

PMLevyCOLPEm Resource

From: Hambrick, Gordon A SAJ [Gordon.A.Hambrick@usace.army.mil]
Sent: Monday, February 06, 2012 2:28 PM
To: Hambrick, Gordon A SAJ; Snead, Paul; Bruner, Douglas; David A Pritchett; Gagliano.Paul@epamail.epa.gov; Dierolf, Amy C.; Kitchen, Robert; Hunter, John J (Jamie); Kitchen, Robert; Frank Matthews
Cc: Collazo, Osvaldo SAJ; Kasbar, John F SAJ; Weeks, Russell SAJ; Kemp, Susan K SAJ; Loschiavo, Andrew J SAJ; Hudson, Theresa SAJ
Subject: Memorandum Update from CESAJ-EN, as discussed at PEF/LNP Meeting on 01/19/2012 (UNCLASSIFIED)
Attachments: EN Memo for LNP 01-17-2012.pdf

Classification: UNCLASSIFIED

Caveats: NONE

All:

Please find attached a copy of Memorandum For CESAJ-RD (January 17, 2012), which updates CESAJ-EN's Memorandum dated June 14, 2011. The updates are based on meetings with PEF and additional information from PEF since June 2011. We discussed at the Jan. 19th meeting that CESAJ-EN would be providing this updated memorandum, and that I would provide a copy to the meeting's participants.

Don

Gordon A. (Don) Hambrick, III
Senior Project Manager
Panama City Permits Section
US Army Corps of Engineers
Jacksonville District
1002 West 23rd Street, Suite 350
Panama City, Florida 32401

Office: 850-763-0717, ext. 25

Fax: 850-872-0231

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From: Hambrick, Gordon A SAJ

Created By: Gordon.A.Hambrick@usace.army.mil

Recipients:

"Collazo, Osvaldo SAJ" <Osvaldo.Collazo@usace.army.mil>
Tracking Status: None
"Kasbar, John F SAJ" <John.F.Kasbar@usace.army.mil>
Tracking Status: None
"Weeks, Russell SAJ" <Russell.Weeks@usace.army.mil>
Tracking Status: None
"Kemp, Susan K SAJ" <Susan.K.Kemp@usace.army.mil>
Tracking Status: None
"Loschiavo, Andrew J SAJ" <Andrew.J.Loschiavo@usace.army.mil>
Tracking Status: None
"Hudson, Theresa SAJ" <Theresa.B.Hudson@usace.army.mil>
Tracking Status: None
"Hambrick, Gordon A SAJ" <Gordon.A.Hambrick@usace.army.mil>
Tracking Status: None
"Snead, Paul" <paul.snead@pgnmail.com>
Tracking Status: None
"Bruner, Douglas" <Douglas.Bruner@nrc.gov>
Tracking Status: None
"DavidA Pritchett" <Pritchett.DavidA@epamail.epa.gov>
Tracking Status: None
"Gagliano, Paul" <Gagliano.Paul@epamail.epa.gov>
Tracking Status: None
"Dierolf, Amy C." <Amy.Dierolf@pgnmail.com>
Tracking Status: None
"Kitchen, Robert" <robert.kitchen@pgnmail.com>
Tracking Status: None
"Hunter, John J (Jamie)" <John.Hunter@pgnmail.com>
Tracking Status: None
"Kitchen, Robert" <robert.kitchen@pgnmail.com>
Tracking Status: None
"Frank Matthews" <FrankM@hgslaw.com>
Tracking Status: None

Post Office: EIS-MB04CPC.eis.ds.usace.army.mil

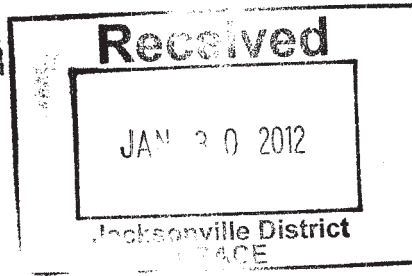
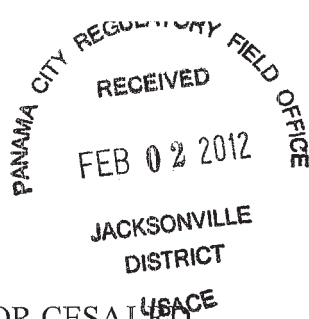
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CESAJ-EN

MEMORANDUM FOR CESAJ-RD



17 Jan 2012

SUBJECT: Progress Energy Florida (PEF) / Levy Nuclear Plant (LNP) – Review of Applicant's Groundwater Modeling – Follow Up Response after 14 Jul and 28 Jul 2011 Meetings

Reference our June 14, 2011 memorandum providing CESAJ-EN review comments on the applicant's groundwater models, model documentation reports and additional information as previously requested in your CESAJ-RD January 5, 2011 memorandum. We understand that portions of information contained in our June 14, 2011 memorandum were subsequently included in the Corps's letter to Progress Energy Florida (PEF) dated June 23, 2011. Afterwards, PEF and the Corps agreed to meet and teleconference on July 14, 2011 along with representatives from the Nuclear Regulatory Commission (NRC) and the Environmental Protection Agency (EPA) in order for PEF to provide an initial response and timeline of future responses to the Corps's letter. One of the issues discussed at that meeting was the potential for impacts on wetlands, springs and existing wells from the proposed withdrawal of water from four proposed wells for LNP plant operations, and the groundwater models that were used to forecast the potential for impacts. As a result of the 14 Jul 2011 meeting, PEF requested a meeting in the near future with the Corps's hydrologist to specifically discuss these groundwater models. On 28 July 2011, two meetings/teleconferences occurred – the first at 1300 hrs EDT involving the applicant PEF (including their engineering consultant CH2MHill), Corps, NRC, EPA and the second at 1600 hrs EDT, including just the federal agencies (Corps, NRC and EPA). The purpose, conversation summary and specific participants in each of those two meetings are documented in the 28 July 2011 teleconference record prepared by the CESAJ-RD Project Manager, Don Hambrick.

More recently, Don Hambrick requested that we consider whether the CESAJ-EN 14 June 2011 memorandum, and particularly, it's stated recommendations and conclusions, needed to be revised based on the information that PEF and CH2MHill presented at the 14 July and 28 July

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2011 meetings. We have considered that presentation information, along with language from the EIS and Draft Levy Nuclear Power Plant Monitoring Plan Recommendations provided by the CSAJ RECOVER Branch, to offer the following revised conclusions/recommendations:

Conclusions

- a. Initial: Our initial review of available geologic information (i.e., geological agency publications and the site-specific data provided by CH2MHill) mostly does support a 3-layer geologic conceptualization near the project area with no compelling evidence of confinement between the three layers. It is not clear if this conceptualization can be readily applied to the remainder of the model domain.
Revised: Based on information provided during the 28 Jul 2011 presentation, page 29, we agree that the 5-layer geologic conceptualization near the project area is appropriate since the intermediate aquifer model layers 2 and 3, while present in other areas of the SWFWMD between the SAS and UFA, are not present at the LNP project site, and are therefore transparent in the DWRM2 5-layer model. Therefore, at the LNP project site, the 5 layer model functions the same as a 3-layer model.
- b. Initial: While there is little or no evidence of confinement between the SAS and UFA at the site, the interpretation of confinement between the UFA and LFA at the project site is less clear.
Revised: Although there are few cores in the area that extend to elevations of -300 feet below ground surface, USGS boring FLA-LV-3 (at the JT Goethe site; Plate 22, Miller, 1986) does show a lower confining unit between the UFA and LFA. Confinement between the UFA and the LFA is represented in both the original 5-layer (between model layers 4 and 5) and recalibrated 3-layer model (between model layers 2 and 3) by an inter-layer leakance parameter value. These interlayer leakance values are the same in both models and calibration results for the 3-layer model were found to be insensitive to changes in the leakance value.
- c. Initial: The data collected and modeling performed to date are necessary steps in a process to better characterize groundwater behavior at the site, but more site-specific

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parameter quantification is required in order to improve the reliability of the model. This data could best be obtained through an upcoming APT test situated at the future site of the major production wells.

Revised: The data collected and modeling performed to date are necessary steps in a process to better characterize groundwater behavior at the site, but more site-specific parameter quantification may be required depending on results of the state mandated aquifer performance test (ideally situated at the future site of each of the four major production wells) per the Florida Department of Environmental Protection's "Conditions of Certification".

- d. Initial: Once obtained and incorporated into the LNP2 model, that model could be recalibrated to the 2007 condition, but preferably in a transient mode and not steady-state. A transient calibration would prepare the LNP2 model for subsequent application of the existing and with-project conditions that are better suited for an incremental and NEPA type evaluation of impacts to wetlands (see Enclosure 2, paragraph 6). The same LNP2 model could also be re-run for Stress Conditions 1, 2 and 3 as defined by the SWFWMD for evaluation of incremental and cumulative drawdown impacts to springs and adjacent permitted users.

Revised: If the results of the APT indicate that the stated aquifer parameter values obtained through the field test differ by more than twenty percent from those used in the groundwater model, the groundwater models must be re-run. Once the APT aquifer values are obtained and incorporated into the original DWRM2-TRM 5-layer model, that model should be re-calibrated accordingly, however, the new water level data in the SAS from the onsite monitoring wells should be added to the calibration set, even if only for comparison during the year 2007 simulation period. Since one of the purposes of the model is to assess the impact of groundwater withdrawals for onsite wetlands, it is critical that the model performance within these site-specific wells be evaluated during calibration. A transient calibration would prepare the DWRM2-TRM model for subsequent application of the existing and with-project conditions that are better suited for an incremental and NEPA type evaluation of impacts to wetlands (see Enclosure 1,

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paragraph 6 from 14 June 2011 CESAJ-EN memorandum). The same recalibrated DWRM2-TRM would also be re-run for Stress Conditions 1, 2 and 3 as defined by the SWFWMD for evaluation of incremental and cumulative drawdown impacts to springs and adjacent permitted users.

Recommendations

Initial: Our review of the “Conditions of Certification” by the Florida Department of Environmental Protection (2009) reveals that an APT plan is eventually required at the site prior to the project's production wells being placed in service. The APT is required to compare the aquifer characteristics obtained through the field test to those used in the groundwater model, and should those values differ by more than twenty percent, the groundwater models must be re-run by incorporating the APT parameter values. To better represent the aquifer characteristics in the current models and to simulate the groundwater system more effectively, we believe strongly that the APT tests should be initiated and completed prior to a decision on whether the project site is deemed acceptable. Any site-specific hydro-geology or aquifer parameters obtained from the APT would then be incorporated into the LNP model and this model re-run for both the standard SWFWMD permitted modeling scenarios as well as a prescribed base and with-project condition (see Enclosure 1, paragraph 6) to evaluate potential impacts to on-site wetlands. The definition of the modeling condition and the wetland impact criteria to be evaluated with a groundwater model were extracted directly from a previous technical document prepared by the SWFWMD and is therefore considered appropriate for the current LNP site impacts analysis.

Revised:

1. Our review of the “Conditions of Certification” by the Florida Department of Environmental Protection (2009) reveals that at least six months prior to the start of construction of any production well, PEF will submit an aquifer performance test plan to the USACE for review and approval. At least five years prior to any use of production wells in excess of 100,000 gallons per day, PEF will conduct an aquifer performance test pursuant to the terms of this APT plan. Based upon the results of the additional aquifer testing, PEF may be required to perform

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additional groundwater modeling for the SWFWMD in accordance with the state-issued final condition of site certification for the project and any "Special Conditions" that the USACE attaches as part of its granting of a Section 404 permit. The state-issued conditions would include re-running the model for the standard SWFWMD permitted modeling scenarios while the USACE Special Condition would prescribe a base and with-project modeling condition (see Enclosure 1, paragraph 6 from CESAJ-EN 14 June 2011 memorandum) more similar to a NEPA analysis for evaluating potential impacts to on-site wetlands. The definition of the modeling condition and the wetland impact criteria to be evaluated with a groundwater model were extracted directly from a previous technical document prepared by the SWFWMD and is therefore considered appropriate for the current LNP site impacts analysis.

2. Results from the original DWRM2-TRM and the recalibrated groundwater model were considered by USACE staff in their assessment of groundwater use impacts at the site. If the assessment of groundwater impacts was to be determined solely on the results of modeling and the decision was required now, we would opt for the results of the recalibrated model (i.e., assume the worse-case scenario of the two existing modeling efforts). If the assessment of groundwater impacts were to be determined solely from modeling and a decision could be rendered subsequently based on improved model parameterization and another calibration, we would opt for the results of a recalibrated DWRM2-TRM 5-layer model. This model would incorporate the site-specific SAS wells and utilize both the standard SWFWMD steady-state scenarios (Stress Periods 1, 2 and 3) as well as a USACE specified transient modeling condition strictly for the wetland impacts.

3. However, similar to the rationale as currently drafted by NRC staff for the FEIS, the model results should not be the sole basis of the staff's assessment. Borrowing their language, "the complex site hydrologic conditions including the natural annual variability in groundwater level, model parameter uncertainties, and the relatively small water-level changes that have been shown to result in wetlands impacts", in addition to the technical challenges with representing a highly Karst geologic setting, the USACE staff likewise concluded that use of the modeling

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results alone was not sufficient to make a definitive assessment of wetland impacts. This determination is consistent with the State of Florida's groundwater permitting process and specifically with the FDEP's Conditions of Certification for the site that includes an environmental monitoring program to assure no adverse impacts to wetlands.

4. Acknowledging that all models are imperfect representations of reality and carry inherent uncertainty, a more tangible and discernible evaluation of cause and effect would be to monitor the actual effects of the groundwater withdrawals and reveal whether there are actual impacts to wetlands that would confirm the need to utilize alternative sources of water. The CESAJ RECOVER Branch has recently provided a DRAFT "Levy Nuclear Power Plant Monitoring Plan Recommendations". The plan objectives are two-fold:

- a) to monitor and assess actual draw downs with the ramped installation of the LNP production wells to confirm expected draw downs from modeling and understand potential areas of wetlands to be affected;
- b) to monitor and assess stress on wetlands to determine whether a impact threshold has been met.

We recommend that Regulatory Division consider the guidelines in this monitoring plan and consider including the plan within the Special Conditions of the Section 404 permit.

Should you have questions or require additional information, please contact our Mr. Russ Weeks at 904-232-1159.


Luis A. Ruiz, P.E.

Acting Chief, Engineering Division