentration of 25,000 parts per million (the maximum expected TDS concentration in the CFBC). He also conservatively assumed that *all* suspended and dissolved solids in the cooling tower drift would be salt. Finally, the estimate of salt drift emissions was conservatively based on the maximum short-term circulating flow rate of 600,000 gpm as described above. PEF500 at p. 9.

The dispersion modeling analysis performed by Dr. Howroyd demonstrates that the maximum *offsite* salt deposition rate for the LNP cooling towers is 6.81 kilograms/hectare/month ("kg/ha/mo") at a location 1000 meters due west of the midpoint of the cooling towers. Id. at pp. 9-10. In addition, the analysis predicts that the maximum offsite deposition rate decreases to approximately one-third of the maximum offsite rate at a distance of 2000 meters from the cooling towers. Id. at p. 11. The modeling also shows that the maximum *onsite* deposition rate is 10.75 kg/ha/mo at a location approximately 1000 meters northeast of the midpoint of the cooling towers. Id.

These results represent maximum predicted rates of salt deposition, because the modeling assumed that (1) the LNP would be continuously operated at maximum power generation capacity; (2) the cooling towers would be operated at the maximum circulating water flow rate; (3) all solid emissions from the cooling towers are salts; (4) the cooling water will have the maximum expected salinity from the CFBC; and (5) all of these operating characteristics would simultaneously occur in conjunction with the occurrence of the worst-case meteorological conditions. Id. at pp. 10-12. Dr. Howroyd testifies that the maximum predicted salt deposition rates of 6.81 kg/ha/mo offsite and 10.75 kg/ha/mo onsite are greater

[54] In response to an NRC Staff Request for Additional Information, PEF compared available onsite meteorological data with the Gainesville data. PEF found the two sets of data generally consistent with respect to wind speed and direction, the key meteorological parameters for this analysis. PEF500 at p. 8.

than the expected *actual* rate of salt deposition. This is because, in Dr. Howroyd's professional opinion, all of the modeled assumptions are unlikely to occur simultaneously, particularly due to the low frequency of the worst-case meteorological conditions. Id.

The FEIS relies on Dr. Howroyd's maximum onsite and offsite salt deposition rates in evaluating the impacts on the environment of salt drift from the LNP. NRC001, Section 5.3.1.1, at pp. 5-20 and 5-21.[55]

2. The FEIS Adequately Addresses Impacts On Water Resources Due To Salt Drift And Salt Deposition From The LNP's Cooling Towers, And Appropriately Concludes That Those Impacts Will Be Minor, Infrequent And Limited To The LNP Site

The FEIS contains a substantial discussion regarding the potential impacts of salt drift and salt deposition on water resources, including related plants and animals, on and off the LNP site. See NRC001, Section 5.3.1.1, at pp. 5-20 through 5-25. Relying on the upper-bounding, worst-case maximum-predicted salt deposition rates calculated by Dr. Howroyd, the FEIS concludes that: the impact on vegetation from salt drift "is expected to be minor, infrequent and limited to the LNP site" (NRC001, Section 5.3.1.1, at p. 5-22); "[c]onsidering the very low additional contribution to surface-water salinity from cooling-tower drift and the low likelihood for substantial concentration of salts in surface waters, cooling-tower drift is not expected to impair freshwater ecosystems on the LNP site" (NRC001, Section 5.3.1.1, at p. 5-24); "incidents of salt toxicity in animals that reside around the LNP site would be highly unlikely" (NRC001, Section 5.3.1.1, at p. 5-25); and "little impact [from salt drift] is expected on amphibians" (NRC001, Section 5.3.1.1, at p 5-25). As explained below, those conclusions are based on a detailed analysis and accurately characterize the potential salt drift impacts.

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[55] The FEIS mistakenly reports the offsite maximum as "6.83" kg/ha/mo in one section. See NRC001, Section 5.3.1.1, at p. 5-21. This appears to be a typographical error that is corrected in other sections of the FEIS. See, e.g., NRC001, Section 5.4.1.1, at p. 5-63; NRC001, Section 5.7.2, at p. 5-86; see also PEF500 at p. 10.

Applicable NRC Guidance, found at NUREG-1555, Section 5.3.3.2, sets forth salt deposition thresholds for visible leaf damage in the range of 10 kg/ha/mo to 20 kg/ha/mo. PEF600 at p. 5; PEF603 at p. 5.3.3.2-4. Visible leaf damage is generally viewed as a meaningful surrogate for overall impairment of freshwater wetlands vegetation because it indicates that plants are under stress. PEF600 at p. 5. Comparing the NRC Guidance threshold with the worst-case maximum salt deposition rates calculated by Dr. Howroyd shows that the maximum *offsite* deposition rate of 6.81 kg/ha/mo is significantly below the NRC Guidance threshold. The same comparison shows that the maximum *onsite* deposition rate of 10.75 kg/ha/mo is slightly within the threshold. Id.; see also NRC001, Section 5.3.1.1, at p. 5-21. The FEIS concludes, however, that the maximum amount of onsite deposition would have only minor impacts. NRC001, Section 5.3.1.1, at p. 5-22.

In addition, the onsite deposition rate of 10.75 kg/ha/mo is a worst-case maximum rate that is not the expected actual rate of salt deposition onsite because it is based on conservative assumptions that are unlikely to occur simultaneously. PEF500 at p. 12. In fact, as the FEIS points out, the 10.75 kg/ha/mo maximum was based on one year of meteorological data. The other four years of data show maximum predicted salt deposition rates below the threshold limit. NRC001, Section 5.3.1.1, at p. 5-21. The FEIS also notes that the NRC Guidance threshold "is based on the responses of relatively sensitive plant species (both cultivated and native) to salt deposition . . . ." Id. Moreover, PEF witness Dr. Blancher's review of the NRC Guidance – and his professional experience – lead him to conclude that the thresholds set forth in the Guidance are, in fact, "extremely conservative" as applied to the LNP. PEF600 at p. 8. Dr. Blancher confirmed that view by performing an independent analysis, as described below.

The two critical factors for evaluating salt drift impacts are: (1) the amount of salt that is deposited in the area at issue; and (2) the degree to which that salt is diluted by rainfall. Id. at p. 6. In general, rainfall will dilute deposited salt such that there would be very little, or no, effects on water resources (including associated flora and fauna). Id. As the FEIS states: "considering the high precipitation rates, the impact on vegetation from salt drift is expected to be minor, infrequent and limited

to the LNP site." NRC001, Section 5.3.1.1, at p. 5-22. Dr. Blancher adds, however, that the potential impact of salt drift increases during extended periods of extreme drought. This is the case because, over time, salt deposits can become concentrated by a plant's loss of water. PEF600 at p. 6. Therefore, Dr. Blancher performed an analysis to determine whether drought conditions could result in significant salt drift impacts at the LNP.

In order to test the impact of salt drift during severe drought conditions, Dr. Blancher prepared a spreadsheet (PEF604) using Dr. Howroyd's maximum rates of predicted onsite and offsite salt deposition and the minimal potential rainfall using historical records for Levy County through 2011. The rainfall data used by Dr. Blancher showed that the lowest eight-month dry season rainfall on record in Levy County (since 1915) was 10.08 inches in 2000. PEF600 at p. 6; PEF605 at Column B, Row 88. Dr. Blancher's testimony explains how he took this data and translated Dr. Howroyd's salt deposition rates to a likely salt concentration under the worst case drought (nearly 100 year drought conditions in Levy County for the dry season). PEF600 at pp. 6-7.

Dr. Blancher's analysis shows that, based on the highest salt deposition rate calculated by Dr. Howroyd combined with the lowest cumulative rainfall observed in Levy County during the dry season in nearly 100 years, the maximum level of salt concentration from eight consecutive months of the maximum onsite salt deposition would be approximately 0.03 parts per thousand ("ppt.").[56] Id. at p. 7. As Dr. Blancher testifies, "[i]t is generally accepted that exposures to salinities of 4 parts per thousand (ppt) or greater for extended periods of time results in leaf damage to most freshwater plants, including those of the type at or near the LNP that will receive salt depositions." Id. He adds that "[t]he most conservative models show habitat stress (i.e., leaf damage) beginning at 1 ppt." Id.

Dr. Blancher's calculations show maximum salt concentrations at the LNP under severe drought conditions of 0.03 ppt, which "is far below the concentration at which even the most conservative models

[56] Dr. Blancher's calculations showed a concentration of 0.03 grams per liter which, as he explains, equates to approximately 0.03 parts per thousand. PEF600 at 7.

begin to suggest habitat stress." Id. at pp. 7-8. Accordingly, "it is clear that salt drift from the LNP will not measurably impact the vegetation on the LNP site nor in adjacent or downstream areas." Id. at p. 8. In fact, damaging concentrations of salt water would occur only if there were maximum salt deposition of 10.75 kg/ha/mo for eight consecutive months combined with total rainfall during that same eight month period of less than 0.5 inches. Id. These events are unlikely to ever occur simultaneously, especially given that rainfall data for all Florida counties in the vicinity of the LNP (including Levy County) show that the lowest amount of rainfall in the dry season in nearly 100 years was 6.69 inches in Charlotte County. Id.; PEF605, Column Q, Row 59. In addition, while certain very sensitive freshwater plants may possibly be impacted by salinities of less than 1.0 ppt, even the most sensitive species would not be impacted by the 0.03 ppt worst case salinity at the LNP that Dr. Blancher calculated. PEF600 at p. 8.

Dr. Blancher's spreadsheet results confirm that the NRC Guidance threshold is extremely conservative as applied to the LNP, given precipitation rates in Levy County. Moreover, the NRC Guidance is intended to apply to nuclear power plants nationwide. Even in more arid areas – where rainfall and humidity are less than that in subtropical Florida – the NRC Guidance threshold "would only rarely result in salt drift impacts." Id. In addition, the Guidance is conservative as applied to the LNP because vegetation onsite and offsite at the LNP already are well-adapted to salt drift, given the LNP's proximity to the Florida coast. Id. at pp. 8-9. Dr. Blancher also points out that studies performed at the nearby CREC (PEF606 and PEF607), which has vegetation similar to the LNP, show "there were no significant adverse impacts to vegetation caused by salt drift or salt deposition from the CREC's cooling towers." PEF600 at p. 10. Any adverse impacts from salt intrusion observed in those studies resulted from the rise of sea levels, not cooling tower drift. Id. at p. 10; NRC001, Section 5.3.1.1, at p. 5-23.

The FEIS also concludes that salt drift from the LNP will have no adverse effects on animals (including amphibians) that reside around the LNP site, or on the salinity of surface water. NRC001, Section 5.3.1.1, at pp. 5-24 through 5-25. Dr. Blancher agrees with those conclusions. PEF600 at pp. 9-10. As he testifies, most freshwater organisms (including sensitive invertebrates and vertebrates such as

amphibians and salamanders) suffer some measurable stress upon prolonged exposure to salinities of 4 ppt, which is well in excess of the 0.03 ppt salinity as calculated by his spreadsheet under the worst-case conditions. Id. at p. 9. There also will be no measurable impact on water body salinity due to salt drift, since the already low concentrations of salt that may be deposited will be diluted by downstream flows (as well as precipitation) which lead to estuarine environments that already have elevated salinities due to tidal activities. Id. at pp. 9-10.

For all of these reasons, "salt drift from the LNP will not result in any measurable impact to wetlands, floodplains, special aquatic sites, OFW and other waters, including associated flora and fauna." Id. at p. 11. Dr. Blancher adds:

> Based on the NRC Guidance and my independent analysis, the deposition of salt from the LNP cooling towers (as calculated by Dr. Howroyd) will not result in concentrations, even under the maximum predicted salt deposition combined with the worst drought conditions on record, that will cause any measurable damage to . . . aquatic resources at the LNP site and in the surrounding areas.

Id. Accordingly, the FEIS adequately describes, and appropriately characterizes as minor, the impact of salt drift from the LNP's cooling towers. Id. Contention 4A, Part B, therefore, is without merit.

D. Contention 4A, Part C – Zone Of Impacts

Contention 4A, Part C, states:

> As a result of the omissions and inadequacies described above, the Draft Environmental Impact Statement [FEIS] also failed to adequately identify, and inappropriately characterizes as SMALL, the proposed project's zone of:
>
> 1. Environmental Impacts;
>
> 2. Impact on Federally listed species;
>
> 3. Irreversible and irretrievable environmental impacts; and
>
> 4. Appropriate mitigation measures.

As set forth below, Part C of Contention 4A is without merit.

1. Since The FEIS Adequately Addresses And Appropriately Characterizes The Environmental Impacts At Issue In Contention 4A, Parts A And B, The "Consequential" Allegations In Contention 4A, Part C Are Without Merit

According to Contention 4A, Part C, "as a result of the omissions and inadequacies described [in Contention 4A] above," the FEIS fails to adequately identify and inappropriately characterizes as SMALL the proposed project's zone of certain impacts and appropriate mitigation measures. By its own terms, in order for Contention 4A, Part C to be viable, the FEIS must suffer from the "omissions and inadequacies" alleged in Contention 4A, Parts A and B. It does not.

As set forth above – contrary to the claims set forth in Contention 4A, Part A – the testimony and supporting exhibits submitted with this Initial Statement demonstrate that the FEIS adequately and appropriately characterizes as SMALL (or, in one case, SMALL to MODERATE), the direct, indirect, and cumulative impacts, onsite and offsite, to wetlands, floodplains, special aquatic sites, and other waters from active and passive dewatering during construction and operation of the LNP. The evidence also shows that the FEIS properly concludes there will be no more than SMALL impacts on water quality caused by LNP dewatering. The evidence further demonstrates that there is no credible scientific link between increased wildfires and dewatering at the LNP; much less is there a basis for claiming that such wildfires (if any) will impact water quality and the aquatic environment due to increased concentrations of nutrients released by such wildfires. The evidence also confirms that the FEIS adequately describes and appropriately characterizes as minor the impacts of salt drift and salt deposition from the LNP's cooling towers.

Accordingly, since Contention 4A, Parts A and B are without merit, Contention 4A, Part C's allegations that the FEIS fails to adequately identify, and inappropriately characterizes as SMALL, the proposed project's zone of: (1) Environmental Impacts; (2) Impact on Federally listed species; (3) Irreversible and irretrievable environmental impacts; and (4) Appropriate mitigation measures, also are without merit. PEF300 at pp. 43-44.

This position is consistent with the Board's interpretation of Contention 4A, Part C. According to the Board, Contention 4C – which "migrate[d]" into Contention 4A, Part C – raised "consequential allegations" that were tied to the "underestimation of the impacts" as alleged in the other parts of Contention 4 that the Board found admissible.[57] Because PEF has shown that the FEIS does not underestimate the impacts at issue in Contention 4A Parts A and B, the "consequential allegations" of Part C must be denied without further analysis.

Even if it were necessary to discuss the substance of Contention 4A, Part C, it is clear that the FEIS adequately addresses and appropriately characterizes as SMALL the LNP's "zone of . . . environmental impacts." As discussed in this Initial Statement, and in the testimony of Dr. Griffin, Mr. Rumbaugh, Mr. Lehnen and Dr. Dunn, the FEIS lays out in substantial detail the specific water resources, and the onsite and offsite areas, that could have reasonably foreseeable impacts from LNP dewatering. The FEIS's analysis necessarily included "Impact[s] on Federally listed species"[58] and

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[57] Levy, LBP-09-10, 70 NRC at 105; see also Licensing Board Memorandum and Order (Admitting Contention 4A) at p. 21 (Feb. 2, 2011) (unpublished).

[58] As described in Dr. Dunn's testimony (PEF300 at pp. 45-47), the impact of the LNP on Federally listed species (threatened or endangered) is discussed extensively in the FEIS (NRC001, Section 4.3.1.3, at pp. 4-47 through 4-58; Section 4.3.2.3, at pp. 4-76 through 4-78; Section 5.3.1.3, at pp. 5-38 through 5-42; Section 5.3.2.3, at p. 5-60). The FEIS discussion concludes that impacts on aquatic Federally listed species from construction and operation of the LNP would be minimal. NRC001, Section 4.3.2.3, at p. 4-78; Section 5.3.2.3, at p. 5-60. As stated earlier in this Initial Statement's discussion of dewatering impacts, the FEIS concludes that the impacts to terrestrial ecological resources, which include wetlands and threatened and endangered species, from construction and operation of the LNP would be SMALL to MODERATE. NRC001, Section 4.3.1.8, at p. 4-71; Section 5.3.1.6, at p. 5-47. Impacts to Federally listed species also are discussed in three documents that can be found in Appendix F to the FEIS: (1) a "Biological Assessment" prepared by the NRC in cooperation with the USACE, which examines the potential effect of the proposed action on Federally listed aquatic species under the jurisdiction of the National Marine Fisheries Service (NRC001, Appendix F, at pp. F-65 through F-117); (2) a "Biological Assessment" prepared by the NRC in cooperation with the USACE, which examines the potential effect of the LNP on Federally listed terrestrial species under the jurisdiction of the U.S. Fish and Wildlife Service (NRC001, Appendix F, at pp. F-119 through F-194); and (3) a "Biological Opinion" issued by the U.S. Fish and Wildlife Service (NRC001, Appendix F, at pp. F-195 through F-221). The National Marine Fisheries Service Biological Assessment sets forth an impact determination for Federally listed species examined thereunder of either "No effect" or "May affect, not likely to adversely affect." NRC001, Appendix F, at p. F-106. The Biological Opinion, which is based on the U.S. Fish and Wildlife Service Biological Assessment and other information, similarly sets forth an impact determination for Federally listed species examined thereunder of either "No effect" or "May

"Irreversible and irretrievable environmental impacts" (none of significance were identified since the FEIS found the impacts to be only SMALL or SMALL to MODERATE). Id. at p. 47. The FEIS also adequately discusses the "Appropriate mitigation measures" – such as those required by the EMP and AWS Plan – that are in place to limit potential impacts due to dewatering. Id. at p. 47. As Dr. Dunn testifies regarding dewatering:

> . . . water budget simulations show that the magnitude and areal extent of hydrologic change due to active and passive dewatering during construction and operation [of the LNP] are relatively small compared to the flux of water moving through the UFA and the surface water system on and in the vicinity of the LNP site. The FEIS also delineates the vertical and horizontal extent of drawdown in the [surficial aquifer system] due to active dewatering during operations and concludes that operational impacts on terrestrial ecological resources, including wetlands, would be, at most, SMALL to MODERATE. However, . . . it is my professional opinion that the impacts on wetlands and aquatic ecosystems on and in the vicinity of the LNP site and South Property would be SMALL. These findings logically lead to the conclusion that the project's zone of environmental impacts is SMALL.

Id. at pp. 44-45.

The FEIS also lays out in substantial detail the area onsite and offsite of potential impacts on water resources – including flora and fauna – due to salt deposition. The predicted maximum offsite salt deposition, which was well below the NRC Guidance threshold as explained above, would occur 1000 meters from the cooling towers. PEF500 at pp. 9-10. As the FEIS states, "[o]ffsite deposition rates would decrease significantly with increasing distance from the proposed plant site, approaching one-third of the maximum offsite rate at 3280 ft. from the site boundary." NRC001, Section 5.3.1.1, at pp. 5-20 through 5-21. Thus, the areal extent (or zone of impact) of any potential concern regarding salt

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affect, not likely to adversely affect" for all but one species, the Florida scrub-jay. NRC001, Appendix F, at pp. F-196 through F-198. The Biological Opinion found that limited mortality of the Florida scrub-jay could result from habitat losses caused by the LNP, but that the losses are not expected to appreciably affect overall survival of the species; therefore, the U.S. Fish and Wildlife Service issued an Incidental Take Statement for Florida scrub-jays. NRC001, Appendix F, at pp. F-214 through F-217. Dr. Dunn concludes that FEIS adequately and appropriately characterizes as SMALL to MODERATE the impacts on Federally listed species, including the zone of such impacts. PEF300 at p. 47.

deposition is appropriately established as no greater than 1000 meters from the cooling towers since there were no reasonably foreseeable adverse impacts further away from the towers. See PEF300 at p. 45.

Since the FEIS has determined that the potential impacts due to dewatering and salt drift are SMALL (or in one case SMALL to MODERATE) within the area of reasonably foreseeable impacts, there is no basis for expanding the area to be examined. It is well-settled that NEPA does not demand virtually infinite study and resources. Pilgrim, CLI-10-11, 71 NRC at 315. Indeed, the FEIS "need not address every impact that could possibly result, but rather only those [impacts] that are reasonably foreseeable or have some likelihood of occurring." Vogtle, LBP-09-7, 69 NRC at 631 (citing Shoreham, ALAB-156, 6 AEC at 836). The FEIS more than satisfies that requirement.

VII. CONCLUSION

The Board should find that the FEIS satisfies the Commission's regulations and NEPA will respect to the allegations raised by Contention 4A. Accordingly, the Board should deny all of the Intervenors' claims in that Contention.

Respectfully Submitted,

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Dated: June 26, 2012

Counsel for Progress Energy Florida, Inc.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)		
	)	Docket Nos.	52-029-COL
Progress Energy Florida, Inc.	)		52-030-COL
	)		
(Combined License Application for	)		
Levy County Nuclear Plant, Units 1 and 2)	)	ASLBP No.	09-879-04-COL

CERTIFICATE OF SERVICE

I hereby certify that the foregoing Progress Energy Florida, Inc.'s Initial Statement Of Position In The Contested Hearing For Contention 4A, dated June 26, 2012, and all PEF Exhibits cited therein, were provided to the Electronic Information Exchange for service to those individuals on the service list in this proceeding this 26th day of June 2012.

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