

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

Before the Atomic Safety and Licensing Board

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

**FLORIDA POWER & LIGHT, CO. RESPONSE STATEMENT OF
POSITION IN THE CONTESTED HEARING FOR CONTENTION 2.1**

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I. INTRODUCTION

Pursuant to the Atomic Safety and Licensing Board’s (“Board”) Initial Scheduling Order in this proceeding of March 30, 2011,¹ as revised by the Board’s November 15, 2016 Final Scheduling Order,² Florida Power & Light, Co. (“FPL”) hereby submits its Response Statement of Position in the contested hearing regarding Contention 2.1. The initial statements and direct testimonies submitted by FPL and the NRC Staff show that the NRC Staff’s Final Environmental Impact Statement (“FEIS”) took a “hard look” at the “reasonably foreseeable” environmental impacts at issue in Contention 2.1. Nothing in the Intervenors’ direct case, or in the City of Miami’s Initial Statement,³ demonstrates otherwise.

Joint Intervenors’ entire case relies on speculation and unsupported statements. They have failed to present substantive scientific evidence, analysis, modeling, or studies explaining

¹ *Florida Power & Light Co.* (Turkey Point Units 6 and 7), Order (Initial Scheduling Order and Administrative Directives) (Mar. 30, 2011) (unpublished) (ML110890768).

² *Florida Power & Light Co.* (Turkey Point Units 6 and 7), Order (Final Scheduling Order) (Nov. 15, 2016) (unpublished) (ML16320A248).

³ *See generally* The City of Miami’s (“City”) Initial Statements of Position and Direct Testimony for Contention 2.1 (Mar. 1, 2017). Because the portions of the City’s Initial Statement that have been admitted in this case are limited to four paragraphs that largely repeat the “various arguments submitted by the Joint Intervenors,” (*id.* at 4) FPL’s response to the City is incorporated into its response to Joint Intervenors.

how the four chemicals at issue will have *any* actual impact on the environment, let alone one that is greater than “small.”⁴ For example, Joint Intervenors provide no evidence demonstrating how wastewater from Turkey Point will travel upward through the 1,465-foot confining unit between the Boulder Zone and the Upper Floridan Aquifer, then horizontally (against groundwater flow) crossing over 10 miles to the nearest drinking water source. They have advanced no credible scientific basis supporting their claim that the chemicals will have an impact greater than “small,” when the concentrations (at their most conservative) are below Federal drinking water standards. And they fail to explain how there is any increased environmental impact, when the same wastewater to be injected at Turkey Point would otherwise be injected into the Boulder Zone nine miles away at the South District Plant.

Instead, the Joint Intervenors simply contend that the FEIS relied on insufficient information. For example, the Joint Intervenors now emphasize that the NRC Staff should have performed a “seismic-reflection analysis,” because the NRC “must utilize ... the best available scientific information.”⁵ But the case which Joint Intervenors cite to support that statement does not contain the language that Joint Intervenors’ quote, and defers to agencies on “questions of scientific methodology,”⁶ such as Joint Intervenors’ demand for a seismic-reflection analysis. Indeed, agencies may “select their own methodology as long as that methodology is reasonable.”⁷ Moreover, it is well-established that NEPA does *not* require the NRC to use the

⁴ See generally Joint Intervenors’ Initial Written Statement of Position on NEPA Contention 2.1 (Inadequate Evaluation of Groundwater Impacts) (hereinafter “Joint Intervenors’ Initial Statement”).

⁵ Joint Intervenors’ Initial Statement at 6 (citing *Colorado Environmental Coalition v. Dombek*, 185 F.3d 1162, 1171-72 (10th Cir. 1999)).

⁶ *Colorado Envir. Coalition*, 185 F.3d at 1170.

⁷ *Entergy Nuclear Generation Co. (Pilgrim Nuclear Power Station)*, CLI-10-11, 71 NRC 287, 316 (2010) (footnote omitted).

“best scientific methodology.”⁸ An FEIS is not intended to be “a ‘research document,’ reflecting the frontiers of scientific methodology, studies, and data.”⁹ Although “there ‘will always be more data that could be gathered,’” agencies performing NEPA reviews “‘must have some discretion to draw the line and move forward with decisionmaking.’”¹⁰

Additionally, as Dr. Maliva and Mr. McNabb explain, a seismic-reflection analysis cannot determine if groundwater will flow through a confining unit, so it cannot be used to address the matters at issue here.¹¹ Moreover, Joint Intervenors have not shown that the constituents will cause a reasonably foreseeable environmental impact greater than “small.” In fact, Joint Intervenors’ only claim of potential environmental impacts consists of four or five paragraphs in Mr. Quarles’ Initial Testimony where, demonstrating a basic misunderstanding of the principles of toxicology, his entire opinion relies upon the incorrect claim that “[a]ny concentration of the constituents above zero could cause adverse impacts.”¹²

Joint Intervenors are simply asking for further study for the sake of further study, requesting additional tests that are outside industry norms, and raising unsupported allegations about phantom environmental impacts.¹³ In contrast, the evidence provided by FPL and the NRC Staff demonstrates that the NRC took the required “hard look” at the reasonably foreseeable environmental impacts at issue in Contention 2.1.

⁸ *Id.* at 315.

⁹ *Id.*

¹⁰ *Id.*

¹¹ See McNabb Rebuttal Testimony (FPL-060) at ¶ 16; Maliva Rebuttal Testimony (FPL-061) at ¶ 18.

¹² Prefiled Initial Testimony of Mark A. Quarles Regarding [sic] Joint Intervenors’ Contention 2.1 at A21 (hereinafter “Quarles Prefiled Initial Testimony”).

¹³ NEPA only requires a discussion of “reasonably foreseeable” impacts, excluding “remote and speculative” impacts or “worst-case” scenarios (*Private Fuel Storage L.L.C.* (Independent Spent Fuel Storage Installation), CLI-02-25, 56 NRC 340, 348-49 (2002)) that have no “credible mechanism” to occur (*see Public Service Electric & Gas Co.* (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 62 n.29 (1981)).

II. ARGUMENT

A. Joint Intervenors Have Failed to Show that the Four Constituents Will Have an Environmental Impact Greater than “Small.”

According to Joint Intervenors, “the FEIS lacks a valid technical basis for its assertion that injected wastewater is ‘extremely unlikely’ to migrate upwards into the drinking water aquifer, or cause environmental harm if it does reach the drinking water aquifer.”¹⁴ They further claim that “the wastewater to be injected into the Turkey Point site contains probable and possible human carcinogens, for which federal guidance recommends complete elimination from human drinking water.”¹⁵ Accordingly, they allege that the environmental impact of the wastewater injected at Turkey Point will be greater than “small.”

But Joint Intervenors fail to describe a reasonably foreseeable scenario to support their claim. As Dr. Maliva points out, there are many barriers that will prevent the four chemicals at issue in the wastewater from entering a potable water supply and causing a human health impact, including:¹⁶

- The confining strata between the injection zone and the Upper Floridan Aquifer;¹⁷
- Monitoring of the area around the injection wells;¹⁸
- The horizontal distance between the injection well site and the nearest potable water supply well;¹⁹
- The direction of groundwater flow;²⁰
- Dilution of the wastewater²¹ and the biodegradation of the chemical constituents;²²

¹⁴ Joint Intervenors’ Initial Statement at 2.

¹⁵ Joint Intervenors’ Initial Statement at 2.

¹⁶ Maliva Rebuttal Testimony (FPL-061) at ¶ 36.

¹⁷ Maliva Rebuttal Testimony (FPL-061) at ¶ 36.

¹⁸ McNabb Rebuttal Testimony (FPL-060) at ¶ 19.

¹⁹ Maliva Rebuttal Testimony (FPL-061) at ¶ 36.

²⁰ Maliva Rebuttal Testimony (FPL-061) at ¶ 36.

- The water treatment that occurs before the water is injected and after it is drawn from the Upper Floridan Aquifer;²³ and
- The minimal concentrations of the chemical constituents even before they are treated, biodegraded, and diluted.²⁴

Only *one* of these barriers is required to minimize the environmental impact of the chemicals at issue. But Joint Intervenors’ case—which provides no scientific bases for claiming that certain of these barriers will fail (and does not even discuss others)—depends on the failure of them all.

1. Contrary to Joint Intervenors’ Assertions, the Confining Unit at Turkey Point Will Prevent an Environmental Impact Greater than “Small.”

According to Joint Intervenors, the FEIS fails to establish an adequate confining unit at Turkey Point because: 1) the EW-1 test results show the absence of a confining unit; and 2) the FEIS improperly relies on “broad generalizations” and discounts prior experience from the Miami-Dade Water and Sewer Department’s South District Wastewater Treatment Plant (“South District Plant”). Both of these allegations are wrong.

a. The EW-1 Test Results Indicate an Adequate Confining Unit.

Joint Intervenors claim that the data and studies referenced in the FEIS “contradict, rather than support, NRC’s conclusion that vertical migration of contaminated injectate is extremely unlikely.”²⁵ Mr. Quarles, Joint Intervenors’ sole expert, states that the data from EW-1 does not support finding an effective confining unit because of low percent bedrock recovery, high

²¹ If wastewater were to somehow reach a potable water well, dilution “would be enormous,” since pumped wells draw water from all directions limiting the contribution from any contaminated source. Maliva Rebuttal Testimony (FPL-061) at ¶¶ 33, 36.

²² Maliva Rebuttal Testimony (FPL-061) at ¶ 36 (“[O]rganic chemicals undergo natural biodegradation in groundwater environments.”).

²³ Reverse osmosis desalination is required after water is drawn from the Upper Floridan Aquifer for potable use. Maliva Rebuttal Testimony (FPL-061) at ¶ 36.

²⁴ Teaf Rebuttal Testimony (FPL-062) at ¶ 7.

²⁵ Joint Intervenors’ Initial Statement at 16.

percent porosity, and the straddle packer test results.²⁶ Mr. Quarles also claims that the EW-1 report is “outdated and inadequate” because it is limited to data collected from a single well and suffers from other “methodological flaws” such as the use of pulverized drill cuttings.²⁷ However, as Dr. Maliva and Mr. McNabb—who, unlike Mr. Quarles, are licensed geologists in the State of Florida with decades of experience practicing in that State—establish, Mr. Quarles’ claims are baseless.

First, a low percent bedrock recovery has no bearing on the adequacy of a confining layer. As Dr. Maliva testifies, “core recovery has no relationship to the effectiveness of confining strata.”²⁸ “Percent recovery,” according to Mr. McNabb, “is a measure of the amount of rock core recovered versus the amount of cored interval, not ‘how much of the bedrock core sample from a specified sample interval actually contains bedrock rather than voids.’”²⁹ If there actually were voids, Dr. Maliva testifies that the voids would result in a bit drop during drilling (i.e., rapid fall of the drill string into the void) that would have been detected.³⁰ But such a bit drop did not occur during the EW-1 coring.³¹ Mr. McNabb agrees.³² Thus there are no voids in the bedrock at EW-1.

In addition, a high percent porosity is equally irrelevant to the confining unit’s adequacy. As Dr. Maliva testifies, Mr. Quarles’ claim in this regard “is false and contrary to basic hydrogeology. High porosity values do not indicate a high permeability and poor confinement. For example, clays have both high porosities and very low permeabilities, and can thus serve as

²⁶ Quarles Prefiled Initial Testimony at A10-A13.

²⁷ Quarles Prefiled Initial Testimony at A14.

²⁸ Maliva Rebuttal Testimony (FPL-061) at ¶ 14.

²⁹ McNabb Rebuttal Testimony (FPL-060) at ¶ 12.

³⁰ Maliva Rebuttal Testimony (FPL-061) at ¶ 14.

³¹ Maliva Rebuttal Testimony (FPL-061) at ¶ 14.

³² McNabb Direct Testimony (FPL-002) at ¶ 35.

highly effective confining units.”³³ Mr. McNabb shares that view, because “[r]ock with a relatively high porosity can have a low permeability if the individual pores within the rock are not interconnected.”³⁴ In fact, “[s]imulations *using actual porosity data* from EW-1 indicate that very effective confinement is likely present.”³⁵

Finally, as Mr. McNabb points out, contrary to Mr. Quarles’ testimony, the straddle packer test results “*conclusively* demonstrated the presence of the confining unit.”³⁶ Indeed, when the packers were able to seal against the borehole wall, thus isolating the test interval, confinement was clearly demonstrated.³⁷ The failure of a packer to isolate a test interval is an unrelated matter that could be due to multiple reasons,³⁸ such as an inflatable packer that is unable to fully seal against the borehole wall.³⁹

In summary, Mr. Quarles’ unsupported claims regarding the EW-1 test are based on many misinterpretations of the data collected during construction of that well.⁴⁰ His resulting conclusions are erroneous—neither low percent core recovery, high percent porosity, nor the straddle packer testing support a finding of insufficient confinement. Accordingly, Mr. Quarles has failed to demonstrate that the EW-1 test and its results are insufficient to support the FEIS’ conclusions at issue in Contention 2.1.

³³ Maliva Rebuttal Testimony (FPL-061) at ¶ 15.

³⁴ McNabb Rebuttal Testimony (FPL-060) at ¶ 13.

³⁵ Maliva Rebuttal Testimony (FPL-061) at ¶ 15 (emphasis added).

³⁶ McNabb Rebuttal Testimony (FPL-060) at ¶ 14 (emphasis added).

³⁷ McNabb Rebuttal Testimony (FPL-060) at ¶ 14.

³⁸ Maliva Rebuttal Testimony (FPL-061) at ¶ 16.

³⁹ McNabb Direct Testimony (FPL-002) at ¶ 37.

⁴⁰ See McNabb Rebuttal Testimony (FPL-060) at ¶¶ 9-14.

b. While Joint Intervenors Claim Otherwise, the NRC Staff Considered Sufficient Information to Determine that the Environmental Impact at Issue Is “Small.”

Joint Intervenors and Mr. Quarles repeatedly argue that the NRC Staff’s FEIS considered insufficient information by relying on the well data from EW-1. Their main concern appears to now be that a “seismic-reflection” analysis should have been performed.⁴¹ According to Mr. Quarles, “[i]t is inadequate to assume, based on testing of a single well,” that a sufficient confining unit exists.⁴² Rather, he asserts that FPL should have used a seismic-reflection analysis to study whether wastewater is likely to migrate into the USDW and that FPL’s failure to do so “is unjustifiable.”⁴³ Given such strong claims, one would think that multiple exploratory wells and seismic-reflection analysis are commonly used when siting deep-injection wells in Florida. But that is not the case.

The use of more than one exploratory well is unnecessary, and would be unprecedented. As Dr. Maliva testifies, “[d]ue to the multi-million dollar cost of drilling an exploratory well, no Class I injection well system in South Florida has *ever* had multiple exploratory wells.”⁴⁴ Mr. Quarles has not cited one example to the contrary, nor can he. Requiring FPL to conduct testing that has never been previously performed is clearly outside the scope of a NEPA analysis. An FEIS is not a research project.⁴⁵ NEPA does not require FPL to perform studies and analysis that

⁴¹ See Joint Intervenors’ Initial Statement at 2, 9-10, 15, 19; Quarles Prefiled Initial Testimony at A9, A15, A18.

⁴² Quarles Prefiled Initial Testimony at A14.

⁴³ Quarles Prefiled Initial Testimony at A14-15.

⁴⁴ Maliva Rebuttal Testimony (FPL-061) at ¶ 13 (emphasis added).

⁴⁵ See *Entergy Nuclear Generation Co.* (Pilgrim Nuclear Power Station), CLI-10-22, 72 NRC 202, 208 (2010).

are beyond the industry standard, for the sole purpose of accumulating additional data that may or may not be useful.⁴⁶

Furthermore, performing a seismic-reflection analysis would provide no relevant information relating to the matters at issue in Contention 2.1. A seismic-reflection analysis does not determine whether wastewater will migrate. As Dr. Maliva testifies, “[s]eismic-reflection surveys may indicate the presence of faults or other subsurface features, but not the likelihood of upward migration of water.”⁴⁷ He adds:

The existence of faults and other geologic features (e.g., folds and collapse structures), however, is not indicative of groundwater migrating upward. Such features could be more permeable, equally permeable, or less permeable than the adjacent un-impacted strata. Some faults are actually impermeable and act to seal off aquifers and hydrocarbon reservoirs. No inferences can be made on the vertical migration of water from the presence of subsurface faults and other geological features identified in seismic-reflection surveys.⁴⁸

Mr. Quarles points to the Cunningham articles in an attempt to link subsurface features identified at the South District Plant, via seismic-reflection analysis, with a compromised confining unit.⁴⁹ However, the mere presence of subsurface features does not indicate a compromised confining unit. In fact, some of the injection wells at the South District Plant were drilled through the identified features.⁵⁰ The geophysical log data from those wells shows “no evidence of widespread fracturing of the confining strata,” indicating that the confining unit was

⁴⁶ As Dr. Maliva notes, “[d]rilling additional exploratory wells would yield limited additional value.” Maliva Rebuttal Testimony (FPL-061) at ¶ 13.

⁴⁷ Maliva Rebuttal Testimony (FPL-061) at ¶ 18.

⁴⁸ Maliva Rebuttal Testimony (FPL-061) at ¶ 19.

⁴⁹ Quarles Prefiled Initial Testimony at A15.

⁵⁰ Maliva Rebuttal Testimony (FPL-061) at ¶ 22.

not compromised.⁵¹ Another wellfield shows similar results, with monitoring data indicating that structural features do not compromise the confining unit.⁵²

c. The FEIS Does Not Use “Broad Generalizations” to Support a Finding of Confinement.

Joint Intervenors also claim that “the FEIS incorrectly relies on broad generalizations about the ‘low-permeability’ of the ‘confining units’” and “incorrectly minimizes the significance of known instances of upward migration of contaminated wastewater in the area of the Turkey Point site.”⁵³ According to Joint Intervenors and Mr. Quarles,

The FEIS incorrectly attributes the known instances of vertical migration of contaminated wastewater to faulty wells, rather than geologic conduits such as faults and karst collapse structures. The studies on which the FEIS relies do not support this proposition. Instead, these studies acknowledge that geologic characteristics of a given site are just as likely to be the cause of vertical migration.⁵⁴

The FEIS, however, does not rely on “broad generalizations.” It relies on data taken directly from the Turkey Point site at EW-1, used to generate groundwater models that demonstrate sufficient confinement. As Dr. Maliva testifies, based on the actual data from EW-1 and his groundwater modeling, “there is a very low probability that upwards migration of wastewater could occur into the Upper Floridan Aquifer at Turkey Point.”⁵⁵ He cannot foresee “even a remotely plausible scenario whereby the injected wastewater at Turkey Point could contaminate the public potable (tap) water supply, posing an environmental risk.”⁵⁶

⁵¹ Maliva Rebuttal Testimony (FPL-061) at ¶ 22.

⁵² Maliva Rebuttal Testimony (FPL-061) at ¶ 23.

⁵³ Joint Intervenors’ Initial Statement at 19.

⁵⁴ Joint Intervenors’ Initial Statement at 20 (internal citations omitted).

⁵⁵ Maliva Rebuttal Testimony (FPL-061) at ¶ 17.

⁵⁶ Maliva Rebuttal Testimony (FPL-061) at ¶ 8.

Joint Intervenors rely heavily on wastewater migration that occurred at the South District Plant as evidence of what may happen at Turkey Point. They go so far as to claim that the experience at the South District Plant, which is 9 miles away from Turkey Point⁵⁷ and has different geology,⁵⁸ is a “known instance[] of upward migration of contaminated wastewater *in the area of the Turkey Point site.*”⁵⁹ On its face, this is clearly false.

Without support, Mr. Quarles also speculates that vertical migration at the South District Plant is due to the geological characteristics of the site, because fault and karst collapse structures could provide high permeability passageways for groundwater movement.⁶⁰ But as even Mr. Quarles acknowledges, “[t]he Walsh & Price study, for example, concluded that upward migration ‘*likely resulted from issues related to well installation or failure.*’”⁶¹ As Dr. Maliva testifies, the evidence from the South District Plant clearly suggests that the vertical fluid migration was most likely due to well construction issues, not faults or karst structures.⁶²

Moreover, as noted above, the mere presence of subsurface faults or other geologic features is not necessarily indicative that water will migrate vertically. Even at the South District Plant, where wells have been drilled through such subsurface features, there is no evidence showing that these faults allowed for the upward migration of water.⁶³ The South District Plant wells failed because they were constructed more than 25 years ago when backplugging of pilot

⁵⁷ See Jacobs Direct Testimony (FPL-001) at ¶ 10.

⁵⁸ Maliva Direct Testimony (FPL-003) at ¶ 59.

⁵⁹ Joint Intervenors’ Initial Statement at 19 (emphasis added).

⁶⁰ Quarles Prefiled Initial Testimony at A18.

⁶¹ Quarles Prefiled Initial Testimony at A28 (emphasis added).

⁶² Maliva Rebuttal Testimony (FPL-061) at ¶ 29.

⁶³ Maliva Rebuttal Testimony (FPL-061) at ¶ 22.

holes going through the confining unit did not take place.⁶⁴ Current construction techniques remove this risk.⁶⁵

Importantly, while some wastewater entered the lower USDW at the South District Plant, none of that wastewater contaminated an actual potable drinking water source.⁶⁶ In fact, in the entire history of wastewater injection in South Florida, water injected into the Boulder Zone has never migrated upward and entered a potable water supply well or a surface environment.⁶⁷ Mr. Quarles provides no examples to the contrary. Indeed, as Dr. Maliva testifies, “it would be nearly impossible for the injected wastewater to enter the public drinking supply and have any impact on public health.”⁶⁸ Ultimately, he concludes that the health risks would best be described as “infinitesimal or non-existent.”⁶⁹

For these reasons, Joint Intervenors’ claims regarding the confining unit’s inadequacies are easily dismissed. Consistent with standard industry practice, the EW-1 test and groundwater modeling are sufficient to demonstrate that there is a confining unit at Turkey Point. Joint Intervenors and Mr. Quarles have failed to establish that there is a plausible pathway for the wastewater to move through the confining zone, bypassing the first of the many barriers protecting the public health.

⁶⁴ See McNabb Rebuttal Testimony (FPL-060) at ¶ 21. Mr. Quarles’ claim that the well construction “process is risky,” (Quarles Prefiled Initial Testimony at A29) ignores improvements in modern well construction. McNabb Rebuttal Testimony (FPL-060) at ¶ 21.

⁶⁵ McNabb Rebuttal Testimony (FPL-060) at ¶ 21.

⁶⁶ Maliva Direct Testimony (FPL-003) at ¶ 57.

⁶⁷ See Maliva Direct Testimony (FPL-003) at ¶ 15.

⁶⁸ Maliva Direct Testimony (FPL-003) at ¶ 76.

⁶⁹ Maliva Rebuttal Testimony (FPL-061) at ¶ 37.

2. Contrary to Joint Intervenors' Assertions, Well Monitoring Will Provide Advance Notice of Upward Migration, Limiting the Environmental Impact to "Small."

Joint Intervenors have also failed to establish that the chemicals at issue will bypass monitoring wells without detection in the extremely unlikely event of wastewater migration. According to Joint Intervenors, the FEIS incorrectly determined that "the design and testing of the injection well will prevent any leaks, and the monitoring will identify any leaks before adverse impacts can occur."⁷⁰ This is based on a false assertion by Mr. Quarles that "FPL's groundwater monitoring of potential contamination in USDWs consist [sic] of quarterly or semi-annual sampling frequencies."⁷¹

As Mr. McNabb testifies, consistent with Florida Department of Environmental Protection requirements the groundwater sampling at Turkey Point will be weekly at first, and then monthly, while water level monitoring will be continuous:

As required under FDEP regulations, both monitor zones of the dual-zone monitor well will be sampled on a weekly basis for the first six months to two years of operation, after which the sampling frequency will be reduced to monthly. The frequent sampling, proximity of the monitor well to the injection well, along with continuous monitoring of the water level of both monitor zones will allow leaks to be detected by the monitoring wells.⁷²

Accordingly, Joint Intervenors and Mr. Quarles have not credibly challenged FPL's wastewater monitoring plan. This leaves in place yet one more barrier to protect the public health, in the extremely unlikely event that the wastewater would migrate upward through the confining unit.

⁷⁰ Joint Intervenors' Initial Statement at 20.

⁷¹ Quarles Prefiled Initial Testimony at A28.

⁷² McNabb Rebuttal Testimony (FPL-060) at ¶ 20 (internal citations omitted).

3. Contrary to Joint Intervenors' Assertions, the Four Chemicals in the Concentrations at Issue Will, at Most, Have an Environmental Impact of "Small."

Joint Intervenors also claim that the environmental impact of the four chemicals at issue will be greater than "small" because the FEIS relied on "the incorrect conclusion that there is a safe concentration of the constituents [sic] and any migration will sufficiently dilute the constituents to this low concentration."⁷³ According to Mr. Quarles, "[a]ny concentration of the constituents above zero could cause adverse impacts. The EPA's Maximum Contaminant Level Goal (MCLG) should have been used to determine whether the environmental impact of the constituents would be 'SMALL.'"⁷⁴ Expert testimony from FPL and the NRC Staff demonstrate that Mr. Quarles is simply wrong.

Mr. Quarles' claims prove his dearth of qualifications as a toxicologist.⁷⁵ As Dr. Teaf, a PhD in toxicology who has practiced in Florida for more than three decades testifies, "Mr. Quarles evidently does not understand a basic principle of toxicology, which is that the simple *presence* of an agent, including these four constituents, in an environmental medium such as water, is not sufficient to assess exposure or significance of exposure."⁷⁶ On the contrary, all chemicals are considered safe up to their MCLs.⁷⁷

The MCLGs of zero for heptachlor and tetrachloroethylene, on which Mr. Quarles focuses, are "health-based goal[s] set at a level at which no adverse health effects may arise, with

⁷³ Joint Intervenors' Initial Statement at 20.

⁷⁴ Quarles Prefiled Initial Testimony at A21.

⁷⁵ Nothing in Mr. Quarles' curriculum vitae indicates that he has professional training, education, or other clear qualifications in the field of toxicology. *See* Teaf Rebuttal Testimony (FPL-062) at ¶ 17.

⁷⁶ Teaf Rebuttal Testimony (FPL-062) at ¶ 8.

⁷⁷ Teaf Rebuttal Testimony (FPL-062) at ¶ 6 ("Concentrations of the four constituents equal to or less than MCL standards are considered safe for consumption in drinking water.").

a significant margin of safety.”⁷⁸ And the EPA understands that a goal of zero sometimes cannot be met by water systems because of technological limitations.⁷⁹ Thus, drinking water need not be absolutely free of those chemicals. Rather, as Dr. Teaf concludes, MCLs (not MCLGs) “protect the public health by limiting levels of contaminants in public drinking water.”⁸⁰ Dr. Teaf adds:

The simple existence of an MCLG is not an indicator that such a number must, or even should, be used as a unique benchmark for environmental impact. On the contrary, the fact that the four constituents exist at concentrations below their respective federal drinking water standards, and thus would be permitted in any federally regulated drinking water supply, represents the functional definition of a “small” impact.⁸¹

Indeed, Mr. Quarles’ claim that MCLGs should be used to determine the health impacts of the constituents “discloses a fundamental unfamiliarity” with the process of human risk assessment.⁸² According to Dr. Teaf, the use of just MCLGs to determine environmental impact “is completely inconsistent with how qualified professionals in the human health risk assessment field make such determinations.”⁸³ After all, MCLGs are highly conservative values with a large margin of safety, not an indicator of a meaningful human health risk.⁸⁴ Instead, Mr. Quarles should have reviewed the scholarly literature to identify the level at which some health impacts may occur, as Dr. Teaf did. For heptachlor, that level is more than 49,500 times greater than the dose that would occur from exposure to the quantity identified in FEIS Table 3-5.⁸⁵ For

⁷⁸ Teaf Rebuttal Testimony (FPL-062) at ¶ 10.

⁷⁹ Teaf Rebuttal Testimony (FPL-062) at ¶¶ 10, 12; *see also* Teaf Direct Testimony (FPL-004) at ¶ 20.

⁸⁰ Teaf Rebuttal Testimony (FPL-062) at ¶ 12.

⁸¹ Teaf Rebuttal Testimony (FPL-062) at ¶ 13.

⁸² Teaf Rebuttal Testimony (FPL-062) at ¶ 13.

⁸³ Teaf Rebuttal Testimony (FPL-062) at ¶ 13.

⁸⁴ Teaf Rebuttal Testimony (FPL-062) at ¶ 13.

⁸⁵ Teaf Direct Testimony (FPL-004) at ¶ 19.

tetrachloroethylene, that level is nearly 2,800 times greater than the dose that would occur from exposure to the quantity identified in FEIS Table 3-5.⁸⁶

While Mr. Quarles and Joint Intervenors rely, improperly, on the MCLGs to claim that heptachlor and tetrachloroethylene would have an adverse impact on drinking water, they make no case at all for the adverse impact of toluene and ethylbenzene. At most, Mr. Quarles claims that ethylbenzene is a “possible human carcinogen.”⁸⁷ He does not establish any negative impacts from ethylbenzene, particularly given that it was not detected in any water samples representative of the wastewater to be injected at Turkey Point.⁸⁸ Mr. Quarles barely mentions toluene, let alone establishes any negative impacts from the chemical. He also ignores the MCLGs for ethylbenzene and toluene (0.7 mg/L and 1 mg/L, respectively⁸⁹), which are far greater than the quantities in Table 3-5 of the FEIS (not detected and 0.00174 mg/L, respectively⁹⁰).

Nothing in Mr. Quarles’ testimony shows that any of the four chemicals of interest, at the concentrations listed in Table 3-5 of the FEIS, will have an adverse impact on human health when injected into the Boulder Zone or in drinking water. On the contrary, as Dr. Teaf testified, these chemicals will have “no detectable impact” with regard to human health, “even if the wastewater is directly injected into the drinking water or the UFA, much less if it is injected into the Boulder Zone as proposed by FPL.”⁹¹

⁸⁶ Teaf Direct Testimony (FPL-004) at ¶ 28.

⁸⁷ Quarles Prefiled Initial Testimony at A21.

⁸⁸ See e.g., NRC-008A Table 3-5 (FEIS); Teaf Direct Testimony (FPL-004) at Table 1.

⁸⁹ Teaf Rebuttal Testimony (FPL-062) at ¶ 11.

⁹⁰ See e.g., NRC-008A Table 3-5 (FEIS); Teaf Direct Testimony (FPL-004) at Table 1.

⁹¹ Teaf Direct Testimony (FPL-004) at ¶ 15.

4. The FEIS Correctly Characterized the Impact from the Four Constituents as “Small.”

For the reasons set forth above, the Joint Intervenors have failed to demonstrate that environmental impacts from the four constituents in the concentrations at issue will be anything other than “small.” Their arguments that the confining unit will be inadequate are based on a false interpretation of the EW-1 data, an improper use of the experience at the South District Plant, and an apparent misunderstanding of well construction methods and monitoring frequency. Joint Intervenors’ arguments that there will be an environmental impact from the four chemicals are even sparser, lacking qualified expert testimony in support, focusing on inapplicable guidelines, and failing to address half the chemicals at issue. The adequate confining unit, well monitoring, and the “small” amount of the four chemicals will each provide an adequate barrier to protect the public health, creating an environmental impact that is, at most, “small.” Additionally, the other barriers listed above, including horizontal separation, groundwater flow, and dilution will serve to further prevent any potential environmental impact.

III. CONCLUSION

For the reasons set forth above, in FPL’s direct case, and in the direct case presented by the NRC Staff, the FEIS satisfies the Commission’s obligations under NEPA and correctly concludes that the environmental impacts at issue in Contention 2.1 are “small.” Nothing in the Joint Intervenors’ or the City of Miami’s filings demonstrates otherwise.

Respectfully submitted,

/Signed electronically by Anne R. Leidich/

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