

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD PANEL

Before the Licensing Board:

E. Roy Hawkens, Chair  
Dr. Michael F. Kennedy  
Dr. William C. Burnett

In the Matter of	)	
	)	
Florida Power & Light Company	)	Docket Nos. 52-040 and 52-041
	)	
Turkey Point,	)	ASLBP No. 10-903-02-COL-BD01
Units 6 and 7	)	
_____	)	

**JOINT INTERVENORS' REPLY TO FLORIDA POWER & LIGHT  
COMPANY'S AND NUCLEAR REGULATORY COMMISSION STAFF'S  
RESPONSES TO JOINT INTERVENORS' MOTION TO AMEND  
CONTENTION 2.1**

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In accordance with 10 C.F.R. §§ 2.309 (h)(2) and the Atomic Safety and Licensing Board Order dated January 26, 2012 (Florida Power & Light Co., (Turkey Point Units 6 & 7, ML 12026A438) (Jan. 26, 2012) (unpublished order) (slip op. at 7)), SOUTHERN ALLIANCE FOR CLEAN ENERGY ("SACE"), NATIONAL PARKS CONSERVATION ASSOCIATION ("NPCA"), DAN KIPNIS, and MARK ONCAVAGE (collectively "Joint Intervenors"), hereby file their Reply to Florida Power & Light Company's ("FPL") and Nuclear Regulatory Commission Staff's ("NRC Staff") Responses to Joint Intervenors' Motion to Amend Contention 2.1. This Reply is supported by the Second Affidavit of Mark Quarles. (February 17, 2012) ("Quarles

Second Affidavit”), as well as the First Affidavit of Mark Quarles (January 23, 2012) (“Quarles Affidavit”).

As further discussed below, Contention 2.1 as amended is timely and identifies a genuine dispute with the application regarding the accuracy and adequacy of FPL’s analysis of the impacts certain constituents would have on potential drinking water resources.

### **STANDARD FOR CONTENTION ADMISSIBILITY**

Throughout their response, FPL argues that Joint Intervenors have not proven their case.<sup>1</sup> The standards governing the admissibility of amended contentions are set forth in the Commission’s regulations, 10 C.F.R. §§ 2.309(f)(1) and (f)(2). These standards, while strict, do not require Joint Intervenors to prove the merits of their case at this time. As the NRC explained in *Carolina Power and Light Company and North Carolina Eastern Municipal Agency* (Shearon Harris Nuclear Power Plant), “it is well settled that in passing upon the admissibility of contentions it is not the function of a licensing board to reach the merits of any contention. Whether the contention ultimately can be proven on the merits is not the appropriate inquiry at the contention-admission stage.” *Carolina Power and Light Company and North Carolina Eastern Municipal Power Agency* (Shearon Harris Nuclear Power Plant) 23 N.R.C. 525, 541, (1986) (internal quotations and citations omitted). *See also In re Texas Utilities Elec. Co.*, 25

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<sup>1</sup> *See, e.g.*, FPL Response at 14 (“Joint Intervenors provide no evidence as to what fraction of the injected wastewater will actually migrate upwards, or what the composition of the migrating water will be once it arrives at the UFA”); FPL Response at 15 (“Joint Intervenors fail to provide any evidence of what environmental or health impacts may result from the upward migration of wastewater injected into the Boulder Zone, nor why those effects would be potentially significant so as to warrant further analysis in the ER”).

NRC at 931; *In re Houston Lighting and Power Co.*, 11 N.R.C. at 548–49. A stated rationale behind this limitation is to ensure that parties are not required to prove their contentions before they are admitted in the proceedings. *See In re Houston Lighting and Power Co.*, 11 N.R.C. at 548. The rule also ensures that the boards will not make rulings on the substantive merits of the parties' contentions until the record on those issues is complete.

Further, while the petitioner must present adequate support and demonstrate a genuine issue of material fact, the amount of support required to meet the contention admissibility threshold is less than is required at the summary disposition stage. And as with a summary disposition motion, a “board may appropriately view Petitioners’ support for its contention in a light that is favorable to the Petitioner.” *Northern States Power Company*, 68 N.R.C. 905, 916-18, (2008) (*quoting Arizona Public Service Company, et. al* (Palo Verde Nuclear Station, Units 1, 2 and 3) 34 N.R.C. 149, 155, (1991)).

As the NRC explained when these rules were promulgated, an “intervenor must provide a concise statement of the alleged facts or expert opinion which support the contention and on which, at the time of filing, the intervenor intends to rely in proving the contention at hearing, together with references to the specific sources and documents of which the intervenor is aware and on which the intervenor intends to rely in establishing the validity of its contention. This requirement does not call upon the intervenor to make its case at this stage of the proceeding, but rather to indicate what facts or expert opinions, be it one fact or opinion or many, of which it is aware at that point in time which provide the basis for its contention.” Rules of Practice for Domestic Licensing

Proceedings—Procedural Changes in the Hearing Process, 54 FR 33168-01 (amending 10 C.F.R. § 2.714, now 10 C.F.R § 2.309).

Therefore, FPL’s merit-based arguments are misplaced. Joint Intervenors were required only to show a material dispute exists, and they have ably met their burden. If FPL believes it should prevail on the merits, it should move for summary disposition AFTER the contention is admitted. In any event, FPL’s arguments regarding the merits of the contention are unsupported by the facts as explained more fully below.

### **ARGUMENT**

I. THE ENVIRONMENTAL REPORT DOES NOT ACCURATELY LIST THE QUANTITIES OF WASTEWATER CONSTITUTENT CHEMICALS INJECTED INTO THE BOULDER ZONE VIA UNDERGROUND INJECTION WELLS.

A. Joint Intervenors’ Motion to Amend Is Timely With Respect to FPL’s Failure to Provide Accurate, Verifiable Data for Heptachlor, Ethylbenzene, Toluene, and Tetrachloroethylene.<sup>2</sup>

Table 3.6.2 of the Environmental Report, Revision 3 (the “ER”) does not accurately list the quantities of heptachlor, ethylbenzene, toluene, and tetrachlorethylene that would be injected into the boulder zone via underground injection wells. As explained in Joint Intervenors’ Motion to Amend Contention 2.1, the ER simply lists the purported concentration levels of the four constituents without discussing the source of the data or its significance. Motion to Amend at 13-14. The accuracy and reliability of these listed concentration numbers depends on their source, and FPL’s failure to provide the source of this data and how it was derived, is material in that it could have an effect on the determination of impact levels associated with these chemicals. See Motion to

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<sup>2</sup> Joint Intervenors acknowledge that Thallium and Selenium appeared in the Table in prior versions of the ER and Joint Intervenors do not maintain their Amended Contention as it relates to these two constituents.

Amend Contention at 13-14; NRC Staff Response at 12. This is especially important considering two of the constituents are known carcinogens. See Motion to Amend Contention at 5-6, 14; Quarles Affidavit at 6. Further, NRC's NEPA regulations require that environmental impact statements "identify any methodologies used and sources relied upon" and "be supported by evidence that the necessary environmental analyses have been made." 10 C.F.R. § 51.70.

Despite the importance of this information and NRC regulatory requirements, FPL has not disclosed where these numbers came from or how these numbers were calculated. Noticeably absent from FPL's Response is any attribution as to the source(s) of the data or the method(s) of data collection used to generate its revised list of constituent concentrations in Table 3.6-2. Quarles Affidavit at 1-2; Second Affidavit at 1.

While NRC Staff recognizes that the ER fails to identify the source of the constituents and does not oppose the admission of Contention 2.1 in this respect (see NRC Staff Response at 12), FPL argues that they otherwise are not required to submit such data because Joint Intervenors' challenge is untimely. According to FPL, "Joint Intervenors could have raised in their Petition any perceived deficiencies in how the values in the Table were obtained." FPL Response at 5.

FPL's argument is nonsensical. At the time Joint Intervenors filed their Petition, there were no values- the ER was completely silent on heptachlor, ethylbenzene, toluene, and tetrachloroethylene. Accordingly, Petitioners submitted a contention alleging that the ER fails to analyze and discuss the potential impacts on groundwater quality of injecting into the Floridan Aquifer via underground injection wells, these four chemicals, which

have been found in injection wells in Florida but are not listed in FPL's ER as wastewater constituent chemicals. See Board's February 28, 2011 Order on Petitions to Intervene at 36 (citing Petition at 26, 28). Because the ER failed to even identify these four constituents, it is beyond comprehension how Joint Intervenors could have challenged FPL's failure to identify the source(s) of the data or the method(s) of data collection used to generate numbers that did not exist. Put another way, it is incomprehensible how Joint Intervenors could have objected to how the values of the four chemicals were obtained when there were no values to begin with. Only now do those "values" appear, and FPL makes no mention of where these numbers came from and how they were derived. FPL's dogged silence in the face of Joint Intervenor's contention casts serious suspicion on the accuracy of these numbers, and this issue must be addressed before either FPL or the NRC can properly conclude that the injection of this wastewater will not have significant groundwater impacts.

Notwithstanding FPL's failure to provide such data, FPL nevertheless argues that it is Joint Intervenors, not the applicant, who bear the responsibility of proving the accuracy of the values. FPL contends that Joint Intervenors' objections "do not directly challenge the information presented in Table 3.6-2" with respect to the four constituents, "do not assert that the values presented in the Table are incorrect," and "also fail to offer any evidence as to what the correct values should be." FPL Response at 6. FPL goes on to conclude that because of this, Joint Intervenors fail to show that a genuine dispute exists with the applicant on a material issue of law or fact and thus the amended contention does not satisfy the requirements of 10 C.F.R. § 2.309(f)(1)(vi). FPL Response at 6.

FPL cannot shift the applicant's burden under 10 C.F.R. § 51.45(c) of preparing an environmental report that contains sufficient data to aid the Commission in its development of an independent analysis of environmental impacts pursuant to the National Environmental Policy Act (NEPA) onto the Joint Intervenors. Federal courts have repeatedly rejected similar attempts by federal agencies to foist the responsibility for developing NEPA analysis onto environmental plaintiffs. *See Friends of the Clearwater v. Dombeck*, 222 F.3d 552, 559 (9th Cir. 2000) ("Compliance with NEPA is a primary duty of every federal agency; fulfillment of this vital responsibility should not depend on the vigilance and limited resources of environmental plaintiffs."); *City of Carmel-by-the-Sea v. U.S. Dept. of Transportation*, 123 F.3d 1142, 1161 (9th Cir. 1997) (the agency, not the plaintiffs, is required to identify nearby projects that could result in cumulative impacts under NEPA). Given the applicant's responsibilities under 10 C.F.R. § 51.45, it would be improper to allow FPL to shift its responsibility of proving "what the correct numbers should be" to the Joint Intervenors. *See* FPL Response at 6. To do so would also result in the NRC running afoul its ultimate responsibilities under NEPA. *See Friends of the Clearwater* at 559; *City of Carmel-by-the-Sea v. U.S. Dept. of Transportation*, at 1161.

B. Joint Intervenors Point to the Lack of Information Concerning Heptachlor Epoxide, Trichloroethene, and Vinyl Chloride to Demonstrate the Incompleteness of FPL's Data and to Highlight the Importance of Adequately Analyzing and Discussing the Potential Impacts of Heptachlor and Tetrachloroethylene.

FPL and NRC Staff object to Joint Intervenors' discussion of the lack of information concerning heptachlor epoxide, trichloroethene, and vinyl chloride in their Motion to Amend Contention 2.1. FPL Response at 7; NRC Staff Answer at 10-11.

Joint Intervenor's position that the revised ER fails to consider heptachlor epoxide, trichloroethene, and vinyl chloride is intended to demonstrate the importance of FPL providing accurate, verifiable data to the NRC to assist the agency in determining the wastewater stream's impacts to groundwater resources. These chemicals are degradation products of heptachlor and tetrachloroethylene—two constituents that are known carcinogens. Quarles Affidavit at 6. All three of these breakdown products are known or probable human carcinogens, which can have serious health effects at lower concentrations than heptachlor and tetrachloroethylene. *Id.* Joint Intervenor's discussion of these breakdown products is intended to highlight the serious consequences of failing to provide accurate, verifiable, and scientifically sound data regarding the levels of heptachlor and tetrachloroethylene contained in the plant's wastewater stream. Unless and until this data is provided *and FPL performs an actual analysis of the impacts of heptachlor and tetrachloroethylene*, the ER cannot accurately conclude that the groundwater impacts of these constituents will be "SMALL." Thus, Joint Intervenor's position that the ER fails to provide accurate, verifiable data with respect to heptachlor and tetrachloroethylene, is all the more material and remains timely.

- C. The potential release of constituents into the Boulder Zone, in levels that exceed the MCL, directly relates to the manner in which the values in Table 3.6-2 were calculated.

Contrary to FPL's assertions, the Motion to Amend Contention 2.1 more than adequately explains how having the releases of the four constituents into the Boulder Zone exceed the MCL relates to the accuracy of the values in Table 3.6-2. See FPL Response at 8.

Joint Intervenor's contend that the concentrations of heptachlor, ethylbenzene,



toluene, and tetrachlorethylene either exceed or are close to the maximum contaminant levels (MCL) listed in the EPA Relative Risk Assessment. *See* Quarles Affidavit at 6.<sup>3</sup> This is important because if FPL relied on a single, unverifiable sampling event in the face of a highly variable wastewater stream, this does not provide reasonable scientific certainty that the MCL will not be exceeded and not result in significant groundwater impacts. *See* Quarles Affidavit at 7; Quarles Second Affidavit at 2. NEPA requires agencies to insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements. *See* 40 C.F.R. § 1502.24. “This information must be of high quality” (40 C.F.R. 15001.1(b)) and an agency cannot lawfully rely upon an analysis that is incomplete or omits ascertainable facts, or rely on facts or analysis, which it knows, should know, or suspects are inaccurate. *See Earth Island Institute v. U. S. Forest Services*, 351 F.3d 1291, 1302 (9th Cir. 2003); *Idaho Sporting Congress v. Rittenhouse*, 305 F.3d. 957, 972 (9th Cir. 2002); *Rybachek v. U.S. E.P.A.*, 904 F.2d. 1276, 1297-98 (9th Cir. 2000).

Given the practically miniscule difference in the tetrachloroethylene levels reported by FPL and the MCL and the highly variable nature of the wastewater stream, additional sampling events could likely yield levels that exceed the MCL. Moreover, without complete, verifiable data regarding the sources and methods of the concentration levels submitted by the applicant, it cannot be said that the reported levels are even accurate representations of the levels that would be expected in the wastewater stream. Thus, contrary to FPL’s assertions, the release of these chemicals into the Boulder Zone,

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<sup>3</sup> With respect to tetrachloroethylene, the release concentration of the chemical reported in expanded Table 3.6-2 is 3.59 ug/L while the MCL for that constituent is 5 ug/L. Joint Intervenor’s concede that the Quarles affidavit erroneously stated that the concentrated level in Table 3.6-2 (as revised) exceeded the MCL.

in levels that exceed or almost exceed the MCL, directly relates to the manner in which the values in Table 3.6-2 were calculated.

D. Joint Intervenors' Comparison of Constituent Levels Listed in Table 3.6-2 With Data from the Central Dade County Facility Supports Joint Intervenors' Position that the Wastewater Stream is Highly Variable.

NRC Staff takes issue with Joint Intervenors inclusion of data from the Central Dade County Facility in Mark Quarles' Affidavit, arguing that because the concentrations in ER Table 3.6-2 are not expected to be the same as those in wastewater as it is received from the treatment facility, and because the processed wastewater is received from a different wastewater treatment facility, the data cited by Joint Intervenors does not by its own terms conflict with the values in the ER. As such, the Amended Contention fails to demonstrate a genuine dispute with the application on a material issue.

NRC Staff's argument is misplaced. The purpose of including data from the Central District is to illustrate the highly variable nature of the wastewater stream and the gross inadequacy of a single, isolated unidentified sampling event to determine that the constituent levels would be below the MCL and therefore would not have a significant impact on potential drinking water supplies. For example, Revision 3 to Table 3.6-2 indicates a level of tetrachloroethylene below the MCL, yet the Central District has recorded a level that exceeds the MCL. *See Quarles Affidavit at 7.* Given the highly variable nature of the wastewater stream, there is no data in the ER to rebut the argument that tetrachloroethylene levels in the wastewater stream from the Southern District facility-the proposed source of FPL's wastewater-could also exceed the MCL.

The constituents and their concentrations can depend on such things as the age of the collection system, the degree of infiltration and inflow into the collection system, the

treatment methods used, the compliance history of the plant, the compliance history of dischargers to the plant, and the types of industrial and commercial users connected to the wastewater collection system for each plant. Quarles Second Affidavit at 2. In addition, not all wastewater treatment operations can remove or effectively treat recalcitrant chemicals such as tetrachloroethylene and heptachlor. *Id.*

Variations in chemical concentrations also occur within a single facility over time due to seasonal activities. Quarles Second Affidavit at 2. This seasonal variability necessitates the use of long-term sampling to achieve an accurate indication of the chemical concentrations in the wastewater stream. *Id.* For these reasons, FPL cannot accurately estimate chemical concentrations and their associated risks without a long-term study of constituents from the South District facility. *Id.*; Quarles Affidavit at 7. The need for such site-specific analysis is also consistent with the requirements of NEPA. *See, e.g., Conservation Law Foundation of New England v. General Serv. Admin.*, 707 F.2d 626 (1st Cir. 1983) (requiring more detailed analysis on a site specific basis of the environmental consequences of disposing of certain properties, so that in part, the agency can make a reasoned choice as to whether or not to take such action).

FPL is not only completely silent about where the data for the four constituents in Table 3.6-2 was derived from, but it also fails to provide any data from the actual source of its wastewater stream (presumably the South District plant) to dispute Joint Intervenors' contention, much less to take issue with Joint Intervenors' use of Central District data.

The fact that the concentrations listed in Table 3.6-2 may be based on four cycles of concentrations in the cooling process and dilution of this processed wastewater with

other sources, does little to advance NRC Staff's position as the constituent levels in Table 3.6-2, again, cannot be verified, the wastewater stream is variable, and neither FPL nor NRC staff can point to what those actual levels will be from FPL's presumed source of wastewater (the South District Plant). Thus, the fact that certain constituents are projected to be diluted by the process makes little difference when the actual levels of those constituents prior to their use in the cooling process is unknown. Accordingly, Joint Intervenors' Amended Contention 2.1 demonstrates a genuine dispute on a material issue and NRC staff's argument fails.

II. FPL'S ER DOES NOT ADEQUATELY ANALYZE WHETHER THE WASTEWATER DISCHARGED VIA DEEPWELL INJECTION COULD MIGRATE TO THE UPPER FLORIDAN AQUIFER AND CONTAMINATE THE GROUNDWATER.

A. Joint Intervenors' Contention Is Timely.

Although NRC Staff does not oppose Joint Intervenors' contention as it relates to the accuracy of the concentration levels of heptachlor, ethylbenzene, toluene, and tetrachloroethylene in Revision 3 to the Table, NRC Staff nevertheless asserts that Joint Intervenors do not demonstrate how its contention regarding the migration of these chemical constituents to the Upper Floridan Aquifer is timely. NRC Staff Response at 11-12. NRC Staff's position is without merit and suffers from the same flawed logic as that set forth by FPL in their response.

The fact that the reports Joint Intervenors and their expert discuss in their Motion to Amend were available at the time the initial petition was filed is irrelevant, as Table 3.6-2 made no mention of heptachlor, ethylbenzene, toluene, and tetrachloroethylene at the time the petition was filed. Thus, Joint Intervenors could not have raised issues about the adequacy of FPL's analysis and discussion when it came to the migration of these

chemicals at the time they filed their petition. The fact that Revision 3 to the ER contains no updated or revised information regarding this issue does not alter this conclusion, as Joint Intervenors could not have disputed the adequacy of the ER's discussion of the potential migration concerning these four constituents when there was no information provided at the time as to their very presence in the wastewater stream.

B. The Studies Joint Intervenors Reference in Their Motion to Amend Contention 2.1 Wholly Support Joint Petitioner's Contention That There is an Inadequate Analysis and Discussion of the Potential Groundwater Impacts of Certain Constituents in the Proposed Wastewater Stream.

FPL contends in their response that “none of the references on which Joint Intervenors and their consultant rely support the proposition that wastewater injected into the Boulder Zone will find its way into the UFA, which is a potential source of drinking water for the area surrounding Turkey Point Units 6 & 7.” FPL Response at 10. FPL then follows with its discussion of the alleged findings and conclusions of the Walsh and Price Study, the INEEL Report, and the EPA Risk Assessment. FPL Response at 10-13.

As a threshold matter, FPL fails to offer any expert opinions to refute the opinions of Joint Intervenors' expert, Mark Quarles. Instead, FPL relies on counsel to render scientific conclusions. FPL Response at 10 (“The Walsh and Price study... concluded”); FPL Response at 10 (“The INEEL Report concluded...”); FPL Response at 11 (“A review of Section 4 [of the EPA Risk Assessment] shows...”).<sup>4</sup> It is well settled law that attorney argument cannot substitute for expert testimony. *Invitrogen Corp. v. Clontech Laboratories, Inc.*, 429 F.3d 1052, 1068 (Fed. Cir. 2005) (“Unsubstantiated attorney

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<sup>4</sup> Further, a review of the most recent mandatory disclosures reveals that FPL has not retained any experts to defend Joint Intervenors' claims as they pertain to Amended Contention 2.1.

argument regarding the meaning of technical evidence is no substitute for competent, substantiated expert testimony.”); *Teva Pharmaceuticals USA, Inc. v. Sandoz, Inc.*, 749 F. Supp. 2d 130, 134 (S.D.N.Y. 2010) (“Defendants essentially offer nothing more than attorney argument. In light of Plaintiffs' experts' declarations, Defendants fail to demonstrate they are entitled to summary judgment...”); *Commonwealth Edison Company*, 18 N.R.C. 19, 21 (1983) (“Questions of fact are not susceptible of resolution on the basis of nothing more than the generalized representations of counsel who are unequipped to attest on the basis of their own personal knowledge to the accuracy of the representations.”); *Florida Power and Light Company*, 6 N.R.C. 8, 24, n. 18 (1977) (“arguments of counsel are not evidence and may not be accepted as such. This is no mere technicality. The company's decision not to proffer counter-affidavits left the Board below (and leaves us) to speculate whether the company witness was unwilling to swear to what counsel now represents... or whether counsel's assertions are indeed the case.”); *Public Service Company of New York*, 17 N.R.C. 1170, 1175 (1983) (“SAPL, however, is proffering its own answers made by its attorney. There is no indication that SAPL’s attorney was answering on the basis of personal knowledge, or that he is competent to testify as to his assertions; and his assertions would not be admissible as evidence.”).

The entirely unsubstantiated argument of FPL’s counsel cannot overcome Mr. Quarles’s expert opinion. In any event, and as explained below, FPL’s arguments are without scientific support and a closer reading of all three studies reveals overwhelming support for Joint Intervenors’ position.

1. *The Walsh & Price Study Supports Joint Intervenors’ Position that Wastewater Injected into the Boulder Zone Could Impact Potential Drinking Water Sources.*

Contrary to FPL's unqualified and unsupported statements on pages 10 and 13 of their response, the Walsh & Price Study wholly supports Joint Intervenors' position that deepwell injection operations into the Boulder Zone could contaminate the Upper Floridan Aquifer, which is a potential source of drinking water.

The Walsh and Price study, published on behalf of the MDWASD, concluded after reviewing 16 years (from 1991 to 2007) of groundwater data that widespread groundwater contamination exists at that injection site because of unfavorable geologic conditions – conditions that are contrary to the assumptions made by FPL in the ER. Quarles Affidavit at 2-3; Quarles Second Affidavit at 3-4 (citing Walsh and Price at 7, 14, and 15). Further, an evaluation of the data reviewed by Walsh and Price indicates that the lower Middle Confining Unit (MCU2) fails to prohibit the rapid vertical migration of the more buoyant wastewater that is injected. Quarles Affidavit at 3; Quarles Second Affidavit at 4.

The one statement contained in the Walsh and Price study that FPL relies on in its response to dismiss Mr. Quarles' expert opinion- that vertical pathways “did not appear to extend up to the UFA” (Upper Floridan Aquifer)-seems to be based on the absence of groundwater contamination in one or more wells drilled within the UFA zone, as defined by Walsh and Price. Quarles Second Affidavit at 5. That conclusion cannot be supported by groundwater data because no wells were even drilled into the upper Middle Confining Unit (MCU1) that lies just below the Upper Floridan Aquifer. *Id.*

Further, of the four wells drilled into the UFA (according to Walsh and Price) at the South Plant, only one of four wells is even capable of detecting a release of contaminants because only one well is located hydraulically downgradient (in the

regional direction of flow) from a plume, as illustrated by Walsh and Price. *Id.* The remaining wells are located hydraulically *upgradient* from the nearest of three other contaminant plumes. *Id.*

The Walsh and Price investigation does not support the ER's conclusions regarding the effectiveness of the middle confining unit layers to prevent upward migration and contamination of more shallow drinking water aquifer zones. *Id.* at 6. Vertical pathways across multiple layers of fractured bedrock can be just a few feet wide and can be extremely difficult to identify. *Id.* Without a very detailed subsurface investigation at the Turkey Point site to identify those features, an injection well program will risk rapid migration of contaminants into drinking water aquifers, based on the results at the South District plant. *Id.*

2. *The INEEL Report Supports Joint Intervenors' Position that Migration May Occur Through Vertical Bedrock Fractures and Conduits and an Extensive Investigation is Needed to Further Understand the Site Conditions.*

Much like FPL's cursory and flawed treatment of the Walsh & Price Study, FPL's statements concerning the findings and conclusions of the INEEL report are similarly flawed and unsupported by the actual findings of the INEEL report.

The INEEL reported concluded that deep well injection activities at the South District plant have already contaminated the Upper Floridan Aquifer. *Id.* at 7 (citing INEEL at 38); Quarles Affidavit at 3. Further, the INEEL study concluded that "the geochemical data sets indicate that groundwater at some locations in the Upper Floridan Aquifer is contaminated with treated wastewater, which implies that contaminants are migrating through the Middle Confining Layer." *Id.* (quoting INEEL at 39).



The INEEL study calculated that the travel time from the Boulder Zone to the Upper Floridan Aquifer would be rapid, with a conservative estimate being approximately 1 to 6 years, compared to the 30 to 1,100 years FPL relies on in their ER. *Id.* at 7 (citing INEEL at 25). Given the lower travel times actually seen and reported by Walsh and Price and the INEEL, this implies that there would be insufficient time for concentrations to be reduced before reaching drinking water receptors (humans) should the aquifer be used as a source of drinking water. *Id.* at 8.

Contrary to FPL's suggestions on page 10 of its response that the INEEL report determined the contamination in the Upper Floridan Aquifer does not show a pattern consistent with widespread upward migration through a leaking confining layer, the INEEL study for the South District plant concluded that a pattern of point-source contamination of the Upper Floridan aquifer exists at the South District plant; however, the available data to determine what exactly the "point sources" are "were not sufficient to differentiate between inadequately sealed wells or natural features as the point source features." *Id.* (quoting INEEL at 36). The INEEL recommended an extensive investigation to determine what the exact sources are. *Id.* (citing INEEL at 9, 10, 26, 27, 36, 38, 39, and 40); Quarles Affidavit at 3. As such, both leaky wells and geologic conditions are suspects for the contamination. Quarles Second Affidavit at 8 (citing INEEL at 40).

3. *The EPA Relative Risk Assessment Further Supports Joint Intervenors' Position as it Determined That There Were 18 Documented Instances Where Injection Well Sites Have Contaminated Drinking Water Aquifers.*

FPL further asserts that Section 4 of the EPA Relative Risk Assessment "did not specifically find any instances of migration of wastewater injected into the Boulder Zone

through the confining zone to the UFA.” FPL Response at 11. FPL then summarily dismisses Joint Intervenors’ contention that wastewater could find its way into the Upper Floridan Aquifer. The Risk Assessment does not support such a cursory and dismissive analysis of the potential for groundwater contamination.

The EPA concluded in their Relative Risk Assessment that 18 deep well injection activities in Florida have resulted in unintended contamination of underground sources of drinking water (USDW) due to fluid migration from the targeted injection zone. Quarles Affidavit at 3; Quarles Second Affidavit at 8. By design, fluid migration through an injection well is not supposed to migrate into an underground drinking water aquifer. The fact that the EPA specifically identified the South District plant as one of the confirmed sites that has in fact, contaminated a drinking water aquifer, supports the conclusions made by Walsh and Price and the INEEL. Quarles Second Affidavit at 8-9.

Given that the EPA has determined that deep well injection at the South District plant has contaminated a drinking water aquifer and given that the U.S. Geological Survey and the INEEL both consider the APPZ to be within the “Upper Floridan Aquifer,” there is sufficient information to infer that wastewater injected into the Boulder Zone has migrated upward - resulting in contamination of the Upper Floridan Aquifer at the South District plant for the actual wastewater planned for injection at Turkey Point. *Id.* at 9.

- B. FPL’s Position that Migration of Injectate Containing Contaminants from the Boulder Zone to the Upper Floridan Aquifer Is Extremely Unlikely, Is Without Merit and Unsupported by the Science.

FPL and NRC Staff downplay the likelihood of vertical migration by arguing that the Boulder Zone, at the point of wastewater injection, is separated from the USDW by a 1,000 foot thick Middle Confining Unit.

However, an evaluation of the data reviewed by Walsh and Price indicates that the lower Middle Confining Unit (MCU2) does virtually nothing to prohibit the rapid vertical migration of the more buoyant wastewater that is injected. Quarles Second Affidavit at 4. The study concluded that four different contamination plumes already exist in the Avon Park Permeable Zone (APPZ), which is a zone of very permeable limestone bedrock of the Upper Floridan Aquifer. *Id.* According to that study, 10 of 12 wells (83%) drilled in the APPZ drinking water are already contaminated with wastewater. *Id.* at 5.

Further, the ER prepared by FPL relied on an assumed 1,000-foot thickness (at least) of the Middle Confining Unit to separate the Boulder Zone from the Upper Floridan Aquifer and to protect drinking water. FPL Motion to Amend at 11. According to Walsh and Price, however, the base of the APPZ is situated 378 meters (1,240 feet) above the top of the Boulder Zone. Quarles Second Affidavit at 5 (citing Walsh and Price at 4). As a result, contaminated groundwater at the South District site has migrated vertically a minimum of approximately 1,250 feet. Thus, the science strongly suggests that a 1,000-foot thick Middle Confining Unit may do little to prevent migration of contaminated wastewater into the Upper Floridan Aquifer. *Id.* at 4-5. Astonishingly, FPL seems to concede that it isn't even sure what the confining characteristics even are, leaving it to a single exploratory well to gather this information. *See* FPL Response at 12 ("From this well, FPL will be able to determine the confining characteristics of the intervals overlying the Boulder Zone.") The INEEL report, however, recommended a

series of additional investigative measures be performed at the South District plant, at a minimum, to calculate the net thickness of the confining layer. *See* Quarles Second Affidavit at 7-8.

FPL and NRC staff argue that it in any event, any impacts that may occur will be addressed later as part of the State of Florida's permitting process for underground injection wells. *See* FPL Response at 11-12; NRC Answer at 17-18. FPL and NRC Staff point to the fact that the injection wells would be installed in accordance with Florida Department of Environmental Protection (FDEP) requirements, the overlying USDW would be monitored periodically for hydrologic impacts and water quality, as required by the Underground Injection Control permit and other State and local permits; and FDEP has issued an exploratory well permit and FPL is currently drilling such a well. FPL Response at 11-12.

FPL and NRC Staff's position that these issues will be investigated and if need be addressed in the distant future by an entirely separate, state regulatory and permitting process rather than in the EIS, runs afoul of NEPA. *See e.g. Calvert Cliffs' Coordinating Committee, Inc. v. United States Atomic Energy Commission*, 449 F.2d 1109, 1123 (D.C. Cir. 1971) (holding that an agency cannot abdicate its responsibilities under NEPA "to other agency certifications" because doing so "neglects the mandated balancing analysis. Concerned members of the public are thereby precluded from raising a wide range of environmental issues in order to affect particular Commission decisions. And the special purpose of NEPA is subverted."). This kind of "trust us, we'll figure things out later" approach is entirely inappropriate, particularly given the serious nature of the constituents at issue.

Moreover, these state permitting and regulatory measures (even in their entirety) are an insufficient basis for concluding that migration is “extremely unlikely.” The fact that 7 deep injection wells would be installed in accordance with certain FDEP requirements and that the overlying USDW would be monitored periodically for hydrologic impacts and water quality as required by the UIC permit, is of little consequence when (as the INEEL report repeatedly remarked as far back as 2001) more study is needed before one could fairly conclude that injection wells are not sources of contamination. Moreover, the highly cavernous nature of the geology in the area and the number of isolated natural conduits that could surround these 7 wells could facilitate migration regardless of what construction requirements may be in place. *See Quarles Affidavit at 5; Quarles Second Affidavit at 6.* In addition, the fact that there would be a periodic monitoring program for hydrologic and water quality impacts to the overlying USDW puts the proverbial “cart before the horse.” As the INEEL report reiterated, extensive investigations need to occur before it can be said that injection wells are not a source of contamination. This has not occurred in the 11 years since that report was released. Yet, FPL intends to go ahead construct the wells and monitor for any impacts. By that time, it may be too late if the wells are indeed causing groundwater contamination and the applicant would have to rely on future remedial plans in place to deal with these impacts, assuming such plans are part of the underground injection well permitting process.

Lastly, with respect to FPL’s assertion that FDEP has issued an exploratory well permit and FPL is currently drilling such a well, this too is grossly inadequate to characterize the site and define the risk to human health. *See Quarles Second Affidavit at*

6. The only apparent subsurface boring or well that has been drilled by FPL deeper than 615 feet at the Turkey Point site is a single well that is currently being drilled. *Id.* (citing FPL Response at 12). According to the Response, “[f]rom this well, FPL will be able to determine the confining characteristics of the intervals overlying the Boulder Zone” and not until and unless confinement is confirmed, will injection wells be drilled. *Id.* In summary, FPL is drilling a *single* exploratory well to define confinement conditions that 32 wells at the South District plant have been unable to define. Quarles Second Affidavit at 6. That single well cannot possibly define subsurface geologic conditions to either determine the suitability of the confining layers to confine vertical migration of wastes into drinking water aquifers or to determine the true risks to the drinking water aquifer. *Id.*

According to Walsh and Price, 32 groundwater monitoring wells and borings have been installed at the South District plant. *Id.* According to the INEEL report, the data produced from those 32 wells have proven insufficient to determine subsurface geologic conditions, requiring the installation of even three (3) to four (4) *more wells* and conducting extensive more monitoring activities. *Id.* In light of the degree of investigation required to understand the localized geology and hydrogeology, the single well currently being drilled by FPL at the Turkey Point site is grossly inadequate. *Id.*

Unless and until a thorough subsurface investigation is performed at the Turkey Point site to determine actual conditions before deep well injections begin, FPL cannot determine that impacts will be “SMALL.” Quarles Affidavit at 7. Without a thorough investigation of the actual conditions and in light of the sheer volume of water to be

injected in unknown geologic conditions, FPL risks widespread contamination of drinking water aquifers with contamination. Quarles Second Affidavit at 6.

C. Joint Intervenors Provide Sufficient Facts and Expert Opinion to Controvert the Conclusion in the ER that the Environmental Impacts of the Injection of Wastewater into the Boulder Zone Will **NOT** Be “Small.”

FPL and NRC’s Staff both assert that Joint Petitioners do not demonstrate that the environmental impacts of the injection of wastewater into the boulder zone will be anything but “small.” *See* FPL Response at 13-16; NRC Staff Response at 15-16. Contrary to FPL and NRC’s Staff’s unsupported assertions, Joint Intervenors provide adequate support to controvert the ER’s conclusion that the environmental impacts of the injection of wastewater into the Boulder Zone will be “small.”

As discussed above, there is credible evidence to support Joint Intervenors’ position that there will be an upwards migration of injected wastewater from the Boulder Zone into the Upper Floridan Aquifer.

Second, FPL engages in conceptual conjecture rather than site specific investigation (as suggested in the INEEL report) to conclude that “[b]ecause of the long migration time, concentrations of all contaminants except nitrate and metals would decrease to lower levels by the time the effluent water reached the drinking-water receptors.” FPL Response at 14. As explained earlier, given the lower travel times actually seen and reported by Walsh and Price and the INEEL, this implies that there would be insufficient time for concentrations to be reduced before reaching drinking water receptors (humans) should the aquifer be used as a source of drinking water. FPL also provides no calculations of the rate to which the four contaminants at issue would actually degrade. Quarles Second Affidavit at 8.

Third, FPL falls back on unsupported, and unverified data to surmise that the listed constituents are below the EPA MCL standards and that Joint Intervenors have not identified any mechanism through which the concentration of these chemicals would increase. As explained earlier, if FPL conducted a single, unverified sampling event resulting in some of the four constituents falling just short of the MCL, this is grossly inadequate to demonstrate that there would be no adverse groundwater impacts. Moreover, the fact that FPL would be injecting up to 90 million gallons of day of highly variable wastewater into seven injection wells without first thoroughly investigating where underground fractures may be that would facilitate the vertical migration of these constituents, significantly undermines FPL's argument. This is especially relevant given that injection activities at the South District plant for the same wastewater proposed for injection at Turkey Point (in substantially similar geologic conditions) contaminated the Upper Floridan Aquifer shortly after injection began. *See Quarles Second Affidavit at 3.*

Finally, and contrary to FPL's assertions, Joint Intervenors have thoroughly explained that all four constituents in even minute concentrations can have adverse health effects, any exceedance of the MCL is considered unsafe for human ingestion (Quarles Affidavit at 6), and two of the four constituents and their degradation products are known carcinogens. *See Quarles Affidavit at 6-7.*

### **CONCLUSION**

For all the aforementioned reasons, the Board should admit Joint Intervenors' Contention 2.1 as Amended.

Respectfully submitted this 17th day of February, 2012.



/signed electronically by/

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

FLORIDA POWER & LIGHT COMPANY

(Turkey Point Units 6 and 7)

Docket Nos. 52-040-COL and 52-041-COL

**CERTIFICATE OF SERVICE**

I hereby certify that copies of the foregoing **JOINT INTERVENORS' REPLY TO FLORIDA POWER & LIGHT COMPANY'S AND NUCLEAR REGULATORY COMMISSION STAFF'S RESPONSES TO JOINT INTERVENORS' MOTION TO AMEND CONTENTION 2.1** were served upon the following persons by Electronic Information Exchange and/or electronic mail.

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