



Serial: NPD-NRC-2010-010  
February 16, 2010

10CFR52.79

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555-0001

**LEVY NUCLEAR PLANT, UNITS 1 AND 2  
DOCKET NOS. 52-029 AND 52-030  
SUPPLEMENT 2 TO RESPONSE TO SUPPLEMENTAL REQUEST FOR ADDITIONAL  
INFORMATION REGARDING THE ENVIRONMENTAL REVIEW**

- References:
1. Letter from Douglas Bruner (NRC) to James Scarola (PEF), dated September 25, 2009, "Supplemental Request for Additional Information Regarding the Environmental Review of the Combined License Application for the Levy Nuclear Power Plant, Units 1 and 2"
  2. Letter from John Elnitsky (PEF) to U. S. Nuclear Regulatory Commission (NRC), dated December 14, 2009, "Response to Supplemental Request for Additional Information Regarding the Environmental Review", Serial: NPD-NRC-2009-242
  3. Letter from John Elnitsky (PEF) to U. S. Nuclear Regulatory Commission (NRC), dated January 29, 2010, "Supplement 1 to Response to Supplemental Request for Additional Information Regarding the Environmental Review", Serial: NPD-NRC-2010-008

Ladies and Gentlemen:

Progress Energy Florida, Inc. (PEF) hereby submits a supplemental response to the Nuclear Regulatory Commission's (NRC) request for additional information provided in Reference 1. A supplemental response to one of the NRC questions (5.2.2-4) is addressed in Enclosure 1.

If you have any further questions, or need additional information, please contact Bob Kitchen at (919) 546-6992, or me at (727) 820-4481.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on February 16, 2010.

Sincerely,



John Elnitsky  
Vice President  
Nuclear Plant Development

Progress Energy Florida, Inc.  
P.O. Box 14042  
St. Petersburg, FL 33733

D094  
NRC

United States Nuclear Regulatory Commission

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Enclosure

cc : U.S. NRC Region II, Regional Administrator  
Mr. Brian C. Anderson, U.S. NRC Project Manager  
Mr. Douglas Bruner, U.S. NRC Environmental Project Manager

**Levy Nuclear Plant Units 1 and 2  
Supplement 2 to Response to NRC Supplemental Request for Additional Information  
Regarding the Environmental Review for the Combined License Application,  
Dated September 25, 2009**

<u>NRC RAI #</u>	<u>Progress Energy RAI #</u>	<u>Progress Energy Response</u>
5.2.2-4	L-0561, L-0688 & L-0689	December 14, 2009; NPD-NRC-2009-242, January 29, 2010; NPD-NRC-2010-008 & Supplemental response enclosed – see following pages
9.3-2	L-0562	December 14, 2009; NPD-NRC-2009-242
9.3-3	L-0563	December 14, 2009; NPD-NRC-2009-242
9.3-4	L-0564	December 14, 2009; NPD-NRC-2009-242
9.3-5	L-0565	December 14, 2009; NPD-NRC-2009-242
9.3-6	L-0566	December 14, 2009; NPD-NRC-2009-242
9.3-7	L-0567	December 14, 2009; NPD-NRC-2009-242
9.3-8	L-0568	December 14, 2009; NPD-NRC-2009-242
9.3-9	L-0569	December 14, 2009; NPD-NRC-2009-242
9.3-10	L-0570	December 14, 2009; NPD-NRC-2009-242
9.3-11	L-0571	December 14, 2009; NPD-NRC-2009-242
9.3-12	L-0572	December 14, 2009; NPD-NRC-2009-242
9.3-13	L-0573	December 14, 2009; NPD-NRC-2009-242
9.3-14	L-0574	December 14, 2009; NPD-NRC-2009-242
9.3-15	L-0575	December 14, 2009; NPD-NRC-2009-242
9.3-16	L-0576	December 14, 2009; NPD-NRC-2009-242
9.3-17	L-0577	December 14, 2009; NPD-NRC-2009-242
9.3-18	L-0578	December 14, 2009; NPD-NRC-2009-242
9.3-19	L-0579	December 14, 2009; NPD-NRC-2009-242
9.3-20	L-0580	December 14, 2009; NPD-NRC-2009-242
USACE-14	L-0581	December 14, 2009; NPD-NRC-2009-242

**NRC Letter No.:** ER-NRC

**NRC Letter Date:** September 25, 2009

**NRC Review of Environmental Report**

**NRC RAI #:** 5.2.2-4

**Text of NRC RAI:**

Provide calibrated DWRM2 TMR model results that considers local scale conditions and the goodness of fit between simulated and observed hydraulic heads in the vicinity of the LNP site.

The assessment of groundwater usage impacts in the ER is based on the Southwest Florida Water Management District (SWFWMD) District Wide Regulation Model, Version 2, with Telescopic Mesh Refinement (DWRM2 TMR), which uses basin and regional-scale hydraulic property distributions. In Supplement 3 Response to RAIs (Accession No: ML092240658), three modifications were made to the model to better represent the Levy Nuclear Plant (LNP) site conditions. Model results indicated a poor goodness of fit between simulated and observed hydraulic heads in the vicinity of the LNP site.

Calibrate the DWRM2 TMR model to reflect local scale conditions in order to improve the fit between simulated and observed hydraulic heads in the vicinity of the LNP site. Consider consulting with SWFWMD staff when doing this calibration.

Provide documentation of the DWRM2 TMR model modifications that are made and any consultations with SWFWMD staff regarding calibration of the local scale groundwater conditions. In addition, provide updated versions of all figures that were submitted in Supplement 3 Response to NRC RAI # 5.2.2-3 (Accession No: ML092240658) for results generated using the recalibrated groundwater model.

In the January 14, 2010 Conference Call, clarifications were requested to previously submitted RAI's: The supplemental information should provide the following:

In response to RAI 5.2.2-4, PEF provided a revised groundwater model evaluating the simulated hydrological effects of proposed LNP operational pumping on the groundwater aquifer (see technical memorandum 338884-TMEM-123 authored by CH2MHILL). Under the revised model, potential groundwater drawdown near the wellheads could approach 2.5 feet (30 inches), and a drawdown of 0.5 feet (6 in) could extend up to 3 miles from the wellheads (see Fig 31 of TM 338884-TMEM-123 for simulated drawdown at year 60). This groundwater drawdown zone would encompass much of the LNP site and include many acres of wetlands.

Please provide an assessment of the potential effects of LNP operational pumping on wetlands that lie in and around the wellfield site, and the need for additional wetland mitigation to compensate for any impacts identified. Provide wetland impacts (in acres) according to both FLUCCS cover types (Level 3) and NWI wetland types for each relevant drawdown category (e.g., 0.5 to 1 ft, 1 -2 ft; 2+ ft). Please consider the following issues in this evaluation:

Wetland delineations have revealed that wetlands near the CFBC are declining in vigor to the point that some may no longer qualify as wetlands. The suspected cause is a local decline in the groundwater table that occurred following construction of the CFBC. Are these wetland changes represented in the delineation maps being prepared for this area? Do these wetland changes affect any areas identified as potential wetland enhancement sites in the BRA (2009) conceptual wetland mitigation plan?

Many of the wetlands that could be affected by operational pumping lie within areas where wetland mitigation via enhancement is proposed (see BRA 2009). Does operational pumping have the potential to limit or eliminate the use of some wetlands for mitigation?

**PGN RAI ID #:** L-0689

**PGN Response to NRC RAI:**

**RAI:** Please provide an assessment of the potential effects of LNP operational pumping on wetlands that lie in and around the wellfield site, and the need for additional wetland mitigation to compensate for any impacts identified.

**RESPONSE:** Operational pumping at Levy Nuclear Plant Units 1 and 2 (LNP) is not expected to affect wetlands adversely in or around the wellfield site and, therefore, the need for additional wetland mitigation is not anticipated. This conclusion is based on the results of groundwater drawdown simulations using the Southwest Florida Water Management District (SWFWMD) District-Wide Regulation Model, Version 2 (DWRM2) (Reference RAI 5.2.2-4 03) presented in Technical Memorandum 338884-TMEM-074, "Revised Conceptual Wellfield Layout and Evaluation of Simulated Drawdown Impacts, Levy Nuclear Plant," Revision 1 (Reference RAI 5.2.2-4 01). While the models cannot directly predict wetland effects, adverse effects on wetlands resulting from groundwater pumping will be identified through the wetland monitoring program. Progress Energy Florida, Inc. (PEF) is committed to mitigating for these effects, as shown in the Conditions of Certification for the Progress Energy Levy Nuclear Power Plant Units 1 and 2, dated January 12, 2010, Section B, Items 11 and 12 (Standard Conditions) (Reference RAI 5.2.2-4 06).

#### **Drawdown Simulations**

The DWRM2 model was required by SWFWMD to simulate potential groundwater drawdown due to LNP wellfield pumpage. The results are documented in Technical Memorandum 338884-TMEM-074, "Revised Conceptual Wellfield Layout and Evaluation of Simulated Drawdown Impacts, Levy Nuclear Plant" (Reference RAI 5.2.2-4 01). While the modeled drawdown does not directly simulate wetland impacts, the DWRM2 model is a useful, conservative tool for estimating the potential for hydrologic changes that may affect wetlands, in view of its design to estimate potential drawdown effects associated with proposed water uses.

In response to the U.S. Nuclear Regulatory Commission's (NRC's) Request for Additional Information (RAI) 5.2.2-4, a second revised groundwater model was developed to simulate the published 2007 United States Geological Survey (USGS) upper Floridan aquifer potentiometric surface maps. The revisions and associated simulation results are documented in Technical Memorandum 338884-TMEM-123, "Revised Groundwater Model Evaluation of Simulated Drawdown Water Impacts, Levy Nuclear Plant" (Reference RAI 5.2.2-4 02).

The two modeling efforts differ in intent, calibration, and application. While neither model is designed to directly predict wetland effects, the SWFWMD required that the results from the DWRM2 model be used to infer potential wetland impacts from groundwater pumping. The DWRM2 model was developed to estimate potential drawdown effects associated with proposed water uses. For this response, the revised model was developed to calibrate to the observed potentiometric surface. The DWRM2 is the primary tool used by the SWFWMD to determine the potential for groundwater withdrawals to cause unacceptable impacts to other well users, Floridan aquifer water quality, drawdown impacts on the surficial aquifer, and subsequent impacts to lakes and wetland hydroperiods.

DWRM2 model development is documented in the "Development of the District Wide Regulation Model for Southwest Florida Water Management District" (Reference RAI 5.2.2-4 03). The SWFWMD expended substantial effort to calibrate not only the upper Floridan aquifer but also the surficial aquifer in the DWRM2 model based on the documented model process and extensive array of calibration targets. The SWFWMD obtained a total of 671 surficial aquifer calibration targets from the USGS.

In contrast, the revised model was calibrated to the average USGS 2007 upper Floridan aquifer water elevations at calibration targets derived from site measurements and USGS data. Surficial aquifer calibration targets were limited to the nuclear island area. Since the stated purpose of the revised model was to calibrate to the USGS potentiometric maps, the revised model effort did not attempt to expand the search for surficial aquifer well targets. As a result, the model has areas of flooded or dry cells in the surficial aquifer and unrealistic water level contours and elevations in certain areas outside of the LNP site. While the revised model more closely simulates the USGS published potentiometric surface map of the Upper Floridan Aquifer than the DWRM2 model, it is inappropriate for use in estimating drawdown in the surficial aquifer.

The DWRM2 model was extensively calibrated to the surficial aquifer and is the model developed and required by SWFWMD to estimate hydrologic changes that may potentially affect wetlands. Therefore, we conclude that the DWRM2 model is the more accurate tool for surficial aquifer simulations and the predicted drawdown from this model should be used to estimate areas of wetlands that lie over the cone of depression resulting from operational pumping of the LNP wellfield.

#### **LNP Commitments in the State Conditions of Certification**

The proposed groundwater use is regulated under the SWFWMD's Water Use Permitting (WUP) Program. A WUP is a state license to use the ground or surface water natural resources. For the LNP, this water use approval is granted in the final state site certification issued to PEF under the PPSA. There is no separate SWFWMD-issued WUP for LNP.

The SWFWMD's regulations ensure that groundwater withdrawals, both individually and cumulatively, do not cause unacceptable impacts on wetlands and surface waters and do not result in saline water intrusion. The SWFWMD and ultimately the Florida Governor and Cabinet sitting as Siting Board evaluated the LNP's proposed groundwater withdrawals against these criteria and concerns in the State site certification proceeding, and the proposed groundwater withdrawals were approved subject to the Conditions of Certification.

PEF has evaluated and SWFWMD reviewed various wellfield locations to determine potential drawdown impacts, leading to the conclusion that locating the wellfield in the southern part of the property results in the least amount of predicted drawdown in the Upper Floridan and surficial aquifers. By locating the wellfield in the southern area, the decreased simulated drawdown of the groundwater aquifers would reduce the acreage of wetlands potentially affected by groundwater withdrawal.

The various water management districts in Florida use groundwater model results differently in assessing the potential for affecting wetlands. Within the South Florida Water Management District, for example, a proposed water use is generally not considered harmful when the modeled drawdown from cumulative withdrawals in the unconfined aquifer beneath certain seasonally-inundated wetlands is less than 1 foot (Reference RAI 5.2.2-4 05). The SWFWMD does not apply numeric criteria but requires monitoring when the potential for impacts to wetland resources is identified.

While the models cannot directly predict wetland effects, adverse effects on wetlands resulting from groundwater pumping will be identified through the wetland monitoring program. PEF has committed to conducting monitoring in the wellfield-area wetlands. As required by the Conditions of Certification for the Progress Energy Levy Nuclear Power Plant Units 1 & 2, January 12, 2010, Section B, XXVIII (Reference RAI 5.2.2-4 06), PEF is developing an Aquifer Performance Testing (APT) Plan and an Environmental Monitoring Plan (EMP) for the proposed LNP raw water wellfield. In accordance with the APT plan requirements, aquifer parameters in the wellfield will be measured, and if necessary, the DWRM2 Telescopic Mesh Refinement (TMR) model will be revised to incorporate the field values.

The SWFWMD developed the Wetland Assessment Procedure (WAP) specifically to monitor biological changes in wetlands, if any, resulting from groundwater withdrawals. The EMP will be based on the WAP and will provide a framework for monitoring the hydrology and ecology of wetlands that could be affected by groundwater drawdowns resulting from the operation of the LNP raw water wellfield. Wetland transects will be established in the vicinity of the wellfield to provide an ongoing assessment of wetland hydrology, soils, and vegetative zonation, composition, and relative health.

As required by the Conditions of Certification for the Progress Energy Levy Nuclear Power Plant Units 1 & 2, January 12, 2010, Section B, XXVIII (Reference RAI 5.2.2-4 06), the EMP monitoring activities will ensure that the conditions at the wellfield location and any changes in the adjacent wetland communities are identified.

**RAI: Provide wetland impacts (in acres) according to both FLUCCS cover types (Level 3) and NWI wetland types for each relevant drawdown category (e.g., 0.5 to 1 ft, 1 -2 ft; 2+ ft).**

**RESPONSE:** Wetland areas classified by the Florida Land Use and Cover Forms Classification System (FLUCCS) and National Wetlands Inventory (NWI) categories within the DWRM2 simulated drawdown contours are presented in Tables 1 and 2. Information describing the DWRM2 model was previously provided in PEF's response to NRC RAI 5.2.2-3.

Based on the DWRM2 model, simulated drawdowns in the surficial aquifer are under 0.3-foot throughout most of the wellfield and LNP site and are equal to or less than 0.5-foot in the immediate vicinity of all of the wells after 1 and 60 years. No wetlands are located within the 0.5-foot or greater simulated drawdown contours of the surficial aquifer system. The wet season water level of the on-site wetlands is expected to remain within the normal range of water levels, and the hydroperiods of these wetlands are expected to remain within a normal range and duration.

The predominant wetland type within the drawdown contours is cypress (FLUCCS 621, Palustrine Forested). These are mostly pond cypress (*Taxodium ascendens*) systems, which are typically characterized by widely fluctuating seasonal and annual water tables. Average water depths for cypress communities in Southwest Florida are estimated to range from average dry season lows of 6 to 16 inches below ground surface to 12 to 18 inches above ground surface in the wet season (Reference RAI 5.2.2-4 04).

TABLE 1

FLUCCS Code Wetlands Overlaying Simulated Drawdown in Surficial Aquifer using the DWRM2 Model documented in 338884-TMEM-074

Code	Wetland Type	Acres	Surficial Aquifer Drawdown Contour (ft)
641	FRESHWATER MARSHES	3.02	0.1
615	STREAM AND LAKE SWAMPS (BOTTOMLAND)	5.57	0.1 - 0.2
617	MIXED WETLAND HARDWOODS	5.85	0.1 - 0.2
621	CYPRESS	1,338.64	0.1 - 0.2
630	WETLAND FORESTED MIXED	320.99	0.1 - 0.2
641	FRESHWATER MARSHES	186.78	0.1 - 0.2
643	WET PRAIRIES	14.70	0.1 - 0.2
644	EMERGENT AQUATIC VEGETATION	6.43	0.1 - 0.2
653	INTERMITTENT PONDS	3.73	0.1 - 0.2
621	CYPRESS	275.38	0.2 - 0.3
630	WETLAND FORESTED MIXED	68.41	0.2 - 0.3
641	FRESHWATER MARSHES	47.34	0.2 - 0.3
643	WET PRAIRIES	1.97	0.2 - 0.3
644	EMERGENT AQUATIC VEGETATION	0.30	0.2 - 0.3
621	CYPRESS	60.74	0.3 - 0.4
630	WETLAND FORESTED MIXED	36.29	0.3 - 0.4
641	FRESHWATER MARSHES	19.20	0.3 - 0.4
643	WET PRAIRIES	0.58	0.3 - 0.4
621	CYPRESS	7.62	0.4 - 0.5
630	WETLAND FORESTED MIXED	6.28	0.4 - 0.5
641	FRESHWATER MARSHES	12.42	0.4 - 0.5
TOTAL		2,422.24	

## Notes:

No wetlands are located within the 0.5-foot contours around the proposed LNP supply wells.

**TABLE 2**

NWI Wetlands Overlaying Simulated Drawdown in Surficial Aquifer using the DWRM2 model documented in TMEM-074

Wetland Type	System	Acres	Surficial Aquifer Drawdown Contour (ft)
FRESHWATER EMERGENT WETLAND	PALUSTRINE	2.80	0.1
LAKE	LACUSTRINE	0.46	0.1
RIVERINE	RIVERINE	0.03	0.1
ESTUARINE AND MARINE DEEPWATER	ESTUARINE	32.28	0.1 - 0.2
FRESHWATER EMERGENT WETLAND	PALUSTRINE	47.42	0.1 - 0.2
FRESHWATER FORESTED/SHRUB WETLAND	PALUSTRINE	1,365.83	0.1 - 0.2
FRESHWATER POND	PALUSTRINE	3.40	0.1 - 0.2
RIVERINE	RIVERINE	34.12	0.1 - 0.2
ESTUARINE AND MARINE DEEPWATER	ESTUARINE	5.82	0.2 - 0.3
FRESHWATER EMERGENT WETLAND	PALUSTRINE	5.52	0.2 - 0.3
FRESHWATER FORESTED/SHRUB WETLAND	PALUSTRINE	327.46	0.2 - 0.3
FRESHWATER POND	PALUSTRINE	0.63	0.2 - 0.3
RIVERINE	RIVERINE	18.84	0.2 - 0.3
FRESHWATER EMERGENT WETLAND	PALUSTRINE	13.94	0.3 - 0.4
FRESHWATER FORESTED/SHRUB WETLAND	PALUSTRINE	82.98	0.3 - 0.4
FRESHWATER EMERGENT WETLAND	PALUSTRINE	1.37	0.4 - 0.5
FRESHWATER FORESTED/SHRUB WETLAND	PALUSTRINE	22.28	0.4 - 0.5
<b>Total</b>		<b>1,965.17</b>	

**Notes:**

No wetlands are located within the 0.5-foot contours around the proposed LNP supply wells.

**RAI: Wetland delineations have revealed that wetlands near the CFBC are declining in vigor to the point that some may no longer qualify as wetlands. The suspected cause is a local decline in the groundwater table that occurred following construction of the CFBC. Are these wetland changes represented in the delineation maps being prepared for this area? Do these wetland changes affect any areas identified as potential wetland enhancement sites in the BRA (2009) conceptual wetland mitigation plan?**

**RESPONSE:** The wetland delineations are based on current site conditions. Some areas in the vicinity of the barge canal appear to have been wetlands historically, but they no longer meet wetland criteria and, therefore, are not mapped as wetlands. The U.S. Army Corps of Engineers (USACE) and the Florida Department of Environmental Protection (FDEP) are currently reviewing the boundaries and jurisdictional status of on-site wetlands, and the initial agency jurisdictional determinations are reflected in the wetland maps.

Site hydrological conditions are being considered in the preparation of the final wetland mitigation plan. Proposed mitigation areas are being evaluated for restoration and enhancement potential, and only those areas with suitable soils and hydrological characteristics will be included in the restoration and enhancement effort.

**RAI: Many of the wetlands that could be affected by operational pumping lie within areas where wetland mitigation via enhancement is proposed (see BRA 2009). Does operational pumping have the potential to limit or eliminate the use of some wetlands for mitigation?**

**RESPONSE:** As stated previously, operational pumping is not expected to adversely affect wetlands, and therefore will not limit or eliminate the use of wetlands for mitigation. While the models cannot directly predict wetland effects, adverse effects on wetlands resulting from groundwater pumping will be identified through the wetland monitoring program. PEF is committed to mitigating for these effects, as shown in the Conditions of Certification for the Progress Energy Levy Nuclear Power Plant Units 1 & 2, January 12, 2010, Section B, Items 11 and 12 (Reference RAI 5.2.2-4 06). Additionally, the results of the DWRM2 modeling effort and potential effects of operational pumping on wetlands are being considered in mitigation plan development.

## References

- Reference RAI 5.2.2-4 01 CH2M HILL, Technical Memorandum 338884-TMEM-074, "Revised Conceptual Wellfield Layout and Evaluation of Simulated Drawdown Impacts, Levy Nuclear Plant," Revision 1. Prepared for Progress Energy Florida, Inc., November 14, 2008.
- Reference RAI 5.2.2-4 02 CH2M HILL, Technical Memorandum 338884-TMEM-123, "Revised Groundwater Model Evaluation of Simulated Drawdown Water Impacts, Levy Nuclear Plant," Revision 0. Prepared for Progress Energy Florida, Inc., December 7, 2009.
- Reference RAI 5.2.2-4 03 Environmental Simulations Inc., Development of the District Wide Regulation Model for Southwest Florida Water Management District, Draft, April, 2004.

- Reference RAI 5.2.2-4 04 Murray, John, Brenda Brooks-Solveson, Julianna da Frota, and Jeff Key, "Final Report to Lee County, Florida and the South Florida Water Management District - Scientific Evaluation and Simulation of the Six Mile Cypress Watershed," Florida Gulf Coast University, December 31, 2004.
- Reference RAI 5.2.2-4 05 South Florida Water Management District, "Rules of the South Florida Water Management District - Basis of Review for Water Use Applications within the South Florida Water Management District," July 2, 2009.
- Reference RAI 5.2.2-4 06 State of Florida, "Levy Nuclear Power Plant Units 1 & 2, Progress Energy Florida, Conditions of Certification - Plant and Associated Facilities And Transmission Lines," January 12, 2010.

**Associated LNP COL Application Revisions:**

No COLA revisions have been identified associated with this response.

**Attachments/Enclosures:**

None.