



FPL

POWERING TODAY.
EMPOWERING TOMORROW.®

Florida Power & Light Company, P.O. Box 14000, Juno Beach, FL 33408-0420

DEPARTMENT OF
ENVIRONMENTAL PROTECTION

JUN 01 2009

June 1, 2009

SITING COORDINATION

Mr. Michael P. Halpin
Department of Environmental Protection
Siting Coordination Office
3900 Commonwealth Blvd. MS#48
Tallahassee, FL 32399-3000

RE: FPL West County Energy Center
PA 05-47
Request to modify the Site Certification;
Units 1&2 to Reclaimed Water Use and
Emergency Water Allotment Calculation

Dear Mr. Halpin;

In accordance with Florida Administrative Code Section 62-17.211 (1)(b) F.A.C., Florida Power & Light Company (FPL) is pleased to request a post-certification modification to the Site Certification for FPL West County Energy Center (WCEC).

Based on this modification, once FPL determines that the use of reclaimed water is feasible, pursuant to the relevant conditions of certification and South Florida Water Management District regulations, FPL will be able to use reclaimed water as the primary source of water for all three units at the plant. This will be a tremendous environmental benefit that FPL has worked extensively with Palm Beach County and the water management district to complete.

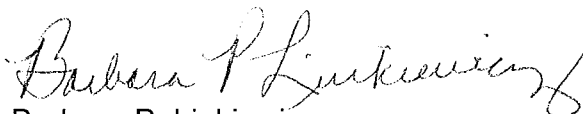
FPL will work with the water management district to revise the conditions for approval. The new conditions should outline that once the plant has received the reclaimed water and verified that the water is acceptable and system is working, according to the applicable conditions of certification and the relevant regulations, reclaimed water will become the primary source of water for the entire plant. Also, FPL and the water management district will work on conditions to provide a backup supply of water to the plant from the Floridan Aquifer. FPL anticipates a need of 29.28 million gallons per day from the Floridan as a backup. FPL has had initial conversations with the water

management district regarding the duration of the backup water supply. FPL will work with the water management district to finalize proposed conditions of approval for the implementation of the reclaimed water at the plant. Attached to this application is The Groundwater Modeling of Project Impacts, prepared by GeoTrans, Inc. This modeling demonstrates that the proposed backup supply of water complies with district regulations.

Also attached to this correspondence is FPL check number 1334873 made out to FDEP in the amount of \$10,000 to cover required fees associated with this filing.

Thank you for your attention and consideration of FPL's request to modify the Site Certification for the West County Energy Center. If you have any questions regarding this submittal, please contact me at (561) 691-7518 or Jan Kirwan at (561) 691-2820.

Sincerely,
Florida Power & Light Company

A handwritten signature in cursive script, reading "Barbara P. Linkiewicz".

Barbara P. Linkiewicz
Director, Environmental Licensing

cc: James Golden, SFWMD
Stephen Bell, SFWMD
Tim Gray, FDEP Southeast District
Tom Young, FPL WCEC (w/o attachment)
Carmine Priore, FPL WCEC (w/o attachment)
Peter Cocotos, FPL
John Gnecco, FPL
Potsy Scoville, FPL (w/o attachment)

Groundwater Modeling of Projected Impacts West County Energy Center Project

Prepared for:

Florida Power and Light Company
700 Universe Blvd
Juno Beach, FL 33408

Prepared by:

GeoTrans, Inc.
1080 Holcomb Bridge Rd
Bldg 100, Suite 190
Roswell, Georgia 30076

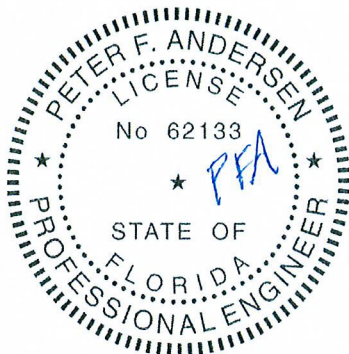
May 4, 2009

 5/4/09

Peter F. Andersen, P.E.

Professional Registered Engineer No. 62133

SEAL:



1. Introduction

Florida Power & Light Company (FP&L) is requesting to increase their allocation of groundwater from the Upper Floridan Aquifer System (FAS) at the West County Energy Center by 9.76 mgd to 29.28 mgd. The increase is required to provide an emergency backup supply for the addition of Unit 3 of this existing power generation facility. The primary source of water will be reclaimed water.

A condition for issuance of the water use aspects of the original power plant certification was for FP&L to conduct an Aquifer Performance Test (APT) to demonstrate that hydrogeologic parameters used in their application were representative of site conditions and that there would be no impacts to existing legal users from pumping 19.52 mgd. JLA Geosciences (2008) conducted a 75-hour APT using one of the production wells at the site to withdraw water and the other two production wells as observation wells for the test. JLA Geosciences (2008) updated the hydrogeologic parameters through analysis of the test. A technical memorandum (GeoTrans, 2008) concluded that the potential impacts of the proposed pumping using the updated hydrogeologic parameters would be minimal. On December 17, 2008, the South Florida Water Management District (SFWMD) issued a letter of authorization to FP&L to pump 19.52 mgd, subject to Conditions XXXII.B.2.a and b (SFWMD, 2008a). The analysis presented in this technical memorandum evaluates the impact of pumping an additional 9.76 mgd, 29.28 mgd total, using the same model and methodology that was used in GeoTrans (2008).

2. Model Configuration

The Hantush-Jacob (1955) analytical model was selected for this analysis because it is capable of representing the hydrologic system in a mathematical framework. The Hantush-Jacob model solves for drawdown in a pumped aquifer that is either underlain or overlain by another layer that transmits water into the aquifer. The model has several assumptions; however none of these assumptions limit the model's use for predicting impact according the SFWMD specifications. JLA Geosciences (2008) found this model most accurately reproduced the drawdown response in the observation wells over the three-day APT that they conducted. This model is specifically called out in the SFWMD guidance for water use permits (SFWMD, 2008b).

JLA Geosciences (2008) determined two sets of aquifer properties, one based on analysis of drawdown in observation well FAW-1 and a second based on analysis of drawdown in

observation well FAW-3. These values were then averaged to obtain a single set of properties that represent the best estimate of aquifer properties. The best estimate of properties is used in the impact assessment to represent the expected case. The lowest and highest values of properties determined from the test are also used to show the range of possible drawdown.

Hydrogeologic properties used in the model are summarized in Table 1 and described below. The expected case model represents the Upper FAS with a transmissivity of 222,000 ft²/d (1,660,000 gpd/ft), a storage coefficient of 0.0004, and a leakance of 6.685 x 10⁻³ d⁻¹ (0.05 gpd/ft³). Table 1 also shows two other sets of properties that bound the possible range in drawdown impact.

Table 1. Hydrogeologic parameters used in the groundwater flow model

Model Run/Property	Value	Units	Source of data
Best Estimate			
Transmissivity	222,000	ft ² /d	JLA Geosciences pg 30 APT value 1,660,000 gpd/ft ³ converted to ft ² /d
Storage coefficient	0.0004	-	JLA Geosciences pg 30 APT value
Leakance	6.68e-3	/d	JLA Geosciences pg 30 APT value 0.05 gpm/ ft ³ converted to /d
High Drawdown			
Transmissivity	102,000	ft	JLA Geosciences Table 9 value 766,000 gpd/ft ³ converted to ft ² /d
Storage coefficient	0.0002	-	JLA Geosciences Table 9
Leakance	1.47e-3	/d	JLA Geosciences Table 9 value 0.011 gpm/ ft ³ converted to /d
Low Drawdown			
Transmissivity	353,000	ft ² /d	JLA Geosciences Table 9 value 2,640,000 gpd/ft ³ converted to ft ² /d
Storage coefficient	0.0008	-	JLA Geosciences Table 9
Leakance	1.15e-2	/d	JLA Geosciences Table 9 value 0.086 gpm/ ft ³ converted to /d

3. Model Simulation

The model simulates the projected drawdown impacts to the Upper FAS associated with the proposed groundwater withdrawal by FP&L. The model does not compute existing water levels or flows, only the effect of the FP&L wells. The drawdown calculated by the model may be subtracted from known potentiometric surface elevations to determine the potentiometric elevations in the Upper FAS that might result for the proposed withdrawal under the prescribed conditions. Per SFWMD guidance, these model simulations were executed to simulate a 90-day withdrawal period without recharge. Several other simplifying assumptions are made in the model including:

- The horizontal extent of the aquifer is assumed to be infinite and homogenous with regard to all of the modeled aquifer parameters;

- Discrete flow via fractures or other preferential pathways is not included in the model;
- Effects from other ground water users are not considered; and
- The effect of fluid density differences within the model is not included.

Figure 1 shows the predicted drawdown in the Upper FAS after 90 days of pumping at 29.28 mgd by FPL. No other withdrawals are considered in this simulation, which therefore represents the independent drawdown impact by FP&L. Three cases are considered, 1) the expected case, 2) high drawdown, and 3) low drawdown. These cases provide an estimated bound on the range of possible impacts. The radius of this circular cone of depression, as defined by the 1 ft drawdown contour, is 6,430 feet (1.22 miles) for the expected case. This radius ranges from 4,425 feet (0.84 miles) to 14,225 feet (2.69 miles) for the low and high range drawdown cases. This information is summarized in Table 2. Other existing legal users, as defined by water use permits for Floridan Aquifer withdrawals, are depicted on this figure using their water use permit number as a label. The well locations of the nearest existing legal user, the Seminole Improvement District, permit number 50-00021-W, are also shown on this figure. The nearest well of the nearest existing legal user is 4.7 miles from the FP&L wells and 3.5 miles outside the FP&L cone of depression as modeled for the expected case simulation. The distance between the permitted withdrawals and the simulated FP&L cone of depression indicates that the proposed FP&L withdrawal will not impact existing legal users.

Table 2. Results of model simulations.

Model Run	Distance to 1 ft drawdown contour (miles)	Distance from 1 ft drawdown contour to nearest existing legal user (miles)
Expected Case	1.2	3.5
High Drawdown	2.7	2.0
Low Drawdown	0.84	3.86

4. Conclusions

The impact analysis that was conducted following the West County Energy Center APT was modified to simulate the anticipated drawdown in the Upper FAS associated with pumping an additional 9.76 mgd above the currently permitted amount. The requested amount is for emergency use of water when reclaim water is not available. The

simulation indicates that the cone of depression (defined by the 1-ft drawdown contour in the Upper FAS) resulting from 90 days of pumping at 29.28 mgd, will extend approximately 6,430 feet (1.2 miles) from the pumping wells. There are no existing legal users within the simulated FPL cone of depression.

5. References

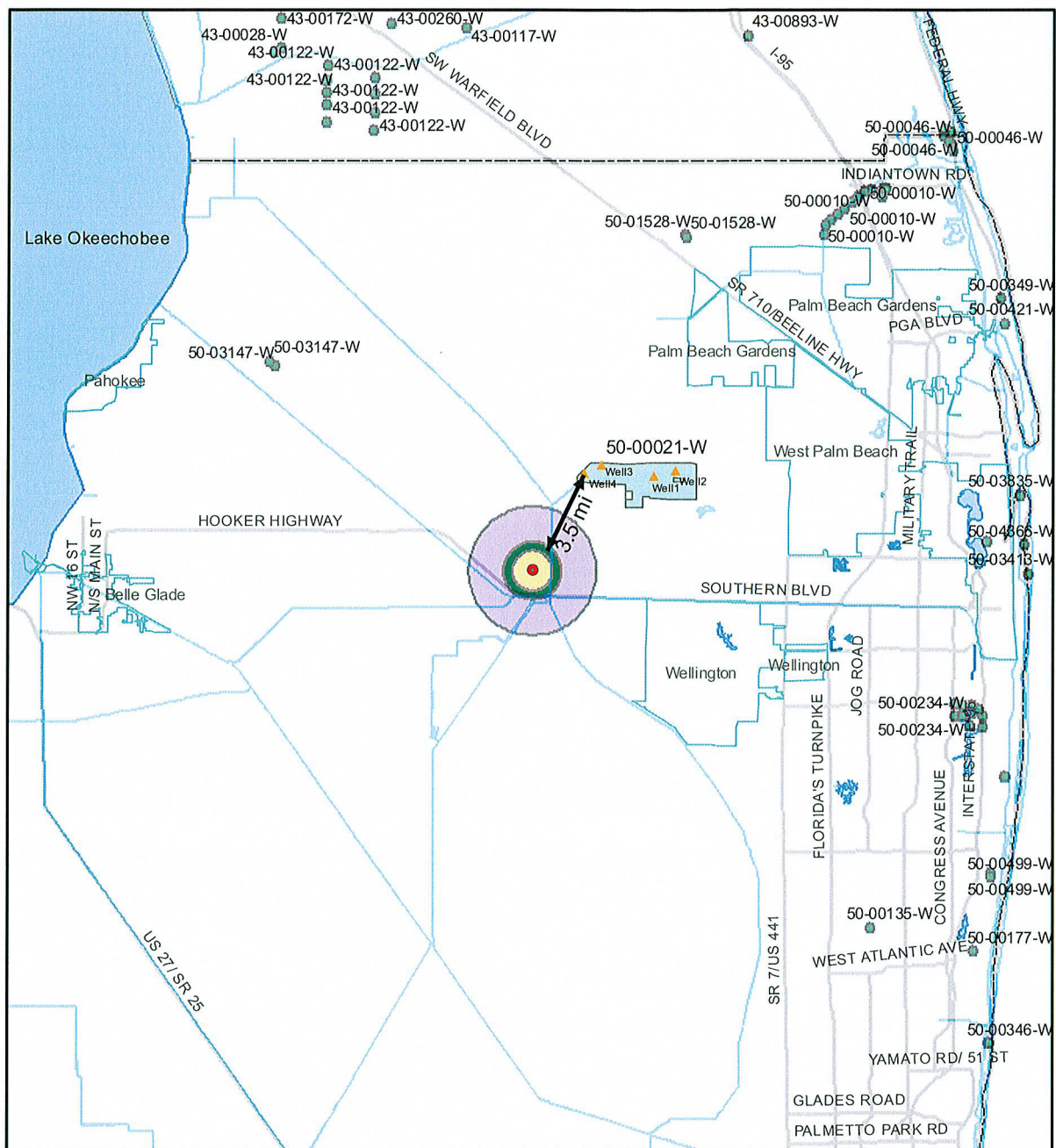
GeoTrans, 2008. Groundwater Modeling for Verification of Projected Impacts. Prepared for Florida Power & Light Company, October 24, 2008.

JLA Geosciences, 2008. Well Completion Report for Floridan Aquifer Wells FAW-1, FAW-2, and FAW-3 FPL West County Energy Center Projects (Units 1 & 2). Loxahatchee Florida. Prepared for West County Power Partners, LLC and Florida Power & Light Company.

Hantush, M.S. and C.E. Jacob, 1955. "Nonsteady radial flow in an infinite leaky aquifer." *Transactions of the American Geophysical Union*, 36, 95-100.

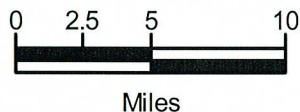
South Florida Water Management District (2008a). Letter from James Harmon (SFWMD) to Barbara Linkiewicz (FP&L) Subject: FPL West County Energy Center, PA 05-47, Aquifer Performance Test. December 17, 2008

South Florida Water Management District (2008b) Rules of the South Florida Water Management District—Basis of Review for Water Use Applications within the South Florida Water Management District. Effective October 14, 2008.



Legend

- | | | |
|---------------|-----------------------------------|---|
| — Roads | ● Floridan Wells - Permit Numbers | Extent of Drawdown Greater Than 1 ft |
| □ City limits | ● West County Wellfield | □ Low Drawdown |
| ■ Lakes | ▲ Seminole Improvement District | ■ Expected Case |
| | | ■ High Drawdown |



TITLE: Simulated Upper FAS Drawdown After Pumping
29.28 MGD for 90 Days

LOCATION: West Palm Beach, FL



CHECKED	PFA
DRAFTED	AG
PROJ	117-
DATE	5/4/09

FIGURE:

1