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)	)	

STATEMENT OF MATERIAL FACTS AS TO WHICH NO GENUINE ISSUE EXISTS, IN SUPPORT OF FLORIDA POWER & LIGHT COMPANY'S MOTION FOR SUMMARY DISPOSITION OF JOINT INTERVENORS' AMENDED CONTENTION 2.1

Applicant Florida Power & Light Company ("FPL") provides, in support of its Motion for Summary Disposition of Amended Contention 2.1 submitted by intervenors Mark Oncavage, Dan Kipnis, Southern Alliance for Clean Energy, and National Parks Conservation Association ("Joint Intervenors"), this Statement of Material Facts as to which FPL contends there is no genuine issue to be heard.

1. In June 2009, FPL submitted to the U.S. Nuclear Regulatory Commission ("NRC") its application ("Application") for a combined license for two AP1000 pressurized water nuclear reactors, to be known as Turkey Point Units 6 and 7 ("Turkey Point"). 74 Fed. Reg. 38,477 (Aug. 3, 2009).

2. FPL proposes to use a Class I deep well injection system for disposing of non-hazardous operational industrial wastewater from Turkey Point. McNabb Decl. at ¶8.

3. The proposed deep well injection system will consist of 12 or 13 Class I deep injection wells and 6 or 7 dual zone monitor wells. *Id.* at ¶9.

4. Wastewater from the operation of Units 6 & 7 will be pumped from the pumping facility through a pipeline to the injection wells, which will inject the wastewater into the "Boulder Zone" at depths between approximately 2,900 and 3,500 feet (more than a half mile) below land surface. *Id.*

5. On September 4, 2009, the NRC Staff ("Staff") accepted the Application for docketing. 74 Fed. Reg. 51,621 (Oct. 7, 2009).

6. Om August 17, 2010, the Joint Intervenors filed a timely petition to intervene. Joint Petitioners' Petition for Intervention (Aug. 17, 2010).

7. The Atomic Safety and Licensing Board herein ("Board") admitted for litigation a portion of one of Joint Intervenors' proposed contentions, identified as NEPA Contention 2.1 ("Contention 2.1"), which challenged the omission of ethylbenzene, heptachlor, tetrachloroethylene, and toluene (the "Constituents") from the Turkey Point Environmental Report ("ER") Table 3.6.2. *Florida Power & Light Co.* (Turkey Points Units 6 and 7), LBP-11-6, 73 N.R.C. 149, 187 (Feb. 28, 2011).

8. On December 16, 2011, FPL submitted to the NRC Revision 3 of its Application. Letter from M. Nazar to NRC Document Control Desk, "Submittal of the Annual Update of the COL Application - Revision 3" (Dec. 16, 2011) (ADAMS Accession No. ML11361A102). That revision included, *inter alia*, an amended ER Table 3.6.2. ER, Chapter 3: Plant Description (Rev. 3)**,** ADAMS Accession No. ML11362A163, at 3.6-7 ("ER Rev. 3 Table 3.6.2"), which included the chemical concentrations for the Constituents. The concentration for ethylbenzene was subsequently revised in ER

Revision 4 submitted in December 2012. ER, Chapter 3: Plant Description (Rev. 4), ADAMS Accession No. ML13008A501, at 3.6-7.

9. Following a number of further submittals by the parties, on August 30, 2012 the Board reformulated Contention 2.1 to allege that:

> The ER is deficient in concluding that the environmental impacts from FPL's proposed deep injection wells will be "small" because the chemical concentrations in ER Rev. 3 Table 3.6-2 for ethylbenzene, heptachlor, tetrachloroethylene, and toluene may be inaccurate and unreliable. Accurate and reliable calculations of the concentrations of those chemicals in the wastewater are necessary so it might reasonably be concluded that those chemicals will not adversely migrate from the Boulder Zone to the Upper Floridan Aquifer.

Memorandum and Order (Granting In Part and Denying in Part Motion for Summary Disposition of Amended Contention 2.1) (Aug. 30, 2012) at 2-3 ("August 30, 2012 Memorandum and Order").

10. In February 2015, the NRC published its draft Environmental Impact Statement for Combined Licenses (COLs) for Turkey Point Nuclear Plant Units 6 and 7, NUREG-2176 (the "DEIS").

11. The DEIS includes the same data for the Constituents that FPL provided in December 2012 in ER Table 3.6-2. *See* DEIS Table 3-5.

12. The data in ER Table 3.6-2, and DEIS Table 3.5-2, for the Constituent concentrations is based on the concentrations for those Constituents taken from testing for the years 2007 through 2011 performed by the South District Wastewater Treatment Plant ("SDWWTP"), the operator of the system from where the reclaimed water will originate.

13. FPL selected as the source data for ER Table 3.6-2 the highest concentration of each of the Constituents found in SDWWTP's reports, which FPL then increased by evaluating the path of the reclaimed water throughout its use in the Turkey Point units and accounting for the effects of concentration in the cooling system and dilution from other sources that combine with the reclaimed water. Declaration of David M. Wagner in Support of Florida Power & Light's Motion for Summary Disposition of Joint Intervenors' Amended Contention 2.1 ("Wagner Decl.") at ¶¶6-7 attached to FPL Motion for Summary Disposition of Joint Intervenors' Amended Contention 2.1, dated July 19, 2012 at 8 ("FPL July 2012 Motion").

14. Subsequent to the data collection relied on for the Constituent concentrations in the ER and the DEIS, the SDWWTP implemented a number of improvements to its water treatment processes, including enhanced filtration and additional chlorination disinfection as required by 62-610, F.A.C., Reuse of Reclaimed Water and Land Application. Powell Report at p. 3; DEIS at 5-87.

15. FPL hired PACE Analytical Services, Inc. ("PACE") to perform additional sampling of the reclaimed water at the SDWWTP. Helton Decl. at ¶7.

16. The PACE facilities that performed the sampling campaign are State of Florida certified laboratories, and the sampling and testing were performed in accordance with FDEP procedures. *Id.* at ¶¶ 10-38.

17. In each of the four quarters from April 2013 through March 2014, PACE took samples of the reclaimed water from two locations at the SDWWTP for a total of eight measurements. *Id.* at ¶13.

18. PACE collected "grab samples" to test for the three volatile Constituents (ethylbenzene, tetrachloroethylene (also known as tetrachloroethene), and toluene) -- using EPA Method 624. *Id.* at ¶15.

19. EPA Method 624 is an approved method for measuring the three volatile constituents. *Id.* at ¶21.

20. EPA Method 624 is incorporated into PACE's Standard Operating Procedure. *Id.* at ¶15, 22.

21. PACE collected 24-hour flow-based composite samples to test for heptachlor during each sampling event, using an automated sampler machine and EPA Method 608, which is an approved method for measuring heptachlor. *Id.* at ¶30.

22. PACE's sampling protocol was reasonable, and was consistent with industry practice and applicable regulations. *Id.* at ¶40; Powell Report at p. 3.

23. The number of samples taken in PACE's campaign provided an accurate representation of the future reclaimed water that the SDWWTP will supply to Turkey Point. Powell Report at p. 4.

24. PACE's sampling was sufficient to capture the potential seasonal variability of the reclaimed water. *Id.*

25. None of the four Constituents was found in any of PACE's sampling events above their method detection limit. Helton Decl. at ¶38.

26. The Constituent concentrations derived from the SDWWTP reports completed from 2007 to 2011 are extremely conservative. *Id.* at ¶40.

27. PACE's sampling results are expected for a number of reasons. First, heptachlor has not been used in the United States for almost 30 years. Powell Report at pp. 4-5.

28. Only one of the prior SDWWTP reports from 2007 to 2011 detected heptachlor, and that measurement was below the applicable method detection limit. *Id.* at 5.

29. Second, the most likely users of the Constituents other than heptachlor are industrial users who would be subject to the federally-mandated Industrial Wastewater Pretreatment Program. *Id.*

30. Under that program, such industrial users must obtain permits before discharging wastewater into the SDWWTP. *Id.*

31. The application process for obtaining a permit to discharge wastewater into the SDWWTP requires the industrial user to describe the program that it will use to pretreat discharges that could potentially contain the Constituents prior to discharging to the SDWWTP. *Id.*

32. The issuance of the permit to discharge wastewater into the SDWWTP subjects the industrial user's facility to monitoring and reporting requirements as well as to periodic unannounced inspections. *Id*.

33. There is reasonable assurance the SDWWTP itself has the capability to effectively treat the domestic and industrial wastewater that it receives. *Id.*

34. The FDEP permit issued to the SDWWTP requires daily monitoring of effluent concentrations of conventional pollutants, which would reveal whether the treatment system is operating properly. *Id*. at 6.

35. If the system is not operating properly, the reclaimed water cannot be provided to Turkey Point, since the SDWWTP is obligated to provide reclaimed water meeting certain specifications. *Id.*

36. In addition to treatment by industrial users and the SDWWTP, the reclaimed water will be further treated at Turkey Point's reclaimed water treatment facility, which will further remove any of the remaining Constituents should they be present. *Id.*

37. The calculation of the Constituent concentrations in the ER and the DEIS do not account for such additional treatment of the reclaimed water in the Turkey Point reclaimed water treatment facility. *Id.* at 7.

38. The calculation of the Constituent concentrations in the ER and DEIS "cycled up" the already high values of the Constituents, including the three volatile constituents - toluene, ethylbenzene, and tetrachloroethylene -- the opposite of what actually happens to volatile constituents as they pass through the cooling tower in the circulating water system. *Id.* at 7.

39. Instead of concentrating or cycling up the volatiles, the warmer water of the circulating water system tends to expel or volatize the volatile constituents. *Id.* at 7.

40. The Turkey Point circulating water system includes three mechanical draft cooling towers, which act as "air strippers" to remove the volatile compounds. *Id.* at 7-8.

41. For the reasons set forth in paragraphs 13-40, the Constituent concentrations appearing in the ER and DEIS are conservative and reliable. Helton at ¶41; Powell Report at pp. 9-10.

42. The DEIS concluded that the environmental impact from deep well injection would be SMALL. DEIS at 5-29. The Constituent concentrations presented in the ER and DEIS are irrelevant to this conclusion, because (1) the injectate will be confined within the Boulder Zone; (2) the injection wells' design and testing are highly regulated to prevent leaks; and (3) the state of Florida requires that the injection wells be monitored to ensure they are functioning properly during operation. DEIS at § 2.3.1.2 at p. 2-55; § 5.2.13, p 5-18, § 5.2.3, p 5-29.

43. The Florida Department of Environmental Protection ("FDEP") administers an underground injection control program ("UIC") under which deep injection wells in Florida, including those contemplated at Turkey Point, are permitted. McNabb at ¶8.

44. The primary objective of the UIC program is to protect the Underground Source of Drinking Water ("USDW"). *Id.*

45. The FDEP has comprehensive and detailed regulations requiring that an applicant for a Class I injection well demonstrate that the hydrogeologic environment is suitable for wastewater injection. DEIS at pp. 3-36, 4-26, 5-6; FAC 62-528.405(1)(a).

46. FDEP regulations require that the applicant demonstrate there is a confining zone with sufficient areal extent, thickness, lithological, and hydraulic characteristics to prevent

fluid migration into underground sources of drinking water. McNabb at ¶11; FAC 62-528.405(2)(a).

47. The FDEP has permitted approximately 180 Class I injection wells for injection of municipal and industrial wastewater into the Boulder Zone of the Florida aquifer system. DEIS at 2-59. Thus, a number of studies have evaluated the fluid movement within the Boulder Zone. DEIS at p. 2-54.

48. The subsurface geology in the vicinity of the Turkey Point site consists of three main hydrogeologic units: the Biscayne Aquifer, the Intermediate Confining Unit, and the Floridan Aquifer System. DEIS Section 2.3.1.2 and 2.8; DEIS Figures 2-17 and 2-40; McNabb Decl. at ¶¶ 20-29.

49. In south Florida, the Floridan Aquifer System is subdivided into three general hydrogeologic units – the Upper Floridan Aquifer, the middle Floridan Aquifer (also known as the Middle Floridan Confining Unit), and the Lower Floridan Aquifer. DEIS §2.3.1.2 and Fig. 2-17; DEIS §2.8 and Fig. 2-40. McNabb Decl. at ¶23.

50. The Boulder Zone is within the Lower Floridan Aquifer. McNabb Decl. at ¶27.

51. FPL constructed an exploratory well, EW-1, to evaluate the site hydrogeology at Turkey Point and confirm the presence of an injection zone and appropriate confining intervals. *Id.* at ¶14.

52. FPL performed a testing and sampling program during the construction of its well EW-1. *Id.* at ¶15.

53. The EW-1 testing program included collection of drill cutting rock samples and rock cores. McNabb Decl.at ¶¶16-19; Ex. 8 at pp. 16 -22.

54. The EW-1 testing program included collection of water samples. McNabb Decl. at ¶16; Ex. 8 pp. 16-17.

55. A formation test was performed to confirm the presence of the injection zone. McNabb Decl. at ¶18; Ex. 8 at pp. 19-22.

56. The data collected during the EW-1 testing confirmed the subsurface geology in the vicinity of the Turkey Point site. McNabb Decl. at ¶¶20-27.

57. The data collected during the EW-1 testing confirmed the existence of the Middle Floridan Confining Unit. McNabb Decl. at ¶25; DEIS at pp. 2-54 to 2-56.

58. The Middle Floridan Confining Unit is characterized by the existence of fine grained and less permeable limestone, dolomitic limestone, and dolomite, which act as a barrier preventing fluids that are injected below the interval from escaping the injection zone. McNabb Decl. at ¶27; DEIS at p. 5-28.

59. The data collected during the EW-1 testing showed confinement at the Turkey Point site over the interval from approximately 1930 to 2915 feet, or a 985 feet thick confining unit. McNabb Decl. at at ¶26; Ex. 8 at 29; DEIS §2.3.1.2 and Fig. 2-17; DEIS §2.8 and Fig. 2-40.

60. The results from the data collected during the EW-1 testing are consistent with a regional study of the Floridan Aquifer System. DEIS at p. 2-54.

61. The data collected during the EW-1 testing confirmed that, at the Turkey Point site, the Boulder Zone is an adequate injection zone. McNabb at ¶24; Ex. 8 at 15; DEIS §2.3.1.2 and Fig. 2-17; DEIS §2.8 and Fig. 2-40.

62. The NRC's DEIS review team completed an independent review of the groundwater hydrology, including the aquifer system underlying the Turkey Point site. DEIS Section 2.3.1.2 and Figure 2-17, *see also* DEIS Section 2.8 and Figure 2-40.

63. The DEIS review team reviewed multiple studies of the region where Turkey Point will be located. *See e.g*. DEIS at p. 2-47 *citing* the U.S. Geological Survey (USGS) Ground Water Atlas of the United States: Alabama, Florida, Georgia, and South Carolina, J.A. Miller (1990); *Synthesis of the Hydrogeologic Framework of the Floridan Aquifer System and Delineation of a Major Avon Park Permeable Zone in Central and Southern Florida by* R. S. Reese and E. Richardson ("Reese and Richardson Study") U.S. Geological Survey Scientific Investigations Report 2007-5207 (2008).

64. The DEIS review team reviewed the site specific results obtained during EW-1 construction. DEIS at p. 2-47.

65. The DEIS review team concluded that the site specific studies of the Floridan Aquifer System were consistent with regional studies. DEIS at p. 2-54; *See also* DEIS at pp. 2-56 through 257 (reviewing the hydraulic properties of the Floridan Aquifer System at Turkey Point).

66. The DEIS review team found that FPL's identification of a confining unit (at a depth of between 1930 ft to 2915ft) is consistent with a regional study of the Floridan Aquifer System performed by Reese and Richardson. DEIS at p. 2-54.

67. The DEIS identifies and evaluates prior incidences where injected wastewater apparently migrated from the Boulder Zone, including all the instances cited by Joint Intervenors in support of Contention 2.1. *See* DEIS at pp. 2-54 through2-56 and 5-18.

68. The DEIS identifies and evaluates an example where wastewater migrated from the Boulder Zone to the uppermost permeable zone within the Lower Floridan Aquifer at an injection well operated by the City of Sunrise, approximately 60 miles north of the Turkey Point site. DEIS at p. 2-54.

69. The DEIS cites to upward migration of treated municipal wastewater injected into the Boulder Zone at the Miami-Dade SDWWTP, which is 12 miles north of the proposed Turkey Point site. DEIS at p 2-55.

70. The DEIS concludes that "enhanced vertical flow through the confining units to the Upper Floridan aquifer is extremely unlikely." DEIS at p. 5-18.

71. The DEIS's conclusion that vertical flow through the confining units is unlikely was based on the results of the EW-1 construction and testing, which did not reveal the presence of enhanced vertical flow paths from construction or natural vertical pathways, as well as a lack of evidence indicating "karst collapse structures." DEIS at p. 5-18.

72. The NRC requested that FPL perform groundwater analysis of three hypothetical exposure scenarios. DEIS at pp. 5-17 to 18, G-4.

73. The NRC reviewed these analyses and performed its own independent analyses confirming FPL's results, which are disclosed in the DEIS. DEIS at pp. 5-17 to 18.

74. FDEP's regulations also provide general design considerations for injection wells to prevent movement of fluids into or between underground sources of drinking water, and to maintain the ground water quality in the aquifers above the injection zone. FAC 62-528.410.

75. Prior to constructing EW-1, FPL sought and received a permit from FDEP. McNabb Decl. at ¶14; Appendix A to Ex. 8.

76. To receive the permit to construct EW-1, FPL submitted an application demonstrating that the design and construction of the EW-1 met the requirements in FAC 62-528. McNabb Decl. at ¶45.

77. The design of EW-1 includes multiple concentric steal casings with all casings fully encased except the final 24-inch casing, which was only cemented on the outside. McNabb Decl. at ¶46.

78. The design of EW-1 also includes the following characteristics: a fiberglass reinforced plastic injection line was installed inside the 24 inch casing and was sealed at the base of the casing; the annular space between the 24 inch casing and the liner was filled with corrosion inhibiter to protect the casing from corrosion; and each casing was cemented from the base of the casing to land surface to prevent movement of fluids into or between the underground source of drinking water, maintain groundwater quality in aquifers above the injection zone, and protect casings from corrosion. *Id.*

79. The Turkey Point injection well design will be similar to EW-1. *Id.* at ¶47.

80. In addition to the data collection during well construction, injection testing on EW-1 required by the FDEP demonstrated: (1) the injection zone's ability to accept water at the intended injection rate; and (2) the absence of fluid connections from the injection zone through the confinement into the zones monitored. McNabb at ¶35; Ex. 8 at 15.

81. The injection testing performed on EW-1 is required for each of the Turkey Point injection wells prior to placing the wells into service. McNabb at ¶35.

82. The FDEP's UIC program regulations require that the operator of a Class I injection system (such as will be used at Turkey Point) install and utilize monitor wells above the injection zone near an injection well to monitor for the absence of fluid movement adjacent to the well bore and the long term effectiveness of the confining unit. FAC 62-528.425(g); DEIS at p. 5-30.

83. FPL will rely on dual-zone monitor wells to meet UIC program regulations for Turkey Point. McNabb Decl. at ¶38; DEIS at p. 5-30.

84. The design of dual-zone monitor wells, and FDEP sampling requirements, provide for an early warning system, allowing detection of any upward fluid movement before drinking water is impacted. McNabb Decl. at ¶¶37-38, FAC 62-528.425(1)(g)(4).

85. If fluid migration is identified by the monitoring program, FDEP regulations require FPL to take remedial action. McNabb Decl. at ¶¶40-43.

86. FDEP requires the wells to be continuously monitored and tested to ensure they are mechanically sound and are not leaking. FAC 62-528.425(1)(b); *See* McNabb Decl. at ¶47.

87. The FDEP requires that each Class I injection well undergo mechanical integrity testing a minimum of every five years. McNabb Decl. at ¶49; FAC 62-528.425(1)(d).

88. The injection well permits must be renewed every five years; therefore, at least every five years the FDEP will review FPL's injection system operating data to determine if the injection well system is operating in accordance with application regulations. FAC 62-528.440(3); McNabb Decl. at ¶50.

89. FPL submitted to the DEIS review team its "FPL Turkey Point Power Plant, Deep Injection Well System, Proposed Monitoring Program" as input to the NRC Staff's environmental review. *See* Enclosure to Letter from W. Maher to USNRC, re: Florida Power & Light Company Proposed Turkey Point Units 6 and 7, Response to NRC Request for Additional Information Letter 1107271 (RAI 5767 Revision 2) Related to ESRP Section 5.2 – Water Related Impacts, dated September 12, 2011 (Available at ADAMS Accession No. ML11257A133).

90. The DEIS review team reviewed the monitoring program required for the FDEP permits, and concluded that in the extremely unlikely event that migration occurred "the impacts of upward migration that could occur before detection would be minor." DEIS at pp. 5-29 through 5-30.