

May 11, 2017

L-2017-083
10 CFR 50.36b



U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555-00001

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
2016 Annual Radiological
Environmental Operating Report

Enclosed is the 2016 Annual Radiological Environmental Operating Report for Turkey Point Units 3 and 4, as required by Technical Specification 6.9.1.3.

Should there be any questions or comments regarding this information, please contact Mr. Mitch Guth, Licensing Manager, at (305) 246-6698.

Sincerely,

A handwritten signature in black ink, appearing to read 'Thomas Summers', with a long horizontal line extending to the right.

Thomas Summers
Regional Vice President, Southern Region
Turkey Point Nuclear Plant

SM
Enclosure

cc: Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

2016

ANNUAL

RADIOLOGICAL ENVIRONMENTAL

OPERATING REPORT

TURKEY POINT PLANT

UNITS 3 & 4

LICENSE NO. DPR-31, DPR-41

DOCKET NOS. 50-250, 50-251

**2016
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT- UNITS 3 & 4**

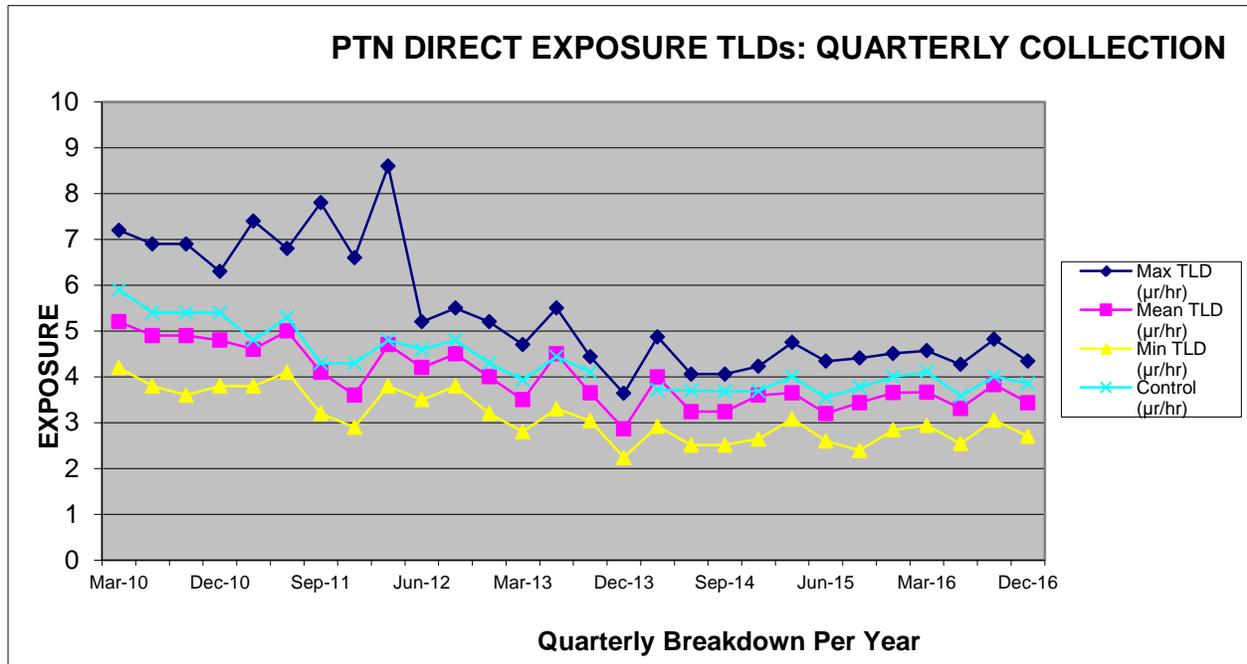
TABLE OF CONTENTS

<u>DESCRIPTION</u>	<u>PAGE</u>
Table of Contents	2
Executive Summary/Program Description	3-6
Discussion and Interpretation of Results	7-8
Environmental Radiological Monitoring Program Annual Analysis Summary	9-17
Deviations / Missing Data	18-19
Land Use Census	20-25
Key to Sample Locations	ATTACHMENT A 26-32
Radiological Surveillance of Florida Power and Light Company's Turkey Point Site	ATTACHMENT B 33
First Quarter, 2016	34-48
Second Quarter, 2016	49-62
Third Quarter, 2016	63-76
Fourth Quarter, 2016	77-90
Results from the Interlaboratory Comparison Program, 2016 ATTACHMENT C	91-95
Ground Water Protection, Industry Initiative	ATTACHMENT D 96-100
ERRATA Data Section- 2015 Report	ATTACHMENT E 101-102

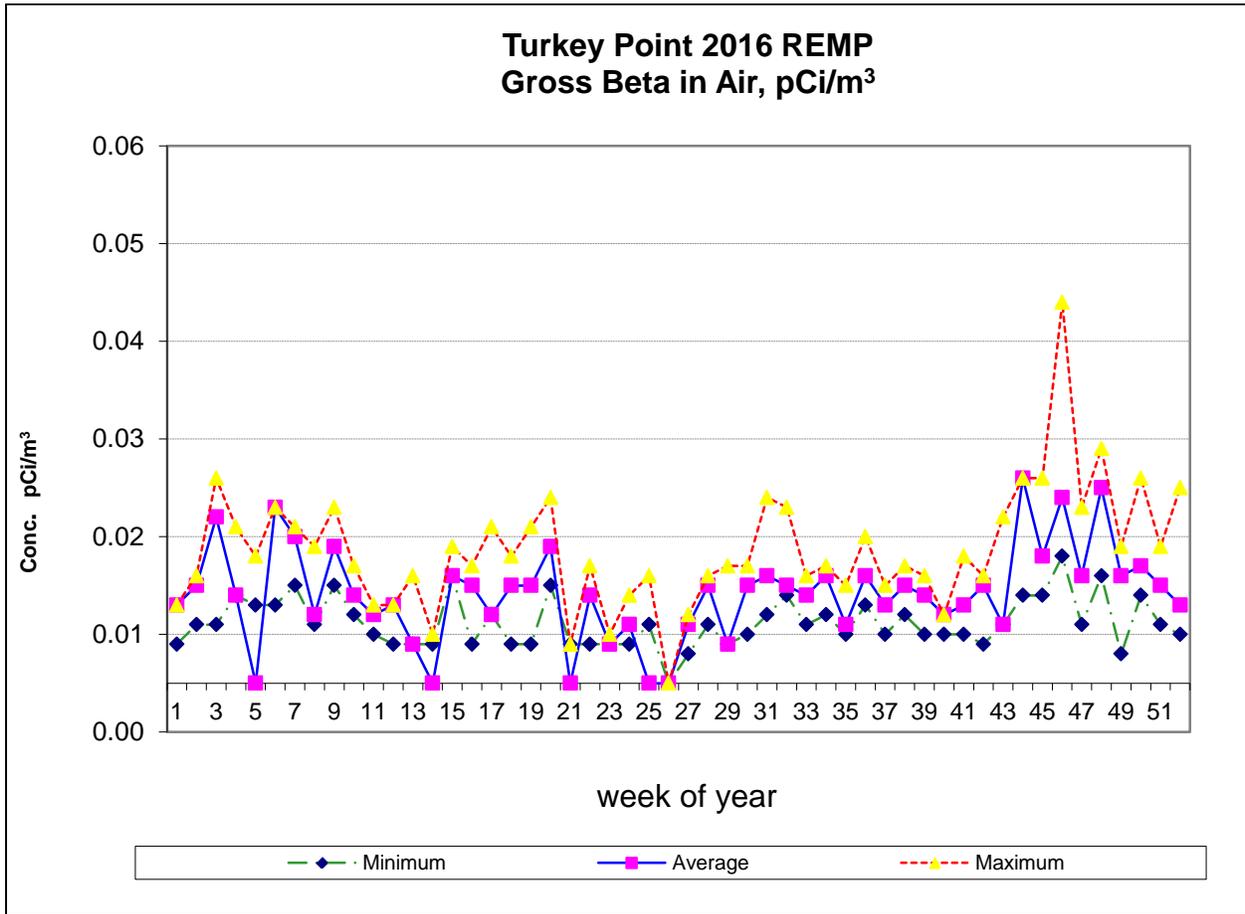
2016
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT- UNITS 3 & 4

EXECUTIVE SUMMARY

The data obtained through the Turkey Point Radiological Environmental Monitoring Program (REMP) verifies that the levels of radiation and concentrations of radioactive materials in environmental samples are not increasing. These measurements verify that the dose or dose commitment to members of the public, due to operation of Turkey Point Units 3 & 4, during the surveillance year, is well within the limits established by 10 CFR 50, Appendix I. The sampling period was from January 1, 2016 to December 31, 2016. Additionally, supplemental samples collected by the State of Florida, DOH, do not indicate adverse trends in the radiological environment.



**2016
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT- UNITS 3 & 4**



I. INTRODUCTION

This report is submitted pursuant to Specification 6.9.1.3 of Turkey Point Units 3 & 4 Technical Specifications. The Annual Radiological Environmental Operating Report provides information, summaries and analytical results pertaining to the Radiological Environmental Monitoring Program for the calendar year indicated. This report covers surveillance activities described in the Offsite Dose Calculation Manual (ODCM) meeting the requirements of Unit 3 and Unit 4 Technical Specifications.

II. RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

A. Purpose

The purpose of the Radiological Environmental Monitoring Program is to provide representative measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides which lead to the highest potential radiation exposures of members of the public resulting from station operation. The Radiological Environmental Monitoring Program also supplements the radiological effluent monitoring program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and the modeling of the environmental exposure pathways.

2016
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT- UNITS 3 & 4

B. Program Description

The Radiological Environmental Monitoring Program for the Turkey Point Plant is conducted pursuant to Control 5.1 of Turkey Point Unit 3 & 4 ODCM.

1. Sample Locations, Types and Frequencies:

- a. Direct radiation gamma exposure rate is monitored continuously at 23 locations by thermoluminescent dosimeters (TLDs). TLDs are collected and analyzed quarterly.
- b. Airborne radioiodine and particulate samplers are operated continuously at six locations. Samples are collected and analyzed weekly. Analyses include Iodine-131, gross beta, and gamma isotopic measurements.
- c. Surface water samples are collected from three locations. Samples are collected and analyzed monthly. Analyses include gamma isotopic and tritium measurements.
- d. Shoreline sediment samples are collected from three locations coinciding with the locations for surface water samples. Samples are collected and analyzed semi-annually. Sediment samples are analyzed by gamma isotopic measurements.
- e. Fish and invertebrate samples are collected from two locations coinciding with two of the locations for surface water samples. Samples are collected and analyzed semi-annually. Fish and invertebrate samples are analyzed by gamma isotopic measurements.
- f. Broad leaf vegetation samples are collected from three locations. Samples are collected and analyzed monthly. Broad leaf vegetation samples are analyzed by gamma isotopic measurements.

Attachment A provides specific information pertaining to sample locations, types and frequencies.

Note: Ground Water Protection, NEI Initiative: The program and results are described in Attachment D.

2. Analytical Responsibility:

Radiological environmental monitoring for the Turkey Point Plant is conducted by the State of Florida, Department of Health (DOH). Samples are collected and analyzed by DOH personnel.

Samples are analyzed at the DOH Environmental Radiation Control Laboratory in Orlando, Florida.

Note: The State is not involved in the (Industry Initiative) ground water monitoring program.

C. Analytical Results

Table 1, Environmental Radiological Monitoring Program Annual Summary provides a summary for all specified samples collected during the referenced surveillance period. Deviations from the sample schedule, missing data and/or samples not meeting the specified "A PRIORI" LLD, if any, are noted and explained in Tables 1A and 1B respectively. Analysis data for all specified samples analyzed during the surveillance period is provided in Attachment B.

2016
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT- UNITS 3 & 4

D. Land Use Census

A land use census out to a distance of 5 miles radius from the Turkey Point Plant is conducted annually to determine the location of the nearest milk animal, residence, and garden producing broad leaf vegetation, in each of the sixteen meteorological sectors. A summary of the land use census for the surveillance year is provided in Table 2, Land Use Census Summary.

E. Interlaboratory Comparison Program

The Interlaboratory Comparison Program consists of participating in the DOE Mixed Analyte Performance Evaluation Program (MAPEP).

This program provides similar testing (matrices, nuclides, and levels) as the former EPA Interlaboratory Comparison Program and is referred to as the Mixed Analyte Performance Evaluation Program (MAPEP).

The samples are analyzed using the methods applicable to the REMP (gamma spectroscopy, Gross Beta, and Tritium for water).

From the MAPEP handbook:

Acceptance criteria were developed from a review of precision and accuracy data compiled by other performance evaluation programs (PEPs), the analytical methods literature, from several MAPEP pilot studies, and from what is considered reasonable, acceptable, and achievable for routine analyses among the more experienced laboratories.

The results for nuclides associated with the REMP are listed in ATTACHMENT C, *Results from the Interlaboratory Comparison Program*.

2016
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT- UNITS 3 & 4

III. DISCUSSION AND INTERPRETATION OF RESULTS

A. Reporting of Results

The Annual Radiological Environmental Operating Report contains the summaries, interpretations and information required by Control 1.4 of ODCM. Table 1 provides a summary of the measurements made for the nuclides required by ODCM Table 5.1-2, for all samples specified by Table 5.1-1. In addition, summaries are provided for other nuclides identified in the specified samples, including those not related to station operation. These include nuclides such as K-40, Th-232, Ra-226, and Be-7 which are common in the Florida environment.

B. Interpretation of Results

1. Direct Radiation:

The results of direct radiation monitoring are consistent with past measurements for the specified locations. The exposure rate data shows no indication of any trends attributed to effluents from the plant. The measured exposure rates are consistent with past historical exposure rates.

2. Air Particulates/Radioiodine:

For results attributed to plant effluents:

The results for radioactive air particulate and radioiodine monitoring are consistent with past measurements and indicate no trends attributed to plant effluents. All samples for radioiodine yielded no detectable I-131. Gamma isotopic measurements yielded no indication of any nuclides attributed to station operation. The results for air particulate/radioiodine samples are consistent with historical trends. Air particulate and radioiodine monitoring results are summarized in Table 1.

3. Waterborne, Surface Water:

The results of radioactivity measurements in surface water samples are consistent with past measurements. Tritium was reported as present in 2 of 24 indicator locations and 1 of the 12 control locations. The highest reported tritium is 104 pCi/L, below the required reporting level of 30,000 pCi/L as specified by ODCM Table 5.1-2.

4. Waterborne, Sediment:

Gamma isotopic measurements yielded no indication of any nuclides attributed to station operation.

5. Waterborne, Food Products:

The results are consistent with past measurements. Gamma isotopic measurements yielded no indication of any nuclides attributed to station operation.

6. Broad Leaf Vegetation

For results attributed to plant effluents:

The results of radioactivity measurements are consistent with past measurements. Cs-137 was detected in samples collected from the indicator locations. This activity identified could be from weapons fallout testing 30-40 years ago and reactor accidents at Chernobyl and Fukushima are contributors. The maximum concentration reported was 119 pCi/kg well

2016
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT- UNITS 3 & 4

below the required reporting level of 2000 pCi/kg as specified by ODCM Table 5.1-2. No other fission products were detected.

7. Land Use Census

A land use census out to a distance of a five mile radius from the Turkey Point Plant is conducted annually to determine the location of the nearest milk animal, residence, and garden producing broad leaf vegetation, in each of the 16 meteorological sectors. A summary of the land use census for the surveillance year is provided in Table 2, Land Use Census Summary.

8. Interlaboratory Comparison Program

The State laboratory participated in MAPEP 34 and 35. These satisfied the requirement of Control 5.3 of the ODCM for the Interlaboratory Comparison Program. The results are listed in Attachment C.

C. Conclusions

The data obtained through the Turkey Point Plant Radiological Environmental Monitoring Program verifies that the levels of radiation and concentrations of radioactive materials in environmental samples, representing the highest potential exposure pathways to members of the public, are not being increased. The measured exposure rates and air particulate/radioiodine samples are consistent with exposure rates that were observed during the pre-operational surveillance program. The highest value of tritium in surface water was 104 pCi/L far below the required LLD listed in ODCM Table 5.1-3. There were no indications of any other nuclides that could be attributed to plant effluents. There were no indications of any nuclides in waterborne sediment or food products attributed to plant effluents. The results of radioactivity measurements for broad leaf vegetation are consistent with past measurements. Additionally, supplemental to the ODCM program, sampling of the direct exposure, inhalation, and ingestion pathways, performed by Florida DOH, does not show adverse trends in levels of radiation and radioactive materials in unrestricted areas. The measurements verify that the dose or dose commitment to members of the public, due to operation of Turkey Point Units 3 & 4, during the surveillance year, are well within "as low as reasonably achievable (ALARA)" criteria established by 10 CFR 50, Appendix I.

**2016
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT- UNITS 3 & 4**

**ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM
ANNUAL ANALYSIS SUMMARY**

PATHWAY: DIRECT RADIATION

SAMPLES COLLECTED: TLD

UNITS: micro-R/hr

Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean (f) ^b Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c	Mean (f) ^b	
			Distance & Direction	Range	
Exposure Rate, 92	---	3.52 (92/92)	NW-10	4.44 (4/4)	3.9 (4/4)
		2.68 - 4.82	10 mi., NW	4.1 - 4.82	3.58 - 4.11

Number of Non-routine Reported Measurements = 0

PATHWAY: AIRBORNE

SAMPLES COLLECTED: RADIOIODINE AND PARTICULATES

UNITS: pCi/m³

Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean (f) ^b Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c	Mean (f) ^b	
			Distance & Direction	Range	
¹³¹ I, 312	0.012	<MDA	---	---	< MDA
Gross Beta, 312	0.0064	0.010 (238/238) 0.003 - 0.039	T-41 1.6 mi, WNW	0.010 (48/52) 0.004 - 0.039	0.010 (52/52) 0.004 - 0.021
Composite Gamma Isotopic, 32					
⁷ Be	0.006	0.1513 (28/28) 0.1028 - 0.1868	T-58 1.3 mi, NW	0.1474 (4/4) 0.1028 - 0.1868	0.1604 (4/4) 0.1299 - 0.2133
⁴⁰ K	0.018	< MDA	---	---	< MDA
¹³⁴ Cs	0.0008	< MDA	---	---	< MDA
¹³⁷ Cs	0.0008	< MDA	---	---	< MDA
²¹⁰ Pb	---	0.0139 (05/20) <MDA - 0.0193	T-51 2.2 mi, NNW	0.0158 (2/4) <MDA - 0.0193	0.0155 (2/4) <MDA - 0.0177

Be-7, K-40 & Pb-210 are naturally occurring.
Number of Non-routine Reported Measurements = 0

PATHWAY: WATERBORNE

SAMPLES COLLECTED: SURFACE WATER

UNITS: pCi/L

Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean (f) ^b Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c	Mean (f) ^b	
			Distance & Direction	Range	
Tritium, 36	172	104 (2/24) <MDA - 104	T-81 6 mi., S	104 (1/12) <MDA - 104	82 (1/12) <MDA - 82
Gamma Isotopic, 36					
⁴⁰ K	58	287 (24/24) 147 - 412	T-42 <1 mi., ENE	258 (12/12) 147 - 412	220 (12/12) 121 - 297
⁵⁴ Mn	3	< MDA	---	---	< MDA
⁵⁹ Fe	6	< MDA	---	---	< MDA
⁵⁸ Co	3	< MDA	---	---	< MDA
⁶⁰ Co	4	< MDA	---	---	< MDA
⁶⁵ Zn	7	< MDA	---	---	< MDA
⁹⁵ Zr-Nb	6	< MDA	---	---	< MDA
¹³¹ I	4	< MDA	---	---	< MDA
¹³⁴ Cs	4	< MDA	---	---	< MDA
¹³⁷ Cs	4	< MDA	---	---	< MDA
¹⁴⁰ Ba-La	9	< MDA	---	---	< MDA

K-40 is naturally occurring.

Number of Non-routine Reported Measurements = 0

PATHWAY: WATERBORNE

SAMPLES COLLECTED: SHORELINE SEDIMENT

UNITS: pCi/kg, DRY

Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean (f) ^b Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c	Mean (f) ^b	
			Distance & Direction	Range	
Gamma Isotopic, 6					
⁷ Be	56	134 (4/4)	T-81	193	139
		<MDA -193	6 mi., S	<MDA- 193	<MDA-139
⁴⁰ K	100	125 (4/4)	T-81	164 (2/2)	485 (2/2)
		78 - 187	6 mi., S	141 -187	304 - 666
⁵⁸ Co	6	<MDA	---	---	< MDA
⁶⁰ Co	7	<MDA	---	---	< MDA
¹³⁴ Cs	7	<MDA	---	---	< MDA
¹³⁷ Cs	7	<MDA	---	---	18 (1/2)
					<MDA - 18
²¹⁰ Pb	---	660 (1/4)	T-42	660 (1/2)	1505 (1/2)
		<MDA - 660	<1 mi., ENE	<MDA-660	<MDA - 1505
²²⁶ Ra	15	1066 (3/4)	T-81	1448 (1/2)	1604 (1/2)
		<MDA - 1448	6 mi., S	<MDA - 1448	<MDA - 1604
²³⁵ U	---	<MDA	---	---	< MDA
²³⁸ U	---	468 (4/4)	T-81	549 (2/2)	464 (2/2)
		381 - 553	6 mi., S	545 - 553	97 - 831

Be-7, K-40, Pb-210, Ra-226, U-235 & U-238 are naturally occurring.

Number of Non-routine Reported Measurements = 0

PATHWAY: INGESTION

SAMPLES COLLECTED: CRUSTACEA

UNITS: pCi/kg, WET

Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c	Mean (f) ^b	
			Distance & Direction	Range	
Gamma Isotopic, 2					
⁴⁰ K	270	1513 (2/2) 1170 - 2173	T-81 6 mi., S	1672 (2/2) 1170 - 2173	1354 (2/2) 1064 - 1644
²²⁶ Ra	300	709 (1/2) <MDA-709	T-81 6 mi., S	709 (1/2) <MDA-709	351 (2/2) 304-398
⁵⁴ Mn	16	---	---	---	---
⁵⁹ Fe	28	---	---	---	---
⁵⁸ Co	15	---	---	---	---
⁶⁰ Co	16	---	---	---	---
⁶⁵ Zn	32	---	---	---	---
¹³⁴ Cs	16	---	---	---	---
¹³⁷ Cs	18	---	---	---	---

Number of Non-routine Reported Measurements = 0

PATHWAY: INGESTION
SAMPLES COLLECTED: FISH
UNITS: pCi/kg, WET

Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean (f) Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c Distance & Direction	Mean (f) ^b Range	
Gamma Isotopic, 4					
⁷ Be	---	<MDA	---	---	<MDA
⁴⁰ K	270	2536 (2/2) 2534 - 2537	T-81 6 mi., S	2536 (2/2) 2534-2537	1953 (2/2) 1860 - 2045
⁵⁴ Mn	16	<MDA	---	---	<MDA
⁵⁹ Fe	28	<MDA	---	---	<MDA
⁵⁸ Co	15	<MDA	---	---	<MDA
⁶⁰ Co	16	<MDA	---	---	<MDA
⁶⁵ Zn	32	<MDA	---	---	<MDA
¹³⁴ Cs	16	<MDA	---	---	<MDA
¹³⁷ Cs	16	<MDA	---	---	<MDA
²²⁶ Ra	300	<MDA	---	---	<MDA
²³⁸ U	---	<MDA	---	---	<MDA

Be-7, K-40, Pb-210, Ra-226 & U-238 are naturally occurring.

Number of Non-routine Reported Measurements = 0

PATHWAY: INGESTION

SAMPLES COLLECTED: BROAD LEAF VEGETATION

UNITS: pCi/kg, WET

Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean (f)Range	Location with Highest Annual Mean		Control Locations Mean (f) ^b Range
			Name ^c	Mean (f) ^b	
			Distance & Direction	Range	
Gamma Isotopic, 36					
⁷ Be	64	2619 (18/24) 511 - 5969	T-40 3 mi., W	3384 (12/12) 1945 - 5969	1870 (12/12) 659 - 3290
⁴⁰ K	120	4684 (18/24) 3219 - 6475	T-41 1.6 mi.,WNW	4847 (12/12) 3219 - 6475	4435 (12/12) 2980 - 5448
⁵⁸ Co	6	<MDA	---	---	<MDA
⁶⁰ Co	8	<MDA	---	---	<MDA
¹³¹ I	8	<MDA	---	---	<MDA
¹³⁴ Cs	8	<MDA	---	---	<MDA
¹³⁷ Cs	8	41 (17/24) 15 - 119	T-40 3 mi., W	59 (9/12) <MDA - 119	17 (6/12) <MDA - 22
²¹⁰ Pb	---	563 (5/24) 184 - 1017	T-40 3 mi., W	1017 (4/12) <MDA - 1017	279 (1/12) <MDA - 279
²²⁶ Ra	189	263 (3/24) <MDA - 412	T-40 3 mi., W	412 (1/12) <MDA - 412	772 (3/12) <MDA - 1276

Be-7, K-40, Pb-210 & Ra-226 are naturally occurring.

Number of Non routine Reported Measurements = 0

NOTES

- a. The LLD is an "a priori" lower limit of detection which establishes the smallest concentration of radioactive material in a sample that will yield a net count above system background that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a real signal. LLDs in this column are at time of measurement. The MDAs reported in Attachment B for the individual samples have been corrected to the time of sample collection.
- b. Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses (f).
- c. Specific identifying information for each sample location is provided in Attachment A.
- d. Results were based upon the average net response of three elements in a TLD. (Thermoluminescent Dosimeter).

DEVIATIONS /MISSING DATA

- A) Pathway: Aquatic Vegetation
Location: T-84 , Cooling Canal (Supplemental)
Dates: 01-01-2016-12/30/2016
Deviation: Sample unavailability
Description of Problem: No sample available in 1st, 2nd, 3rd, and 4th quarter.
Corrective action: None required -supplemental sample.
- B) Pathway Airborne – Particulates and Iodine
Location: T-58, Turkey Point Entrance Rd
Dates: 2/15/2016
Deviation: Estimated run time 50.6 out of 145.4 hours.
Description of Problem: Pump failed and was replaced that day.
Corrective Action: Replaced pump and restored continuous sampling. (AR #2146539)
- C) Pathway Airborne – Particulates and Iodine
Location: T-72, Turkey Point Land Utilization Entrance
Dates: 4/4/2016
Deviation: Estimated run time of 50.5 out of 142.5 hours
Description of Problem: Pump failed and was replaced that day.
Corrective Action: Replaced pump and restored continuous sampling. (AR #2146539)
- D) Pathway: Airborne – Particulates and Iodine
Location: T-57, Siren Pole27, intersection of SW 112 Ave. and SW 304th St., 4 miles NW
Dates: 4/11/2016
Deviation: Estimated run time of 36.7 out of 169.8 hours
Description of Problem: Pump failed and was replaced that day.
Corrective Action: Replaced pump and restored continuous sampling. (AR #2146539)
- E) Pathway: Airborne – Particulates and iodine
Location: T-72, Turkey Point Land Utilization Entrance
Dates: 6/27/2016
Deviation: Estimated run time of 23.3 out of 143.7 hours
Description of Problem: Pump failed and was replaced that day.
Corrective Action: Replaced pump and restored continuous sampling. (AR #2146539)

F) Pathway: Airborne – Particulates and iodine
Location: T-58, Turkey Point Entrance Point
Dates: 7/05/2016
Deviation: The estimated run time was 147.7 out of 195 hours
Description of Problem: Pump failed and was replaced that day.
Corrective Action: Replaced pump and restored continuous sampling. (AR #2166816)

TURKEY POINT 2016 ANNUAL LAND-USE CENSUS SUMMARY

The annual land-use census identifies the nearest residences, vegetable gardens, and potential milk-producing animals within a five-mile radius from the Turkey Point nuclear plant.

The range (miles) and the bearing (degrees) from the plant are summarized for each receptor type in the table below.

SECTOR	NEAREST RESIDENCE	NEAREST GARDEN (A)	NEAREST MILK ANIMAL
N	1.9 mi @ 349° 2.0 mi @ 354°	*	*
NNE	*	*	*
NE	*	*	*
ENE	*	*	*
E	*	*	*
ESE	*	*	*
SE	*	*	*
SSE	*	*	*
S	*	*	*
SSW	*	*	*
SW	*	*	*
WSW	*	*	*
W	*	*	*
WNW	1.7 mi @ 302° 3.7 mi @ 302°	4.5 mi @ 303°	*
NW	3.6 mi @ 304° 3.7 mi @ 311°	*	*
NNW	4.4 mi @ 333° 4.5 mi @ 326°	4.7 mi @ 328°	*

(A) - Only gardens with an estimated total area of 500 square feet, or more, and producing green leafy vegetables are considered.

* - No suitable sites were located within a five-mile range.

TURKEY POINT RESIDENCE SURVEY RESULTS

July 2016

<u>Sector</u>	<u>Range Bearing</u>	<u>Nearest Residence Location</u>
N (A)	<u>1.9 miles</u> 349°	This is the Homestead Bayfront Park complex. Contact is Jim White. Office hours are 8am to 5pm 7 days a week. There is occasional overnight recreational occupancy (up to 4 nights) on boats at the marina. There are approximately 25 workers at the park working various hours 7 days a week; number of daily workers sometimes varies. There is always someone here 24 hours with more workers in the summer than the rest of the year (February thru September have the highest peak of workers). LaPlaya restaurant is open at the park with 6 to 8 employees from Tues thru Sun from 11am to 8pm. N25° 27.683' W80° 20.200'.
N (B)	<u>2.0 miles</u> 354°	Biscayne National Park at Convoy Point. Contact is Sarah Bellmund, Administrative Officer. They work 7 days a week from 7:00 am to dusk and currently have about 40 employees with a large number of volunteers. N25° 27.817' W80° 20.067'.
NNE	No residences were located within a five-mile range.	
NE	No residences were located within a five-mile range.	
ENE	No residences were located within a five-mile range.	
E	No residences were located within a five-mile range.	
ESE	No residences were located within a five-mile range.	
SE	No residences were located within a five-mile range.	
SSE	No residences were located within a five-mile range.	
S	No residences were located within a five-mile range.	
SSW	No residences were located within a five-mile range.	
SW	No residences were located within a five-mile range.	
WSW	No residences were located within a five-mile range.	
W	No residences were located within a five-mile range.	
WNW (A)	<u>1.7 miles</u> 302°	FP&L daycare center and shooting range near the entrance to the Turkey Point Plant. Daycare Center contact is Anita Johnson, Director. There are 9 employees with 52 children currently enrolled, ages 6 months to 5 years. The center is open from 6am to 6pm Monday thru Friday. The number of people and the times at the shooting range varies. N25° 26.817' W80° 21.217'.

TURKEY POINT RESIDENCE SURVEY RESULTS

July 2016 (cont.)

<u>Sector</u>	<u>Range Bearing</u>	<u>Nearest Residence Location</u>
WNW (B)	<u>3.7 miles</u> 302°	Two people (a couple) live at 11790 Canal Drive on the south side of Canal Drive (SW 328 St) west of SW 117 th Ave (no gardens). N25° 27.767' W80° 22.867'.
NW (A)	<u>3.6 miles</u> 304°	The Waste Management Homestead Landfill is located north of Canal Drive (SW 328 th St) and east of SW 117 th Ave. There are 8 full time workers onsite Monday thru Friday usually from 7 am to 4 pm with 3-4 employees working Saturdays from 7 am to noon. N25° 27.833' W80° 22.767'.
NW (B)	<u>3.7 miles</u> 311°	11000 SW 320 th St. Per property records, this house is on land zoned agriculture and the owners live in Texas. Unable to verify if anyone lives there because the gate is locked and too far from residence to see anything. N25° 28.217' W80° 22.567'.
NW (C)	<u>3.8 miles</u> 316°	High Hope Nursery at 11400 SW 316 th St. Contact is George Sprinkle, General Manager. This nursery currently has 30 employees. Hours of operations are 7am to 5pm Monday thru Friday. A couple lives here that also provide security. N25° 28.441' W80° 22.430'.
NW (D)	<u>3.9 miles</u> 314°	Snapper Creek Nursery at 11600 SW 316 th Street. 14 workers that work Monday thru Friday 7 am to 5 pm. Contact is Elmer. Security is provided by another person who lives onsite. N25° 28.444' W80° 22.560'.
NNW (A)	<u>4.4 miles</u> 333°	29800 SW 107 th Ave. Per property records, this is a small one bedroom residence on land zoned as mixed use agricultural. Two people live there. N25° 29.450' W80° 21.817'.
NNW (B)	<u>4.5 miles</u> 326°	Accessible from entrance to SFM Tree Farm. No property address. Occupied by two people living there. N25° 29.372' W80° 22.292'.
NNW (C)	<u>4.7 miles</u> 328°	SFM Tree Farm. Entrance at SW 107 th Ave & SW 296 th St. One person works on property. Contact is Mario. Owner lives off property in Miami. N25° 29.564' W80° 22.264'.
NNW (D)	<u>4.9 miles</u> 336°	Oceanus Seafood, LLC. New fish farm at 29055 SW 107 th Ave Homestead. Manager is Jon Milchman. He initially stated they will farm Triple tail and Pompano. 12 employees staffed 24/7. N25° 29.920' W80° 21.808'.

TURKEY POINT GARDEN SURVEY RESULTS

July 2016

<u>Sector</u>	<u>Range Bearing</u>	<u>Nearest Garden Location (with estimated total area of 500 square feet, or more, and producing green leafy vegetables).</u>
N		No suitable gardens were located within a five-mile range.
NNE		No suitable gardens were located within a five-mile range.
NE		No suitable gardens were located within a five-mile range.
ENE		No suitable gardens were located within a five-mile range.
E		No suitable gardens were located within a five-mile range.
ESE		No suitable gardens were located within a five-mile range.
SE		No suitable gardens were located within a five-mile range.
SSE		No suitable gardens were located within a five-mile range.
S		No suitable gardens were located within a five-mile range.
SSW		No suitable gardens were located within a five-mile range.
SW		No suitable gardens were located within a five-mile range.
WSW		No suitable gardens were located within a five-mile range.
W		No suitable gardens were located within a five-mile range.
WNW (A)	<u>4.5 miles</u> 303°	Thai Farms. Guava (mostly), bananas and some sugar have been grown at this small farm run by an Asian family south of Mowry Drive (SW 320th St) and about 0.6 miles west of Allapattah Rd (SW 117th Ave). Two or three workers Monday thru Friday. N25° 28.217' W80° 23.467'.
WNW (B)	<u>4.8 miles</u> 302°	Located at the northeast corner of the intersection of SW 127 th Ave and SW 320 th Street. This is an inaccessible grove with coconut palms, some banana trees and a few avocado trees which appears to be unattended. N25° 28.250' W80° 23.750'.

TURKEY POINT GARDEN SURVEY RESULTS

July 2016 (cont.)

<u>Sector</u>	<u>Range Bearing</u>	<u>Nearest Garden Location (with estimated total area of 500 square feet, or more, and producing green leafy vegetables).</u>
WNW (C)	<u>6.0 miles 295°</u>	Farm Share, Inc at 14125 SW 320 th St, where farmers donate locally grown produce to be given to charitable organizations. Produce donations usually start in November and run through April. Approximately 15 workers present from 8 am to 4:30 pm Monday thru Friday. The produce usually donated is tomatoes, squash and green beans. N25° 28.255' W80° 25.111'.
NW	No suitable gardens were located within a five-mile range.	
NNW	<u>4.7 miles 328°</u>	SFM Tree Farm. Entrance at SW 107 th Ave & SW 296 th St. Noticed bananas and plantain tress growing in various areas on the farm. One person works on property. Owner lives off property in Miami. N25° 29.564' W80° 22.264'.

Note: At the time of our survey, many fields in the area surveyed were bare soil or cover crops. Other than the sites already described above, the only non-ornamental crops known to have been grown in the survey area were: bananas, beans, corn, guava, malanga, papaya, eggplant, sorghum, squash, sugar cane, tambis, okra and melon.

TURKEY POINT MILK ANIMAL SURVEY RESULTS

July 2016

<u>Sector</u>	<u>Nearest Milk Animals (cows or goats).</u>
N	No potential milk animals were located within five miles.
NNE	No potential milk animals were located within five miles.
NE	No potential milk animals were located within five miles.
ENE	No potential milk animals were located within five miles.
E	No potential milk animals were located within five miles.
ESE	No potential milk animals were located within five miles.
SE	No potential milk animals were located within five miles.
SSE	No potential milk animals were located within five miles.
S	No potential milk animals were located within five miles.
SSW	No potential milk animals were located within five miles.
SW	No potential milk animals were located within five miles.
WSW	No potential milk animals were located within five miles.
W	No potential milk animals were located within five miles.
WNW	No potential milk animals were located within five miles.
NW	No potential milk animals were located within five miles.
NNW	No potential milk animals were located within five miles.

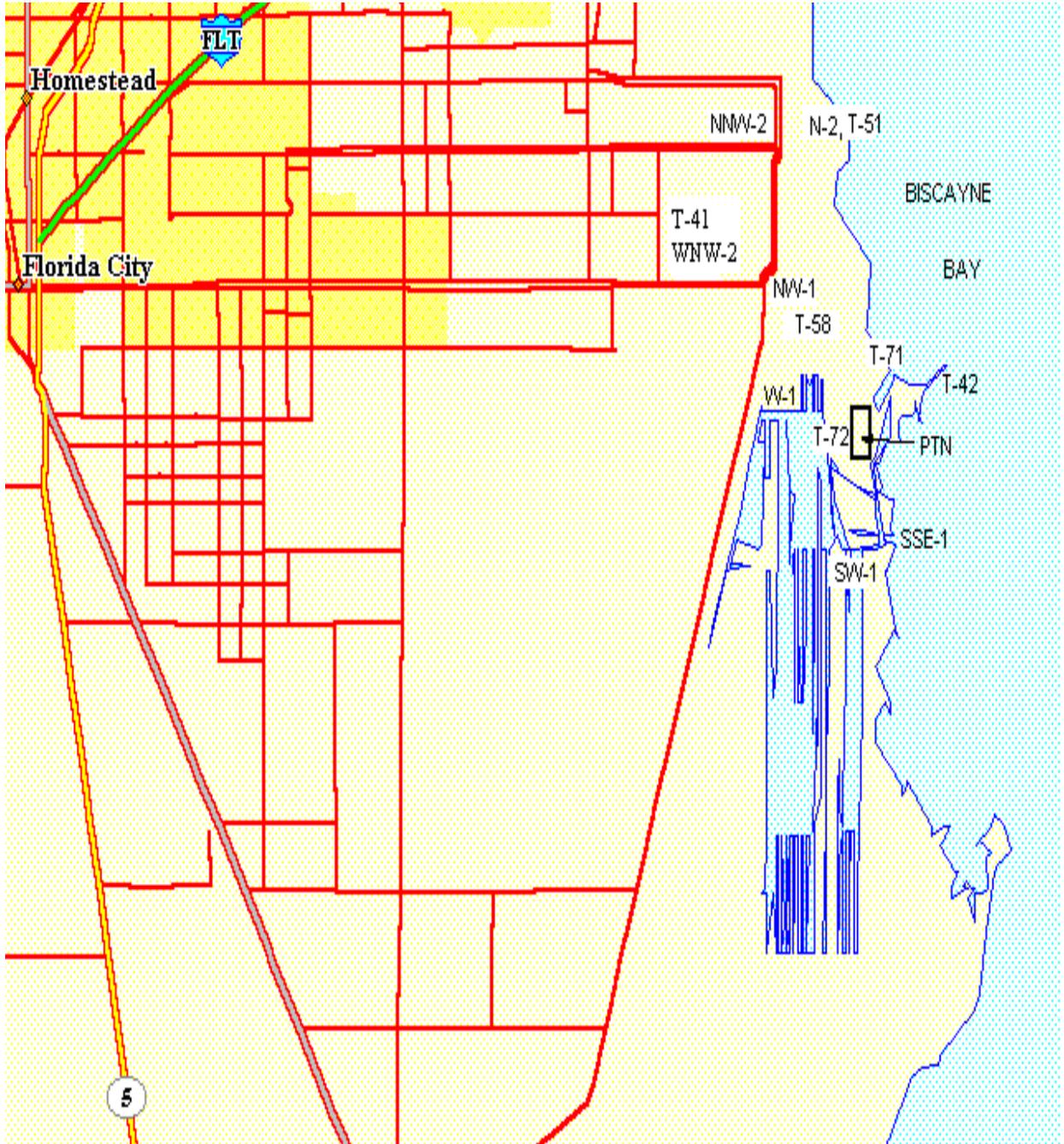
ATTACHMENT A

KEY TO SAMPLE LOCATIONS

ATTACHMENT A

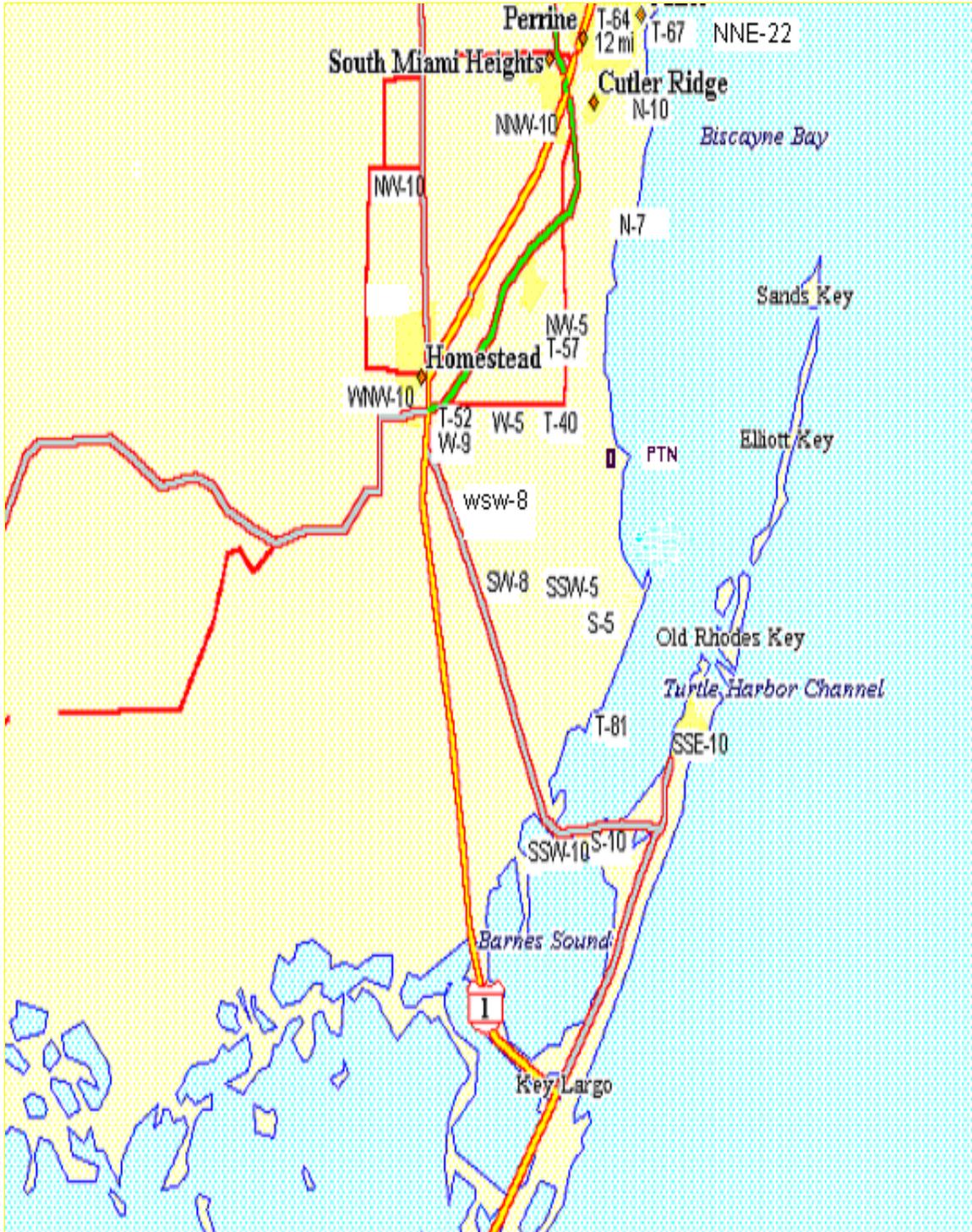
NEAR SITE SAMPLING LOCATIONS

(Page 1 of 6)



ATTACHMENT A
DISTANT REMP SAMPLING LOCATIONS

(Page 2 of 6)



ATTACHMENT A

(Page 3 of 6)

PATHWAY: DIRECT RADIATION

SAMPLES COLLECTED: TLD

SAMPLE COLLECTION FREQUENCY: QUARTERLY

Location ^(a)

<u>Name</u>	<u>Description</u>
N-2	Convey Point, Parking Area
N-7	Black Point Marina Parking Lot
N-10	Old Cutler Rd. approx. 196th Street
NNW-2	East End North Canal Road
NNW-10	Bailes Road & U.S. #1
NW-1	Turkey Point Entrance Road
NW-5	Mowry Drive & 117th Avenue
NW-10	Newton Road, North of Coconut Palm Drive
WNW-2	Satellite School
WNW-10	Homestead Middle School
W-1	On-Site, North Side of Discharge Canal
W-5	Palm Drive & Tallahassee Road
W-9	Card Sound Road, 0.6 mile from U.S. #1
WSW-8	Card Sound Road, 3.4 miles from U.S. #1
SW-1	On-Site near Land Utilization Offices
SW-8	Card Sound Road, 5 miles from U.S. #1
SSW-5	On-Site, Southwest Corner of Cooling Canals
SSW-10	Card Sound Road, west side of Toll Plaza
S-5	On-Site, South East Corner of Cooling Canals
S-10	Card Sound Road at Steamboat Creek
SSE-1	Turtle Point
SSE-10	Ocean Reef
<u>Control</u>	
NNE-22	Natoma Substation, 2475 SW 16 Ct.

^aThe location name is the direction sector - approximate distance (miles)

ATTACHMENT A

(Page 4 of 6)

PATHWAY: AIRBORNE
SAMPLES COLLECTED: RADIOIODINE AND PARTICULATES
SAMPLE COLLECTION FREQUENCY: WEEKLY

<u>Location Name</u>	<u>Direction Sector</u>	<u>Approximate Distance (miles)</u>	<u>Description</u>
T-51	NNW	2	Entrance Area to Biscayne National Park
T-57	NW	4	SW 107th Avenue at Mowry Canal
T-58	NW	1	Turkey Point Entrance Road
T-72	WSW	<1	Just before entrance to Land Utilization's access gate.
T-41	WNW	1.6	Palm Dr. - W. of school near site boundary
<u>Control:</u>			
T-64	NNE	22	Natoma Substation , 2475 SW 16 Ct.

ATTACHMENT A

(Page 5 of 6)

PATHWAY: WATERBORNE
SAMPLES COLLECTED: SURFACE WATER (OCEAN)
SAMPLE COLLECTION FREQUENCY: MONTHLY

<u>Location Name</u>	<u>Direction Sector</u>	<u>Approximate Distance (miles)</u>	<u>Description</u>
T-42	ENE	<1	Biscayne Bay at Turkey Point
T-81	S	6	Card Sound, near Mouth of Old Discharge Canal

Control:

T-67	N, NNE	13-18	Near Biscayne Bay, Vicinity of Cutler Plant, North to Matheson Hammock Park
------	--------	-------	---

SAMPLES COLLECTED: SHORELINE SEDIMENT
SAMPLE COLLECTION FREQUENCY: SEMI-ANNUALLY

<u>Location Name</u>	<u>Direction Sector</u>	<u>Approximate Distance (miles)</u>	<u>Description</u>
T-42	ENE	<1	Biscayne Bay at Turkey Point
T-81	S	6	Card Sound, near Mouth of Old Discharge Canal

Control:

T-67	N, NNE	13-18	Near Biscayne Bay, Vicinity of Cutler Plant, North to Matheson Hammock Park
------	--------	-------	---

ATTACHMENT A

(Page 6 of 6)

PATHWAY: INGESTION
SAMPLES COLLECTED: CRUSTACEA AND FISH
SAMPLE COLLECTION FREQUENCY: SEMI-ANNUALLY

<u>Location Name</u>	<u>Direction Sector</u>	<u>Approximate Distance (miles)</u>	<u>Description</u>
T-81	S	6	Card Sound Vicinity of Turkey Point Facility
<u>Control:</u>			
T-67	N, NNE	13-18	Near Biscayne Bay, Vicinity of Cutler Plant, North to Matheson Hammock Park

SAMPLES COLLECTED: BROAD LEAF VEGETATION
SAMPLE COLLECTION FREQUENCY: MONTHLY

<u>Location Name</u>	<u>Direction Sector</u>	<u>Approximate Distance (miles)</u>	<u>Description</u>
T-40	W	3	South of Palm Dr. on S.W. 117th Street Extension
T-41	WNW	2	Palm Dr., West of Old Missile Site near Plant Site Boundary
<u>Control:</u>			
T-67	N, NNE	13-18	Near Biscayne Bay, Vicinity of Cutler Plant, North to Matheson Hammock Park

ATTACHMENT B

RADIOLOGICAL SURVEILLANCE OF
FLORIDA POWER AND LIGHT COMPANY'S

TURKEY POINT SITE

2016

First Quarter, 2016

Second Quarter, 2016

Third Quarter, 2016

Fourth Quarter, 2016



RADIOLOGICAL SURVEILLANCE
OF
FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT SITE

FIRST QUARTER 2016

BUREAU OF RADIATION CONTROL

TURKEY POINT SITE

Offsite Dose Calculation Manual Sampling

First Quarter, 2016

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Number of Sample Locations</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	23	23
2. Airborne			
2.a. Air Iodines	Weekly	6	78
2.b. Air Particulates	Weekly	6	78
3. Waterborne			
3.a. Surface Water	Monthly	3	9
3.b. Shoreline Sediment	Semiannually	3	3
4. Ingestion			
4.a. Fish and Invertebrates			
4.a.1. Crustacea	Semiannually	2	0
4.a.2. Fish	Semiannually	2	0
4.b. Broadleaf Vegetation	Monthly	3	9
			Total: 200

NOTE: Measurement results having magnitudes that are significantly above the background of the measurement system are reported as net values plus or minus a one-standard-deviation error term. Measurement results that are not significantly above background are reported as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.

The marine fauna listed in this report were collected in part, under Florida FWC SAL030.

1. DIRECT RADIATION - TLD's - (μ R/hour)

Sample Site	Deployment 15-Dec-15 Collection 23-Mar-16	Sample Site	Deployment 15-Dec-15 Collection 23-Mar-16
N-2	4.03 \pm 0.27	WSW-8	3.75 \pm 0.19
N-7	3.42 \pm 0.44		
N-10	4.03 \pm 0.38	SW-1	3.39 \pm 0.19
		SW-8	3.13 \pm 0.35
NNW-2	3.71 \pm 0.29		
NNW-10	3.98 \pm 0.01	SSW-5	3.32 \pm 0.09
		SSW-10	3.40 \pm 0.16
NW-1	4.41 \pm 0.19		
NW-5	3.62 \pm 0.28	S-5	2.94 \pm 0.09
NW-10	4.57 \pm 0.28	S-10	3.60 \pm 0.12
WNW-2	3.72 \pm 0.14	SSE-1	3.16 \pm 0.22
WNW-10	4.31 \pm 0.25	SSE-10	3.32 \pm 0.06
W-1	3.60 \pm 0.24	NNE-22	4.11 \pm 0.15
W-5	3.61 \pm 0.16		
W-9	3.55 \pm 0.18		

2.a. IODINE-131 IN WEEKLY AIR CARTRIDGES - (pCi/m³)

<u>Collection Date</u>	<u>T41</u>	<u>T51</u>	<u>T57</u>	<u>T58</u>	<u>T64</u>	<u>T72</u>
04-Jan-16	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
11-Jan-16	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
19-Jan-16	<0.03	<0.03	<0.04	<0.04	<0.04	<0.04
25-Jan-16	<0.03	<0.03	<0.03	<0.04	<0.04	<0.04
02-Feb-16	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
09-Feb-16	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
15-Feb-16	<0.03	<0.03	<0.03	<0.04(A)	<0.04	<0.03
22-Feb-16	<0.03	<0.04	<0.04	<0.04	<0.04	<0.04
29-Feb-16	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
07-Mar-16	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
14-Mar-16	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
22-Mar-16	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
29-Mar-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

(A) Vacuum pump failed and was replaced. Estimated run time 50.6 out of 145.4 hours.

2.b.1. AIR PARTICULATES - GROSS BETA - (pCi/m³)

Collection						
Date	T41	T51	T57	T58	T64	T72
4-Jan-16	0.007 ± 0.002	0.005 ± 0.002	0.008 ± 0.002	0.004 ± 0.002	0.008 ± 0.002	0.006 ± 0.002
11-Jan-16	0.010 ± 0.002	0.011 ± 0.002	0.006 ± 0.002	0.009 ± 0.002	0.010 ± 0.002	0.007 ± 0.002
19-Jan-16	0.018 ± 0.002	0.015 ± 0.002	0.021 ± 0.002	0.017 ± 0.002	0.017 ± 0.002	0.018 ± 0.002
25-Jan-16	0.016 ± 0.002	0.014 ± 0.002	0.014 ± 0.002	0.010 ± 0.002	0.009 ± 0.002	0.011 ± 0.002
2-Feb-16	0.009 ± 0.001	0.008 ± 0.001	0.010 ± 0.002	0.008 ± 0.002	<0.005	0.011 ± 0.002
9-Feb-16	0.012 ± 0.002	0.015 ± 0.002	0.014 ± 0.002	0.008 ± 0.002	0.018 ± 0.002	0.013 ± 0.002
15-Feb-16	0.013 ± 0.002	0.016 ± 0.002	0.012 ± 0.002	0.010 ± 0.005	0.015 ± 0.002	0.016 ± 0.002
22-Feb-16	0.009 ± 0.002	0.014 ± 0.002	0.010 ± 0.002	0.014 ± 0.002	0.007 ± 0.002	0.012 ± 0.002
29-Feb-16	0.016 ± 0.002	0.015 ± 0.002	0.011 ± 0.002	0.015 ± 0.002	0.014 ± 0.002	0.013 ± 0.002
7-Mar-16	0.007 ± 0.002	0.011 ± 0.002	0.008 ± 0.002	0.009 ± 0.002	0.009 ± 0.002	0.012 ± 0.002
14-Mar-16	0.007 ± 0.002	0.005 ± 0.002	0.007 ± 0.002	0.008 ± 0.002	0.007 ± 0.002	<0.008
22-Mar-16	0.006 ± 0.002	0.008 ± 0.002	0.007 ± 0.002	0.008 ± 0.002	0.008 ± 0.002	0.004 ± 0.002
29-Mar-16	0.004 ± 0.002	0.004 ± 0.002	0.011 ± 0.002	0.005 ± 0.002	0.004 ± 0.002	0.006 ± 0.002
Average:	0.010 ± 0.001	0.011 ± 0.001	0.011 ± 0.001	0.010 ± 0.001	<0.010	<0.011

(A) Vacuum pump failed and was replaced. Estimated run time 50.6 out of 145.4 hours.

2.b.2. AIR PARTICULATES - GAMMA ANALYSIS OF QUARTERLY COMPOSITES - (pCi/m³)

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
T41	0.1636 ± 0.0119	<0.0192	<0.0013	<0.0013	<0.0372
T51	0.1746 ± 0.0118	<0.0182	<0.0014	<0.0010	0.0193 ± 0.0093
T57	0.1653 ± 0.0124	<0.0244	<0.0012	<0.0010	<0.0386
T58	0.1620 ± 0.0107	<0.0152	<0.0013	<0.0012	0.0156 ± 0.0030
T64	0.1505 ± 0.0102	<0.0193	<0.0014	<0.0011	0.0132 ± 0.0029
T72	0.1591 ± 0.0119	<0.0257	<0.0016	<0.0012	<0.0416

3.a. SURFACE WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
T42	13-Jan-16	<145	244 ± 14	<2	<2	<4	<2	<5	<3	<3	<2	<2	<3
	22-Feb-16	<154	161 ± 18	<3	<3	<6	<3	<6	<5	<4	<3	<3	<4
	23-Mar-16	<140	290 ± 23	<3	<3	<5	<3	<6	<5	<4	<3	<3	<11
T67	13-Jan-16	<145	196 ± 17	<2	<3	<4	<3	<5	<4	<3	<2	<3	<5
	22-Feb-16	82 ± 28	175 ± 22	<3	<3	<7	<4	<8	<6	<4	<3	<4	<7
	22-Mar-16	<140	221 ± 17	<2	<2	<5	<3	<5	<4	<3	<2	<3	<5
T81	12-Jan-16	<145	303 ± 24	<3	<3	<7	<4	<7	<5	<4	<3	<3	<6
	22-Feb-16	104 ± 28	262 ± 18	<2	<3	<5	<3	<5	<4	<3	<2	<3	<5
	23-Mar-16	<140	326 ± 24	<3	<3	<7	<4	<7	<5	<4	<3	<3	<7

(A) - These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLD's.

(B) - These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample.

3.b. SHORELINE SEDIMENT - (pCi/kg, dry weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>	<u>Ra-226</u>	<u>Th-232</u>	<u>U-235</u>	<u>U-238</u>
T42	15-Jan-16	<86	78 ± 36	<11	<11	<10	<11	<1345	747 ± 104	<53	<19	394 ± 37
T67	13-Jan-16	139 ± 32	666 ± 75	<14	<14	<11	18 ± 4	1507 ± 496	1604 ± 149	49 ± 14	<24	831 ± 53
T81	12-Jan-16	193 ± 42	141 ± 45	<13	<12	<10	<12	<1381	1448 ± 134	<47	<22	553 ± 46

4.a.1. CRUSTACEA - Blue Crab - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T67	Sample not scheduled for collection this quarter.										
T81	Sample not scheduled for collection this quarter.										

4.a.2. FISH - Mixed Species - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T67	Sample not scheduled for collection this quarter.										
T81	Sample not scheduled for collection this quarter.										

4.b. BROADLEAF VEGETATION - Brazilian Pepper - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>	<u>Pb-212</u>	<u>Ra-226</u>	<u>Ra-228</u>
T40	13-Jan-16	3216 ± 101	4651 ± 181	<12	<9	75 ± 5	412 ± 88	<22	<259	<40
	22-Feb-16	3384 ± 127	5436 ± 246	<21	<13	<22	<1241	<31	<399	<63
	23-Mar-16	1945 ± 87	3930 ± 186	<16	<10	41 ± 6	<954	<26	<245	<57
T41	13-Jan-16	1905 ± 100	5437 ± 255	<18	<15	20 ± 6	<1228	<36	<379	<75
	22-Feb-16	2083 ± 74	6475 ± 224	<14	<9	17 ± 3	286 ± 71	<18	<221	<41
	23-Mar-16	2296 ± 94	4466 ± 202	<15	<11	<18	<988	<30	<290	<60
T67	13-Jan-16	2199 ± 104	4222 ± 214	<18	<15	<22	1276 ± 453	<32	<382	<72
	22-Feb-16	2665 ± 85	2980 ± 127	<11	<8	19 ± 3	831 ± 96	<18	<219	<32
	22-Mar-16	1225 ± 68	4596 ± 201	<19	<11	11 ± 4	<918	38 ± 9	<261	<57

TURKEY POINT SITE

Supplemental Sampling

First Quarter, 2016

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Number of Sample Locations</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	9	9
2. Airborne			
2.a. Air Iodines	Weekly	2	26
2.b. Air Particulates	Weekly	2	26
3. Waterborne			
3.a. Surface Water	Monthly	4	12
3.b. Shoreline Sediment	Semiannually	10	10
3.c. Aquatic Vegetation	Quarterly	1	0
4. Ingestion			
4.a. Milk	Semiannually	1	0
4.b. Marine Life	Semiannually	1	0
4.c. Food Crops	At Harvest	3	2
			Total: 85

NOTE: Measurement results having magnitudes that are significantly above the background of the measurement system are reported as net values plus or minus a one-standard-deviation error term. Measurement results that are not significantly above background are reported as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.

1. DIRECT RADIATION - TLD's - ($\mu\text{R}/\text{hour}$)

<u>Sample Site</u>	<u>Deployment 15-Dec-15</u>	<u>Collection 23-Mar-16</u>
NNW-6	3.73 \pm 0.27	
NW-7	4.22 \pm 0.17	
NW-8	4.21 \pm 0.27	
WNW-3	3.96 \pm 0.22	
WNW-6	3.75 \pm 0.17	
W-8	4.03 \pm 0.27	
ENE-1	2.94 \pm 0.03	
T72	3.72 \pm 0.36	
PTN-1	3.58 \pm 0.14	

2.a. IODINE-131 IN WEEKLY AIR CARTRIDGES - (pCi/m^3)

<u>Collection Date</u>	<u>T52</u>	<u>T56</u>
04-Jan-16	<0.04	<0.04
11-Jan-16	<0.04	<0.04
19-Jan-16	<0.03	<0.03
25-Jan-16	<0.03	<0.03
02-Feb-16	<0.03	<0.03
09-Feb-16	<0.03	<0.03
15-Feb-16	<0.03	<0.03
22-Feb-16	<0.04	<0.04
29-Feb-16	<0.03	<0.03
07-Mar-16	<0.03	<0.03
14-Mar-16	<0.04	<0.04
22-Mar-16	<0.03	<0.03
29-Mar-16	<0.02	<0.02

2.b.1. AIR PARTICULATES - GROSS BETA - (pCi/m³)

<u>Collection Date</u>	<u>T52</u>	<u>T56</u>
4-Jan-16	0.007 ± 0.002	0.008 ± 0.002
11-Jan-16	0.009 ± 0.002	0.006 ± 0.002
19-Jan-16	0.020 ± 0.002	0.006 ± 0.001
25-Jan-16	0.011 ± 0.002	0.011 ± 0.002
2-Feb-16	0.011 ± 0.002	0.013 ± 0.002
9-Feb-16	0.015 ± 0.002	0.013 ± 0.002
15-Feb-16	0.011 ± 0.002	0.010 ± 0.002
22-Feb-16	0.014 ± 0.002	0.006 ± 0.001
29-Feb-16	0.018 ± 0.002	0.010 ± 0.002
7-Mar-16	0.012 ± 0.002	0.011 ± 0.002
14-Mar-16	0.005 ± 0.002	<0.008
22-Mar-16	0.008 ± 0.002	0.004 ± 0.002
29-Mar-16	<0.008	<0.008
Average:	<0.011	<0.009

2.b.2. AIR PARTICULATES GAMMA ANALYSIS OF QUARTERLY COMPOSITES - (pCi/m³)

<u>Sample Site</u>	<u>Be-7</u>	<u>K-40</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>
T52	0.1863 ± 0.0125	<0.0252	<0.0014	<0.0013	<0.0367
T56	0.1496 ± 0.0112	<0.0282	<0.0013	<0.0013	<0.0352

3.a. SURFACE WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
T08	12-Jan-16	7588 ± 145	375 ± 27	<4	<3	<6	<4	<7	<6	<4	<3	<3	<7
	22-Feb-16	6887 ± 138	372 ± 26	<4	<3	<7	<4	<8	<6	<4	<3	<3	<7
	23-Mar-16	17456 ± 212	404 ± 28	<3	<3	<8	<4	<8	<5	<4	<3	<4	<9
T75	13-Jan-16	<145	<34	<2	<2	<5	<3	<5	<4	<3	<2	<3	<8
	22-Feb-16	<142	<23	<2	<2	<4	<2	<4	<3	<2	<2	<2	<4
	23-Mar-16	<140	<41	<3	<3	<6	<3	<7	<5	<4	<3	<3	<7
T84	12-Jan-16	7517 ± 145	407 ± 19	<2	<2	<4	<2	<5	<3	<3	<2	<2	<3
	22-Feb-16	6558 ± 136	403 ± 28	<3	<3	<7	<4	<8	<5	<4	<3	<4	<6
	23-Mar-16	14415 ± 193	433 ± 28	<3	<3	<7	<4	<7	<6	<4	<3	<4	<7
T97	13-Jan-16	7529 ± 145	375 ± 27	<3	<4	<8	<3	<8	<6	<5	<3	<4	<7
	22-Feb-16	6143 ± 131	375 ± 30	<4	<4	<8	<4	<9	<7	<5	<4	<5	<7
	23-Mar-16	14920 ± 196	453 ± 29	<3	<4	<7	<3	<8	<5	<5	<3	<3	<5

(A) - These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLD's.

(B) - These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample.

3.b. SHORELINE SEDIMENT - (pCi/kg, dry weight)

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Pb-210	Ra-226	Th-232	U-235	U-238
T01	15-Jan-16	220 ± 35	135 ± 48	<13	<13	<10	<12	715 ± 328	1528 ± 131	46 ± 13	<21	546 ± 41
T02	13-Jan-16	1253 ± 67	1589 ± 97	<8	<17	<15	20 ± 4	2067 ± 165	990 ± 465	137 ± 14	140 ± 27	1706 ± 57
T03	13-Jan-16	188 ± 36	4124 ± 212	<28	<27	<26	46 ± 5	7510 ± 1710	9399 ± 504	830 ± 38	<53	1092 ± 88
T04	13-Jan-16	376 ± 45	273 ± 53	<15	<14	<11	<14	1470 ± 487	1450 ± 141	<62	<23	383 ± 41
T07	13-Jan-16	132 ± 20	523 ± 38	<5	<7	<6	28 ± 2	324 ± 110	610 ± 218	35 ± 7	<13	169 ± 18
T08	13-Jan-16	<121	358 ± 59	<12	<14	<12	26 ± 3	1590 ± 547	1552 ± 472	58 ± 14	<24	587 ± 28
T09	15-Jan-16	<116	124 ± 44	<11	<13	<10	<12	1636 ± 501	993 ± 117	<53	<21	351 ± 38
T10	13-Jan-16	231 ± 50	668 ± 86	<19	<17	<15	<18	<840	939 ± 123	<78	<22	174 ± 67
T84*	13-Jan-16	370 ± 59	272 ± 73	<18	53 ± 5	<15	<19	2158 ± 717	2630 ± 202	<87	<30	611 ± 47
T85*	13-Jan-16	251 ± 39	220 ± 45	<13	<15	<10	<13	1129 ± 421	577 ± 213	<55	45 ± 12	464 ± 42

*Note that site T84 is the same location as site T05, and site T85 is the same location as site T06.

3.c. AQUATIC VEGETATION - Non-Specific - (pCi/kg, wet weight)

Sample Site	Collection Date	Be-7	K-40	Mn-54	Co-58	Co-60	Ag-110m	I-131	Cs-134	Cs-137	Ra-226	Ra-228
T84	No sample available this quarter.											

4.a. GOAT'S MILK - (pCi/L)

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ba-140</u> <u>La-140 (A)</u>
--------------------	------------------------	-------------	--------------	---------------	---------------	------------------------------------

T99 Sample not scheduled for collection this quarter.

(A) - This tabulated LLD value is for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity.

4.b. MARINE LIFE - Horseshoe Crab - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Ag-110m</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
--------------------	------------------------	-------------	--------------	--------------	--------------	--------------	--------------	----------------	---------------	---------------	---------------	---------------

T84 No sample available this quarter.

4.c. FOOD CROPS - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Ag-110m</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
--------------------	------------------------	-------------	-------------	--------------	--------------	--------------	----------------	--------------	---------------	---------------	---------------	---------------

T43(A)	22-Mar-16	<82	1614 ± 114	<12	<10	<12	<10	<11	<9	<12	<158	<55
--------	-----------	-----	------------	-----	-----	-----	-----	-----	----	-----	------	-----

T44(B)	29-Mar-16	<51	3413 ± 141	<9	<9	<9	<8	<13	<6	<8	<154	<34
--------	-----------	-----	------------	----	----	----	----	-----	----	----	------	-----

T45 Sample not scheduled for collection this quarter.

- (A) Coconut milk
- (B) Green string beans



RADIOLOGICAL SURVEILLANCE
OF
FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT SITE

SECOND QUARTER 2016

BUREAU OF RADIATION CONTROL

TURKEY POINT SITE

Offsite Dose Calculation Manual Sampling

Second Quarter, 2016

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	23	23
2. Airborne			
2.a. Air Iodines	Weekly	6	78
2.b. Air Particulates	Weekly	6	78
3. Waterborne			
3.a. Surface Water	Monthly	3	9
3.b. Shoreline Sediment	Semiannually	3	0
4. Ingestion			
4.a. Fish and Invertebrates			
4.a.1. Crustacea	Semiannually	2	2
4.a.2. Fish	Semiannually	2	2
4.b. Broadleaf Vegetation	Monthly	3	9
			Total: 201

NOTE: Measurement results having magnitudes that are significantly above the background of the measurement system are reported as net values plus or minus a one-standard-deviation error term. Measurement results that are not significantly above background are reported as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.

The marine fauna listed in this report were collected in part, under Florida FWC SAL030.

1. DIRECT RADIATION - TLD's - (μ R/hour)

Sample Site	Deployment 23-Mar-16 Collection 15-June-16	Sample Site	Deployment 23-Mar-16 Collection 15-June-16
N-2	3.74 \pm 0.20	WSW-8	3.16 \pm 0.11
N-7	3.16 \pm 0.12		
N-10	3.46 \pm 0.45	SW-1	3.00 \pm 0.06
		SW-8	2.68 \pm 0.12
NNW-2	3.44 \pm 0.30		
NNW-10	3.62 \pm 0.28	SSW-5	3.10 \pm 1.22
		SSW-10	3.02 \pm 0.07
NW-1	4.00 \pm 0.34		
NW-5	3.07 \pm 0.20	S-5	2.76 \pm 0.15
NW-10	4.27 \pm 0.20	S-10	3.35 \pm 0.06
WNW-2	3.37 \pm 0.35	SSE-1	2.70 \pm 0.07
WNW-10	3.94 \pm 0.32	SSE-10	2.90 \pm 0.26
W-1	3.14 \pm 0.29	NNE-22	3.58 \pm 0.13
W-5	3.10 \pm 0.30		
W-9	3.10 \pm 0.34		

2.a. IODINE-131 IN WEEKLY AIR CARTRIDGES - (pCi/m³)

<u>Collection Date</u>	<u>T41</u>	<u>T51</u>	<u>T57</u>	<u>T58</u>	<u>T64</u>	<u>T72</u>
04-Apr-16	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04(A)
11-Apr-16	<0.03	<0.03	<0.05(B)	<0.03	<0.03	<0.03
19-Apr-16	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
26-Apr-16	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
03-May-16	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
10-May-16	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
16-May-16	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
23-May-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
31-May-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
07-Jun-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
14-Jun-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
21-Jun-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
27-Jun-16	<0.02	<0.02	<0.02	<0.02	<0.03	<0.04(C)

(A) Pump was off upon arrival; turned pump back on. Estimated run time 50.5 out of 142.5 hrs.

(B) Pump failed and was replaced. Estimated run time 36.7 out of 169.8 hrs.

(C) Pump failed and was replaced. Estimated run time 23.2 out of 143.7 hrs.

2.b. AIR PARTICULATES - GROSS BETA - (pCi/m³)

<u>Collection Date</u>	<u>T41</u>	<u>T51</u>	<u>T57</u>	<u>T58</u>	<u>T64</u>	<u>T72</u>
04-Apr-16	0.004 ± 0.002	<0.010	<0.009	0.005 ± 0.002	0.005 ± 0.002	<0.021(A)
11-Apr-16	0.011 ± 0.002	0.011 ± 0.002	<0.032(B)	0.012 ± 0.002	0.011 ± 0.002	0.013 ± 0.002
19-Apr-16	0.007 ± 0.002	0.009 ± 0.002	0.009 ± 0.002	0.004 ± 0.002	0.010 ± 0.002	0.008 ± 0.002
26-Apr-16	0.016 ± 0.002	0.010 ± 0.002	0.012 ± 0.002	0.016 ± 0.002	0.007 ± 0.002	0.014 ± 0.002
03-May-16	0.010 ± 0.002	0.011 ± 0.002	0.009 ± 0.002	0.011 ± 0.002	0.010 ± 0.002	0.004 ± 0.002
10-May-16	0.013 ± 0.002	0.009 ± 0.002	0.009 ± 0.002	0.016 ± 0.002	0.010 ± 0.002	0.008 ± 0.002
16-May-16	0.014 ± 0.002	0.014 ± 0.003	0.019 ± 0.003	0.016 ± 0.003	0.014 ± 0.003	0.010 ± 0.002
23-May-16	0.004 ± 0.002	<0.008	<0.008	<0.008	<0.009	0.004 ± 0.002
31-May-16	0.006 ± 0.002	0.012 ± 0.002	<0.007	0.008 ± 0.002	0.009 ± 0.002	0.004 ± 0.002
07-Jun-16	<0.008	0.004 ± 0.002	0.004 ± 0.002	<0.008	0.004 ± 0.002	0.005 ± 0.002
14-Jun-16	0.009 ± 0.002	0.004 ± 0.002	0.006 ± 0.002	0.005 ± 0.002	0.006 ± 0.002	0.007 ± 0.002
21-Jun-16	0.009 ± 0.002	0.007 ± 0.002	0.008 ± 0.002	0.006 ± 0.002	<0.009	0.011 ± 0.002
27-Jun-16	<0.008	<0.009	<0.010	<0.009	<0.011	<0.045(C)
Average:	<0.009	<0.009	<0.011	<0.010	<0.009	<0.012

(A) Pump was off upon arrival; turned pump back on. Estimated run time 50.5 out of 142.5 hrs.

(B) Pump failed and was replaced. Estimated run time 36.7 out of 169.8 hrs.

(C) Pump failed and was replaced. Estimated run time 23.2 out of 143.7 hrs.

2.b. AIR PARTICULATES - GAMMA ANALYSIS OF QUARTERLY COMPOSITES - (pCi/m³)

<u>Sample Site</u>	<u>Be-7</u>	<u>K-40</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>
T41	0.1423 ± 0.0127	<0.0244	<0.0016	<0.0012	<0.0374
T51	0.1537 ± 0.0124	<0.0235	<0.0016	<0.0012	<0.0378
T57	0.1798 ± 0.0119	<0.0181	<0.0015	<0.0013	<0.0154
T58	0.1381 ± 0.0116	<0.0221	<0.0014	<0.0011	<0.0342
T64	0.1479 ± 0.0105	<0.0146	<0.0014	<0.0012	0.0177 ± 0.0033
T72	0.1544 ± 0.0113	<0.0173	<0.0016	<0.0012	0.0160 ± 0.0033

3.a. SURFACE WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
T42	19-Apr-16	<163	147 ± 16	<3	<3	<5	<3	<7	<5	<5	<3	<3	<6
	17-May-16	<153	345 ± 25	<3	<4	<7	<4	<7	<6	<6	<3	<3	<6
	15-Jun-16	<150	307 ± 24	<3	<3	<6	<3	<8	<6	<4	<3	<3	<7
T67	20-Apr-16	<161	261 ± 22	<3	<3	<7	<4	<8	<6	<5	<3	<3	<4
	17-May-16	<144	121 ± 15	<3	<3	<6	<3	<6	<6	<5	<3	<3	<5
	14-Jun-16	<150	228 ± 17	<3	<3	<5	<3	<6	<4	<3	<2	<3	<5
T81	19-Apr-16	<161	300 ± 16	<2	<2	<4	<2	<4	<3	<3	<2	<2	<3
	17-May-16	<153	361 ± 26	<3	<3	<7	<3	<7	<5	<5	<3	<3	<5
	15-Jun-16	<148	345 ± 25	<3	<3	<6	<4	<7	<6	<4	<3	<3	<5

(A) - These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLD's.

(B) - These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample.

3.b. SHORELINE SEDIMENT - (pCi/kg, dry weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>	<u>Ra-226</u>	<u>Th-232</u>
--------------------	------------------------	-------------	-------------	--------------	--------------	---------------	---------------	---------------	---------------	---------------

These samples were previously collected.

4.a.1. CRUSTACEA - Blue Crab - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T67	16-Jun-16	1644 ± 185	<24	<25	<61	<29	<59	<22	<29	398 ± 148	<117
T81	06-Apr-16	2173 ± 257	<37	<45	<89	<42	<88	<29	<35	709 ± 242	<197

4.a.2. FISH - Mixed Species - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T67(A)	23-Jun-16	2045 ± 154	<21	<20	<43	<20	<44	<20	<21	<395	<81
T81(B)	06-Apr-16	2534 ± 217	<27	<24	<67	<32	<64	<23	<25	<472	<105

(A) Mangrove Snapper

(B) Mixed species

4.b. BROADLEAF VEGETATION - Brazilian Pepper - (pCi/kg, wet weight)

Sample Site	Collection Date	<u>Be-7</u>	<u>K-40</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>	<u>Pb-212</u>	<u>Ra-226</u>	<u>Ra-228</u>
T40	20-Apr-16	1925 ± 87	5044 ± 214	<17	<11	19 ± 5	<1122	<25	<284	<57
	17-May-16	504 ± 45	4323 ± 192	<19	<9	53 ± 6	<852	<22	<247	<53
	14-Jun-16	1209 ± 47	3357 ± 128	<11	<6	31 ± 3	316 ± 65	<13	<158	<26
T41	20-Apr-16	891 ± 58	5170 ± 216	<15	<10	<15	<1073	<20	<242	<53
	17-May-16	511 ± 43	3219 ± 161	<17	<10	15 ± 4	<834	<22	<225	<50
	14-Jun-16	1849 ± 83	3803 ± 177	<17	<10	20 ± 4	<929	<24	90 ± 76	<47
T67	20-Apr-16	659 ± 50	4606 ± 200	<18	<11	22 ± 5	<841	<22	<250	<52
	17-May-16	864 ± 56	4299 ± 189	<19	<10	<12	<937	<23	<245	<49
	14-Jun-16	1140 ± 49	5131 ± 179	<12	<7	14 ± 2	279 ± 65	<14	<169	<31

TURKEY POINT SITE

Supplemental Sampling

Second Quarter, 2016

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	9	9
2. Airborne			
2.a. Air Iodines	Weekly	2	26
2.b. Air Particulates	Weekly	2	26
3. Waterborne			
3.a. Surface Water	Monthly	4	12
3.b. Shoreline Sediment	Semiannually	10	0
3.c. Aquatic Vegetation	Quarterly	1	0
4. Ingestion			
4.a. Milk	Semiannually	1	1
4.b. Marine Life	Semiannually	1	0
4.c. Food Crops	At Harvest	3	1
			Total: 75

NOTE: Measurement results having magnitudes that are significantly above the background of the measurement system are reported as net values plus or minus a one-standard-deviation error term. Measurement results that are not significantly above background are reported as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.

1. DIRECT RADIATION - TLD's - ($\mu\text{R}/\text{hour}$)

Sample Site	Deployment 23-Mar-16 Collection 15-June-16
NNW-6	3.30 \pm 0.06
NW-7	3.77 \pm 0.38
NW-8	3.82 \pm 0.38
WNW-3	3.63 \pm 0.09
WNW-6	3.30 \pm 0.19
W-8	3.59 \pm 0.51
ENE-1	2.54 \pm 0.19
T72	3.26 \pm 0.17
PTN-1	3.27 \pm 0.37

2.a. IODINE-131 IN WEEKLY AIR CARTRIDGES - (pCi/m^3)

Collection Date	T52	T56
04-Apr-16	<0.04	<0.04
11-Apr-16	<0.03	<0.03
19-Apr-16	<0.03	<0.03
26-Apr-16	<0.03	<0.03
03-May-16	<0.03	<0.03
10-May-16	<0.03	<0.03
16-May-16	<0.03	<0.03
23-May-16	<0.02	<0.02
31-May-16	<0.02	<0.02
07-Jun-16	<0.02	<0.02
14-Jun-16	<0.02	<0.02
21-Jun-16	<0.02	<0.02
27-Jun-16	<0.02	<0.02

2.b. AIR PARTICULATES - GROSS BETA - (pCi/m³)

<u>Collection Date</u>	<u>T52</u>	<u>T56</u>
04-Apr-16	0.005 ± 0.002	<0.008
11-Apr-16	0.014 ± 0.002	0.014 ± 0.002
19-Apr-16	0.007 ± 0.002	0.012 ± 0.002
26-Apr-16	0.013 ± 0.002	0.015 ± 0.002
03-May-16	0.013 ± 0.002	<0.008
10-May-16	0.004 ± 0.002	0.005 ± 0.002
16-May-16	0.014 ± 0.002	0.010 ± 0.002
23-May-16	<0.008	0.004 ± 0.002
31-May-16	0.004 ± 0.002	0.010 ± 0.002
07-Jun-16	0.005 ± 0.002	0.005 ± 0.002
14-Jun-16	0.005 ± 0.002	0.004 ± 0.002
21-Jun-16	0.009 ± 0.002	0.006 ± 0.002
27-Jun-16	<0.009	<0.008
Average:	<0.008	<0.008

2.b. AIR PARTICULATES - GAMMA ANALYSIS OF QUARTERLY COMPOSITES - (pCi/m³)

<u>Sample Site</u>	<u>Be-7</u>	<u>K-40</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>
T52	0.1655 ± 0.0126	<0.0226	<0.0013	<0.0011	<0.0381
T56	0.1406 ± 0.0123	<0.0234	<0.0014	<0.0011	<0.0404

3.a. SURFACE WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
T08	19-Apr-16	12919 ± 186	551 ± 32	<3	<3	<6	<3	<7	<6	<4	<3	<3	<5
	17-May-16	9905 ± 163	585 ± 34	<3	<3	<8	<4	<7	<6	<6	<3	<4	<5
	15-Jun-16	5576 ± 127	576 ± 34	<4	<3	<6	<4	<8	<5	<4	<3	<4	<6
T75	20-Apr-16	<161	<34	<2	<2	<5	<3	<6	<4	<3	<2	<3	<5
	17-May-16	<153	<39	<3	<3	<6	<3	<6	<5	<5	<3	<4	<5
	14-Jun-16	<148	<42	<3	<3	<5	<4	<7	<5	<4	<3	<3	<5
T84	19-Apr-16	13078 ± 187	520 ± 32	<3	<3	<7	<3	<8	<6	<6	<3	<3	<4
	17-May-16	9686 ± 161	623 ± 35	<3	<4	<7	<4	<8	<6	<6	<3	<4	<6
	14-Jun-16	5915 ± 130	612 ± 34	<3	<3	<6	<4	<7	<6	<4	<3	<3	<5
T97	19-Apr-16	13361 ± 189	511 ± 31	<4	<3	<7	<3	<7	<5	<6	<3	<4	<5
	17-May-16	9909 ± 163	555 ± 26	<3	<3	<6	<3	<6	<4	<5	<3	<3	<4
	15-Jun-16	5426 ± 125	571 ± 27	<2	<3	<5	<3	<6	<4	<3	<2	<3	<5

(A) - These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLD's.

(B) - These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample.

3.b. SHORELINE SEDIMENT - (pCi/kg, dry weight)

Sample Site	Collection Date	<u>Be-7</u>	<u>K-40</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>	<u>Ra-226</u>	<u>Th-232</u>
-------------	-----------------	-------------	-------------	--------------	--------------	---------------	---------------	---------------	---------------	---------------

These samples were previously collected.

3.c. AQUATIC VEGETATION - Non-Specific - (pCi/kg, wet weight)

Sample Site	Collection Date	<u>Be-7</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Ag-110m</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-212</u>	<u>Ra-226</u>	<u>Ra-228</u>
-------------	-----------------	-------------	-------------	--------------	--------------	--------------	----------------	--------------	---------------	---------------	---------------	---------------	---------------

T84 There was no sample available during the quarter.

4.a. GOAT'S MILK - (pCi/L)

Sample Site	Collection Date	<u>K-40</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ba-140</u> <u>La-140 (A)</u>
T99	09-Jun-16	1607 ± 62	<14	<3	<4	<9

(A) - This tabulated LLD value is for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity.

(B) - Due to extenuating circumstances, unable to get milk sample to lab in time to meet I-131 time constraints.

4.b. MARINE LIFE - Horseshoe Crab - (pCi/kg, wet weight)

Sample Site	Collection Date	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Ag-110m</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T84	This sample was not available during the quarter.											

4.c. FOOD CROPS - Corn - (pCi/kg, wet weight)

Sample Site	Collection Date	<u>Be-7</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Ag-110m</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T43	This sample was previously collected.											
T44	This sample was previously collected.											
T45	01-Apr-16	<71	2689 ± 127	<9	<10	<11	<9	<15	<7	<9	<142	<39



RADIOLOGICAL SURVEILLANCE
OF
FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT SITE

THIRD QUARTER 2016

BUREAU OF RADIATION CONTROL

TURKEY POINT SITE

Offsite Dose Calculation Manual Sampling

Third Quarter, 2016

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	23	23
2. Airborne			
2.a. Air Iodines	Weekly	6	78
2.b. Air Particulates	Weekly	6	78
3. Waterborne			
3.a. Surface Water	Monthly	3	9
3.b. Shoreline Sediment	Semiannually	3	3
4. Ingestion			
4.a. Fish and Invertebrates			
4.a.1. Crustacea	Semiannually	2	0
4.a.2. Fish	Semiannually	2	0
4.b. Broadleaf Vegetation	Monthly	3	9
			Total: 200

NOTE: Measurement results having magnitudes that are significantly above the background of the measurement system are reported as net values plus or minus a one-standard-deviation error term. Measurement results that are not significantly above background are reported as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.

The marine fauna listed in this report were collected in part, under Florida FWC SAL030.

1. DIRECT RADIATION - TLD's - ($\mu\text{R}/\text{hour}$)

Sample Site	Deployment 15-June-16 Collection 13-Sep-16	Sample Site	Deployment 15-June-16 Collection 13-Sep-16
N-2	4.24 ± 0.22	WSW-8	3.67 ± 0.17
N-7	3.47 ± 0.29		
N-10	4.03 ± 0.20	SW-1	3.56 ± 0.61
		SW-8	3.28 ± 0.47
NNW-2	3.94 ± 0.47		
NNW-10	4.71 ± 0.61	SSW-5	3.21 ± 0.11
		SSW-10	3.56 ± 0.28
NW-1	4.40 ± 0.63		
NW-5	3.62 ± 0.58	S-5	3.15 ± 0.56
NW-10	4.82 ± 0.53	S-10	3.83 ± 0.08
WNW-2	3.97 ± 0.35	SSE-1	3.15 ± 0.18
WNW-10	4.50 ± 0.44	SSE-10	3.29 ± 0.05
W-1	3.68 ± 0.15	NNE-22	4.01 ± 0.16
W-5	3.78 ± 0.10		
W-9	3.58 ± 0.35		

2.a. IODINE-131 IN WEEKLY AIR CARTRIDGES - (pCi/m³)

<u>Collection Date</u>	<u>T41</u>	<u>T51</u>	<u>T57</u>	<u>T58</u>	<u>T64</u>	<u>T72</u>
05-Jul-16	<0.02	<0.02	<0.02	<0.02(A)	<0.02	<0.02
11-Jul-16	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
19-Jul-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
26-Jul-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
02-Aug-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
09-Aug-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
16-Aug-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
23-Aug-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
29-Aug-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
06-Sep-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
13-Sep-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
19-Sep-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
27-Sep-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

(A) Pump down, failed and was replaced. Estimated run time 147.7 out of 195 hours.

2.b. AIR PARTICULATES - GROSS BETA - (pCi/m³)

<u>Collection Date</u>	<u>T41</u>	<u>T51</u>	<u>T57</u>	<u>T58</u>	<u>T64</u>	<u>T72</u>
05-Jul-16	0.007 ± 0.002	0.005 ± 0.002	0.003 ± 0.002	<0.009(A)	0.006 ± 0.002	0.005 ± 0.002
11-Jul-16	0.011 ± 0.002	0.006 ± 0.002	0.007 ± 0.002	0.008 ± 0.002	0.010 ± 0.002	0.010 ± 0.002
19-Jul-16	<0.007	<0.007	0.004 ± 0.002	0.005 ± 0.002	0.004 ± 0.002	0.006 ± 0.002
26-Jul-16	0.012 ± 0.002	0.009 ± 0.002	0.012 ± 0.002	0.011 ± 0.002	0.010 ± 0.002	0.006 ± 0.002
02-Aug-16	0.010 ± 0.002	0.014 ± 0.002	0.019 ± 0.002	0.014 ± 0.002	0.011 ± 0.002	0.007 ± 0.002
09-Aug-16	0.013 ± 0.002	0.009 ± 0.002	0.013 ± 0.002	0.018 ± 0.002	0.010 ± 0.002	0.009 ± 0.002
16-Aug-16	0.006 ± 0.002	0.007 ± 0.002	0.006 ± 0.002	0.009 ± 0.002	0.009 ± 0.002	0.006 ± 0.002
23-Aug-16	0.009 ± 0.002	0.010 ± 0.002	0.009 ± 0.002	0.012 ± 0.002	0.011 ± 0.002	0.007 ± 0.002
29-Aug-16	0.010 ± 0.002	0.007 ± 0.002	<0.009	0.007 ± 0.002	0.006 ± 0.002	0.005 ± 0.002
06-Sep-16	0.011 ± 0.002	0.010 ± 0.002	0.012 ± 0.002	0.013 ± 0.002	0.011 ± 0.002	0.008 ± 0.002
13-Sep-16	0.008 ± 0.002	0.006 ± 0.002	0.009 ± 0.002	0.006 ± 0.002	0.008 ± 0.002	0.010 ± 0.002
19-Sep-16	0.010 ± 0.002	0.009 ± 0.002	0.009 ± 0.002	0.008 ± 0.002	0.010 ± 0.002	0.012 ± 0.002
27-Sep-16	0.005 ± 0.002	0.009 ± 0.002	0.010 ± 0.002	0.007 ± 0.002	0.009 ± 0.002	0.011 ± 0.002
Average:	<0.009	<0.008	<0.009	<0.010	0.009 ± 0.001	0.008 ± 0.001

(A) Pump down, failed and was replaced. Estimated run time 147.7 out of 195 hours.

2.b. AIR PARTICULATES - GAMMA ANALYSIS OF QUARTERLY COMPOSITES - (pCi/m³)

<u>Sample Site</u>	<u>Be-7</u>	<u>K-40</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>
T41	0.1475 ± 0.0147	<0.0098	<0.0011	<0.0011	0.0062 ± 0.0024
T51	0.1711 ± 0.0180	<0.0229	<0.0014	<0.0013	<0.0358
T57	0.1631 ± 0.0151	<0.0164	<0.0012	<0.0008	<0.0130
T58	0.1868 ± 0.0192	<0.0351	<0.0016	<0.0012	<0.0395
T64	0.2133 ± 0.0166	<0.0173	<0.0013	<0.0010	<0.0116
T72	0.1682 ± 0.0178	<0.0210	<0.0017	<0.0015	<0.0364

3.a. SURFACE WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
T42	20-Jul-16	<150	318 ± 39	<6	<7	<13	<7	<13	<10	<11	<5	<7	<11
	09-Aug-16	<156	412 ± 43	<7	<7	<14	<7	<13	<14	<35	<5	<7	<23
	15-Sep-16	<150	286 ± 23	<3	<3	<7	<3	<7	<6	<5	<3	<4	<4
T67	21-Jul-16	<150	180 ± 34	<6	<6	<13	<7	<14	<11	<10	<5	<7	<11
	09-Aug-16	<156	198 ± 35	<7	<6	<16	<6	<14	<13	<35	<5	<6	<24
	15-Sep-16	<162	293 ± 37	<5	<5	<10	<7	<11	<11	<8	<5	<6	<11
T81	20-Jul-16	<150	334 ± 41	<6	<6	<14	<6	<14	<9	<10	<6	<6	<12
	09-Aug-16	<156	352 ± 26	<3	<3	<10	<3	<8	<6	<19	<3	<4	<11
	15-Sep-16	<150	244 ± 36	<6	<6	<12	<6	<14	<10	<10	<6	<6	<10

(A) - These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLD's.

(B) - These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample.

3.b. SHORELINE SEDIMENT - (pCi/kg, dry weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>	<u>Ra-226</u>	<u>Th-232</u>	<u>U-235</u>	<u>U-238</u>
T42	20-Jul-16	75 ± 17	94 ± 22	<8	<8	<8	<8	660 ± 82	1002 ± 85	<34	<14	381 ± 26
T67	21-Jul-16	<98	304 ± 48	<10	<11	<9	<12	<730	<217	<50	<14	97 ± 36
T81	20-Jul-16	<106	187 ± 55	<15	<15	<11	<14	<1003	<389	<67	<24	545 ± 67

4.a.1. CRUSTACEA - Blue Crab - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>	
T67		Sample not scheduled for collection this quarter.										
T81		Sample not scheduled for collection this quarter.										

4.a.2. FISH - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>	
T67		Sample not scheduled for collection this quarter.										
T81		Sample not scheduled for collection this quarter.										

4.b. BROADLEAF VEGETATION - Brazilian Pepper - (pCi/kg, wet weight)

Sample Site	Collection Date	Be-7	K-40	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>	<u>Pb-212</u>	<u>Ra-226</u>	<u>Ra-228</u>
T40	20-Jul-16	1576 ± 61	4466 ± 166	<15	<8	99 ± 5	165 ± 61	<17	<209	<33
	09-Aug-16	1836 ± 67	4360 ± 162	<16	<7	42 ± 4	257 ± 66	<17	<187	<32
	15-Sep-16	3969 ± 141	4219 ± 210	<23	<12	119 ± 10	<1008	<37	<367	<70
T41	20-Jul-16	1429 ± 55	4485 ± 161	<13	<7	30 ± 3	184 ± 58	<16	<180	<29
	09-Aug-16	2743 ± 89	5751 ± 204	<19	<9	23 ± 3	<330	<18	<237	<39
	15-Sep-16	3441 ± 100	4721 ± 173	<13	<7	24 ± 3	535 ± 85	<19	<219	<34
T67	21-Jul-16	1283 ± 73	4369 ± 203	<19	<12	15 ± 5	<998	<20	<303	<59
	09-Aug-16	2608 ± 109	4626 ± 218	<28	<12	19 ± 5	<1096	<30	<312	<66
	15-Sep-16	1806 ± 90	4624 ± 220	<19	<12	12 ± 4	<993	<29	210 ± 97	<65

TURKEY POINT SITE

Supplemental Sampling

Third Quarter, 2016

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	9	9
2. Airborne			
2.a. Air Iodines	Weekly	2	26
2.b. Air Particulates	Weekly	2	26
3. Waterborne			
3.a. Surface Water	Monthly	4	12
3.b. Shoreline Sediment	Semiannually	2	2
3.c. Aquatic Vegetation	Quarterly	1	0
4. Ingestion			
4.a. Milk	Semiannually	1	0
4.b. Marine Life	Semiannually	1	0
4.c. Food Crops	At Harvest	3	0
			Total: 75

NOTE: Measurement results having magnitudes that are significantly above the background of the measurement system are reported as net values plus or minus a one-standard-deviation error term. Measurement results that are not significantly above background are reported as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.

The marine fauna listed in this report were collected in part, under Florida FWC SAL030.

1. DIRECT RADIATION - TLD's - ($\mu\text{R}/\text{hour}$)

<u>Sample Site</u>	<u>Deployment 15-Jun-16 Collection 13-Sep-16</u>
NNW-6	3.79 \pm 0.45
NW-7	4.32 \pm 0.21
NW-8	4.18 \pm 0.27
WNW-3	4.22 \pm 0.42
WNW-6	3.95 \pm 0.39
W-8	4.05 \pm 0.27
ENE-1	3.06 \pm 0.23
T72	3.85 \pm 0.14
PTN-1	3.68 \pm 0.29

2.a. IODINE-131 IN WEEKLY AIR CARTRIDGES - (pCi/m^3)

<u>Collection Date</u>	<u>T52</u>	<u>T56</u>
05-Jul-16	<0.02	<0.02
11-Jul-16	<0.03	<0.03
19-Jul-16	<0.02	<0.02
26-Jul-16	<0.02	<0.02
02-Aug-16	<0.02	<0.02
09-Aug-16	<0.02	<0.02
16-Aug-16	<0.02	<0.02
23-Aug-16	<0.02	<0.02
29-Aug-16	<0.02	<0.02
06-Sep-16	<0.02	<0.02
13-Sep-16	<0.02	<0.02
19-Sep-16	<0.02	<0.02
27-Sep-16	<0.02	<0.02

2.b. AIR PARTICULATES - GROSS BETA - (pCi/m³)

<u>Collection Date</u>	<u>T52</u>	<u>T56</u>
05-Jul-16	0.004 ± 0.002	0.005 ± 0.002
11-Jul-16	0.008 ± 0.002	0.008 ± 0.002
19-Jul-16	0.012 ± 0.002	<0.007
26-Jul-16	0.009 ± 0.002	0.005 ± 0.002
02-Aug-16	0.012 ± 0.002	0.014 ± 0.002
09-Aug-16	0.011 ± 0.002	0.012 ± 0.002
16-Aug-16	0.011 ± 0.002	<0.008
23-Aug-16	0.009 ± 0.002	0.012 ± 0.002
29-Aug-16	0.010 ± 0.002	0.007 ± 0.002
06-Sep-16	0.015 ± 0.002	0.010 ± 0.002
13-Sep-16	<0.009	0.005 ± 0.002
19-Sep-16	0.009 ± 0.002	0.007 ± 0.002
27-Sep-16	0.009 ± 0.002	0.008 ± 0.002
Average:	<0.010	<0.008

2.b. AIR PARTICULATES - GAMMA ANALYSIS OF QUARTERLY COMPOSITES - (pCi/m³)

<u>Sample Site</u>	<u>Be-7</u>	<u>K-40</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>
T52	0.1735 ± 0.0155	<0.0184	<0.0013	<0.0010	<0.0133
T56	0.1422 ± 0.0166	<0.0225	<0.0015	<0.0012	<0.0393

3.a. SURFACE WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
T08	20-Jul-16	3441 ± 104	776 ± 57	<6	<6	<14	<7	<15	<12	<12	<6	<7	<12
	09-Aug-16	3334 ± 104	628 ± 51	<6	<7	<17	<6	<15	<12	<37	<6	<7	<19
	15-Sep-16	2031 ± 85	593 ± 51	<7	<6	<12	<7	<15	<10	<9	<6	<7	<8
T75	20-Jul-16	<150	<37	<3	<3	<6	<3	<6	<5	<6	<3	<2	<6
	09-Aug-16	<156	<38	<3	<3	<8	<3	<7	<6	<18	<3	<3	<8
	15-Sep-16	<150	<75	<5	<6	<13	<6	<10	<10	<9	<5	<7	<11
T84	20-Jul-16	3212 ± 101	732 ± 38	<4	<3	<7	<3	<7	<6	<6	<3	<4	<5
	09-Aug-16	3037 ± 100	671 ± 54	<6	<8	<17	<7	<16	<13	<39	<6	<6	<20
	15-Sep-16	1939 ± 84	613 ± 35	<3	<4	<7	<3	<8	<6	<6	<3	<3	<5
T97	20-Jul-16	3116 ± 100	738 ± 55	<6	<6	<13	<6	<13	<13	<12	<6	<7	<11
	09-Aug-16	3065 ± 100	718 ± 38	<3	<4	<10	<4	<8	<7	<20	<3	<4	<11
	15-Sep-16	1954 ± 84	620 ± 51	<7	<6	<14	<7	<15	<12	<10	<6	<6	<10

(A) - These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLD's.

(B) - These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample.

3.b. SHORELINE SEDIMENT - (pCi/kg, dry weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>	<u>Ra-226</u>	<u>Th-232</u>	<u>U-235</u>	<u>U-238</u>
T84	20-Jul-16	<189	1161 ± 111	<23	<24	<19	<25	1700 ± 689	2443 ± 195	<93	<31	466 ± 57
T85	20-Jul-16	49 ± 21	338 ± 37	<11	20 ± 2	<10	<11	718 ± 98	1745 ± 109	<49	<16	414 ± 26

3.c. AQUATIC VEGETATION - Non-Specific - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Ag-110m</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>	<u>Pb-212</u>	<u>Ra-226</u>	<u>Ra-228</u>
T84	No sample available for collection.													

4.a. GOAT'S MILK - (pCi/L)

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ba-140</u> <u>La-140 (A)</u>
T99	Sample not scheduled for collection this quarter.					

(A) - This tabulated LLD value is for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity.

4.b. MARINE LIFE - Horseshoe Crab - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Ag-110m</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T84	Sample not scheduled for collection this quarter.											

4.c. FOOD CROPS - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Ag-110m</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T43		This sample was previously collected.										
T44		This sample was previously collected.										
T45		This sample was previously collected.										



RADIOLOGICAL SURVEILLANCE
OF
FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT SITE

FOURTH QUARTER 2016

BUREAU OF RADIATION CONTROL

TURKEY POINT SITE

Offsite Dose Calculation Manual Sampling

Fourth Quarter, 2016

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	23	23
2. Airborne			
2.a. Air Iodines	Weekly	6	78
2.b. Air Particulates	Weekly	6	78
3. Waterborne			
3.a. Surface Water	Monthly	3	9
3.b. Shoreline Sediment	Semiannually	3	0
4. Ingestion			
4.a. Fish and Invertebrates			
4.a.1. Crustacea	Semiannually	2	2
4.a.2. Fish	Semiannually	2	2
4.b. Broadleaf Vegetation	Monthly	3	9
			Total: 201

NOTE: Measurement results having magnitudes that are significantly above the background of the measurement system are reported as net values plus or minus a one-standard-deviation error term. Measurement results that are not significantly above background are reported as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.

The marine fauna listed in this report were collected in part, under Florida FWC SAL030.

1. DIRECT RADIATION - TLD's - ($\mu\text{R}/\text{hour}$)

Sample Site	Deployment 13-Sep-16 Collection 14-Dec-16	Sample Site	Deployment 13-Sep-16 Collection 14-Dec-16
N-2	3.48 ± 0.35	WSW-8	3.44 ± 0.36
N-7	2.96 ± 0.13		
N-10	3.30 ± 0.23	SW-1	3.68 ± 0.21
		SW-8	2.78 ± 0.25
NNW-2	3.24 ± 0.11		
NNW-10	3.98 ± 0.17	SSW-5	2.80 ± 0.23
		SSW-10	3.07 ± 0.52
NW-1	4.34 ± 0.18		
NW-5	3.72 ± 0.08	S-5	2.94 ± 0.13
NW-10	4.10 ± 0.25	S-10	3.29 ± 0.36
WNW-2	3.32 ± 0.15	SSE-1	2.70 ± 0.03
WNW-10	3.96 ± 0.16	SSE-10	3.01 ± 0.33
W-1	3.21 ± 0.17	NNE-22	3.85 ± 0.22
W-5	3.23 ± 0.19		
W-9	3.12 ± 0.28		

2.a. IODINE-131 IN WEEKLY AIR CARTRIDGES - (pCi/m³)

<u>Collection Date</u>	<u>T41</u>	<u>T51</u>	<u>T57</u>	<u>T58</u>	<u>T64</u>	<u>T72</u>
05-Oct-16	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
11-Oct-16	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
18-Oct-16	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
25-Oct-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
01-Nov-16	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
08-Nov-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
15-Nov-16	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
22-Nov-16	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02
29-Nov-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
07-Dec-16	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
13-Dec-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
19-Dec-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.03
27-Dec-16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

2.b. AIR PARTICULATES - GROSS BETA - (pCi/m³)

<u>Collection Date</u>	<u>T41</u>	<u>T51</u>	<u>T57</u>	<u>T58</u>	<u>T64</u>	<u>T72</u>
05-Oct-16	<0.008	0.007 ± 0.002	0.007 ± 0.002	0.005 ± 0.002	0.007 ± 0.002	0.007 ± 0.002
11-Oct-16	0.008 ± 0.002	0.010 ± 0.002	<0.009	0.008 ± 0.002	0.008 ± 0.002	0.005 ± 0.002
18-Oct-16	0.005 ± 0.002	0.008 ± 0.002	0.004 ± 0.002	0.008 ± 0.002	0.010 ± 0.002	0.006 ± 0.002
25-Oct-16	0.015 ± 0.002	0.015 ± 0.002	0.017 ± 0.002	0.015 ± 0.002	0.006 ± 0.002	0.007 ± 0.002
01-Nov-16	0.013 ± 0.002	0.009 ± 0.002	0.018 ± 0.002	0.014 ± 0.002	0.021 ± 0.003	0.014 ± 0.002
08-Nov-16	0.011 ± 0.002	0.013 ± 0.002	0.009 ± 0.002	0.021 ± 0.002	0.013 ± 0.002	0.011 ± 0.002
15-Nov-16	0.039 ± 0.003	0.016 ± 0.002	0.015 ± 0.002	0.019 ± 0.002	0.019 ± 0.003	0.026 ± 0.003
22-Nov-16	0.014 ± 0.002	0.018 ± 0.002	0.009 ± 0.002	0.006 ± 0.002	0.011 ± 0.002	0.013 ± 0.002
29-Nov-16	0.015 ± 0.002	0.024 ± 0.003	0.017 ± 0.002	0.011 ± 0.002	0.020 ± 0.002	0.017 ± 0.002
07-Dec-16	0.014 ± 0.002	0.012 ± 0.002	0.013 ± 0.002	0.011 ± 0.002	0.011 ± 0.002	0.011 ± 0.002
13-Dec-16	0.021 ± 0.003	0.012 ± 0.002	0.013 ± 0.002	0.013 ± 0.003	0.012 ± 0.002	0.017 ± 0.002
19-Dec-16	0.011 ± 0.002	0.006 ± 0.002	0.007 ± 0.002	0.011 ± 0.002	0.010 ± 0.002	0.010 ± 0.003
27-Dec-16	0.006 ± 0.002	0.006 ± 0.002	0.008 ± 0.002	0.007 ± 0.002	0.008 ± 0.002	0.020 ± 0.002
Average:	<0.014	0.012 ± 0.001	<0.011	0.012 ± 0.001	0.012 ± 0.001	0.013 ± 0.001

2.b. AIR PARTICULATES - GAMMA ANALYSIS OF QUARTERLY COMPOSITES - (pCi/m³)

<u>Sample Site</u>	<u>Be-7</u>	<u>K-40</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>
T41	0.1381 ± 0.0095	<0.0118	<0.0013	<0.0009	<0.0183
T51	0.1101 ± 0.0103	<0.0207	<0.0014	<0.0012	0.0122 ± 0.0094
T57	0.1336 ± 0.0105	<0.0279	<0.0014	<0.0008	<0.0308
T58	0.1028 ± 0.0102	<0.0284	<0.0015	<0.0012	<0.0384
T64	0.1299 ± 0.0109	<0.0218	<0.0014	<0.0009	<0.0370
T72	0.1108 ± 0.0101	<0.0339	<0.0012	<0.0012	<0.0368

3.a. SURFACE WATER - (pCi/L)

<u>Sample Site</u>	<u>Collection Date</u>	<u>H-3</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Zr-95 Nb-95 (A)</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ba-140 La-140 (B)</u>
T42	19-Oct-16	<158	206 ± 34	<6	<6	<12	<6	<13	<10	<10	<5	<6	<10
	15-Nov-16	<157	159 ± 32	<6	<6	<13	<7	<14	<11	<10	<5	<6	<9
	13-Dec-16	<169	220 ± 34	<7	<6	<13	<7	<14	<11	<11	<5	<6	<12
T67	19-Oct-16	<161	265 ± 36	<6	<7	<11	<6	<12	<9	<11	<5	<6	<11
	15-Nov-16	<154	297 ± 37	<6	<7	<15	<6	<13	<10	<20	<6	<6	<14
	13-Dec-16	<169	208 ± 34	<6	<7	<12	<7	<13	<10	<9	<5	<7	<9
T81	18-Oct-16	<162	250 ± 37	<6	<6	<13	<7	<14	<10	<11	<6	<6	<9
	15-Nov-16	<154	387 ± 42	<6	<7	<17	<6	<14	<12	<22	<5	<6	<15
	14-Dec-16	<171	327 ± 41	<6	<6	<12	<7	<15	<9	<9	<6	<6	<12

(A) - These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLD's.

(B) - These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample.

3.b. SHORELINE SEDIMENT - (pCi/kg, dry weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>	<u>Ra-226</u>	<u>Th-232</u>	<u>Others:</u>
T42	This sample was previously collected.										
T67	This sample was previously collected.										
T81	This sample was previously collected.										

4.a.1. CRUSTACEA - Blue Crab - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T67	10-Nov-16	1064 ± 108	<16	<19	<44	<17	<37	<15	<15	304 ± 96	<76
T81	09-Nov-16	1170 ± 85	<15	<17	<36	<15	<36	<15	<16	<199	<57

4.a.2. FISH - Mixed Species - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T67	09-Nov-16	1860 ± 148	<20	<21	<57	<23	<44	<19	<20	<401	<71
T81	09-Nov-16	2537 ± 229	<27	<27	<78	<27	<66	<24	<27	<460	<115

4.b. BROADLEAF VEGETATION - Brazilian Pepper - (pCi/kg, wet weight)

Sample Site	Collection Date	Be-7	K-40	I-131	Cs-134	Cs-137	Pb-210	Pb-212	Ra-226	Ra-228
T40	19-Oct-16	3100 ± 116	4090 ± 201	<16	<13	35 ± 6	<1110	<27	<347	<55
	15-Nov-16	2690 ± 110	3640 ± 185	<24	<12	119 ± 8	<1070	<28	<319	<66
	13-Dec-16	5969 ± 173	4408 ± 201	<21	<11	15 ± 4	1017 ± 463	<28	<319	<56
T41	19-Oct-16	3270 ± 95	4760 ± 172	<10	<7	19 ± 3	409 ± 74	<19	<214	<33
	15-Nov-16	3720 ± 131	5190 ± 225	<27	<12	16 ± 5	<1270	<29	<306	<62
	14-Dec-16	2704 ± 86	4684 ± 174	<15	<8	16 ± 2	668 ± 88	<19	<212	<34
T67	19-Oct-16	2200 ± 95	4370 ± 202	<21	<11	20 ± 5	<934	<24	<284	<60
	15-Nov-16	3290 ± 123	3950 ± 190	<26	<13	<15	<1090	<28	<323	<63
	13-Dec-16	2496 ± 105	5448 ± 234	<24	<12	<15	<1055	<26	<323	<60

TURKEY POINT SITE

Supplemental Sampling

Fourth Quarter, 2016

<u>Sample Type</u>	<u>Collection Frequency</u>	<u>Locations Sampled</u>	<u>Number of Samples</u>
1. Direct Radiation	Quarterly	9	9
2. Airborne			
2.a. Air Iodines	Weekly	2	26
2.b. Air Particulates	Weekly	2	26
3. Waterborne			
3.a. Surface Water	Monthly	4	12
3.b. Shoreline Sediment	Semiannually	2	0
3.c. Aquatic Vegetation	Quarterly	1	0
4. Ingestion			
4.a. Milk	Semiannually	1	1
4.b. Marine Life	Semiannually	1	0
4.c. Food Crops	At Harvest	3	0
			Total: 74

NOTE: Measurement results having magnitudes that are significantly above the background of the measurement system are reported as net values plus or minus a one-standard-deviation error term. Measurement results that are not significantly above background are reported as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.

The marine fauna listed in this report were collected in part, under Florida FWC SAL030.

1. DIRECT RADIATION - TLD's - ($\mu\text{R}/\text{hour}$)

Sample Site	Deployment 13-Sep-16 Collection 14-Dec-16
NNW-6	3.16 ± 0.22
NW-7	4.23 ± 0.37
NW-8	4.30 ± 0.29
WNW-3	3.67 ± 0.16
WNW-6	3.45 ± 0.24
W-8	3.58 ± 0.16
ENE-1	2.86 ± 0.55
T72	3.51 ± 0.18
PTN-1	3.14 ± 0.16

2.a. IODINE-131 IN WEEKLY AIR CARTRIDGES - (pCi/m^3)

Collection Date	T52	T56
05-Oct-16	<0.03	<0.03
11-Oct-16	<0.02	<0.01
18-Oct-16	<0.03	<0.03
25-Oct-16	<0.02	<0.02
01-Nov-16	<0.01	<0.01
08-Nov-16	<0.02	<0.02
15-Nov-16	<0.03	<0.03
22-Nov-16	<0.02	<0.02
29-Nov-16	<0.02	<0.02
07-Dec-16	<0.01	<0.01
14-Dec-16	<0.02	<0.02
19-Dec-16	<0.02	<0.02
27-Dec-16	<0.02	<0.02

2.b. AIR PARTICULATES - GROSS BETA - (pCim³)

<u>Collection Date</u>	<u>T52</u>	<u>T56</u>
05-Oct-16	<0.007	0.007 ± 0.002
11-Oct-16	0.013 ± 0.002	0.007 ± 0.002
18-Oct-16	0.011 ± 0.002	0.009 ± 0.002
25-Oct-16	0.016 ± 0.002	0.015 ± 0.002
01-Nov-16	0.012 ± 0.002	0.015 ± 0.002
08-Nov-16	0.017 ± 0.002	0.017 ± 0.002
15-Nov-16	0.013 ± 0.002	0.020 ± 0.003
22-Nov-16	0.013 ± 0.002	0.009 ± 0.002
29-Nov-16	0.014 ± 0.002	0.018 ± 0.002
07-Dec-16	0.003 ± 0.002	0.013 ± 0.002
14-Dec-16	0.009 ± 0.002	0.011 ± 0.002
19-Dec-16	0.014 ± 0.003	<0.009
27-Dec-16	0.005 ± 0.002	0.006 ± 0.002
Average:	<0.011	<0.012

2.b. AIR PARTICULATES - GAMMA ANALYSIS OF QUARTERLY COMPOSITES - (pCi/m³)

<u>Sample Site</u>	<u>Be-7</u>	<u>K-40</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>
T52	0.1239 ± 0.0103	<0.0222	<0.0013	<0.0011	<0.0356
T56	0.1332 ± 0.0104	<0.0310	<0.0013	<0.0012	<0.0366

3.a. SURFACE WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
T08	18-Oct-16	1434 ± 78	558 ± 51	<6	<7	<14	<6	<14	<13	<10	<6	<6	<10
	15-Nov-16	2542 ± 93	773 ± 57	<6	<6	<12	<7	<15	<11	<12	<6	<6	<10
	14-Dec-16	2995 ± 102	627 ± 35	<3	<3	<7	<3	<7	<6	<5	<3	<4	<5
T75	18-Oct-16	<162	<44	<3	<3	<7	<3	<7	<5	<6	<3	<4	<6
	15-Nov-16	<154	<83	<5	<7	<12	<6	<14	<12	<20	<5	<6	<12
	13-Dec-16	<171	<69	<6	<6	<12	<6	<14	<10	<11	<6	<7	<10
T84	18-Oct-16	1331 ± 75	598 ± 52	<7	<7	<14	<6	<12	<12	<12	<5	<5	<10
	15-Nov-16	2667 ± 95	592 ± 52	<6	<7	<13	<6	<14	<12	<22	<5	<6	<16
	14-Dec-16	2826 ± 100	582 ± 51	<6	<7	<13	<7	<15	<14	<10	<6	<6	<11
T97	19-Oct-16	1513 ± 79	567 ± 49	<7	<7	<14	<6	<12	<11	<11	<6	<7	<11
	15-Nov-16	2501 ± 93	571 ± 50	<8	<7	<16	<6	<14	<12	<23	<6	<6	<14
	13-Dec-16	2814 ± 100	689 ± 53	<6	<7	<13	<7	<16	<11	<13	<6	<7	<11

(A) - These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLD's.

(B) - These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample.

3.b. SHORELINE SEDIMENT - (pCi/kg, dry weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-210</u>	<u>Ra-226</u>	<u>Th-232</u>	<u>Others:</u>
T84	This sample was previously collected.										
T85	This sample was previously collected.										

3.c. AQUATIC VEGETATION - Non-Specific - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Ag-110m</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Pb-212</u>	<u>Ra-226</u>	<u>Ra-228</u>
T84	There was no sample available during the quarter.												

4.a. GOAT'S MILK - (pCi/L)

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ba-140 La-140 (A)</u>
T99	19-Dec-16	1589 ± 64	<4	<4	<3	<11

(A) - This tabulated LLD value is for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity.

4.b. MARINE LIFE - Horseshoe Crab - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Fe-59</u>	<u>Co-60</u>	<u>Zn-65</u>	<u>Ag-110m</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T84		There was no sample available during the quarter.										

4.c. FOOD CROPS - (pCi/kg, wet weight)

<u>Sample Site</u>	<u>Collection Date</u>	<u>Be-7</u>	<u>K-40</u>	<u>Mn-54</u>	<u>Co-58</u>	<u>Co-60</u>	<u>Ag-110m</u>	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Ra-226</u>	<u>Ra-228</u>
T43		This sample was previously collected.										
T44		This sample was previously collected.										
T45		This sample was previously collected.										

ATTACHMENT C

**RESULTS FROM THE 2016
INTERLABORATORY COMPARISON PROGRAM
CONDUCTED BY
DEPARTMENT OF ENERGY**

DOE-MAPEP 34 RESULTS

Program status	Radionuclide	Result	Ref. Value	Flag (Evaluation)	Acceptance Range
Matrix: RdF Air Filter Bq/filter					
Required	MN54	4.828	4.53	A	3.17 - 5.89
Required	CO57	2.736	2.94	A	2.06 - 3.82
Required	CO60	4.118	4.02	A	2.81 - 5.23
	ZN65	4.062	3.57	A	2.50 - 4.64
Required	CS134	0.007		A	False Positive Test
Required	CS137	2.396	2.3	A	1.61 - 2.99

Matrix: GrF Air Filter Bq/filter

Required	Gross Beta	0.90	0.79	A	0.40 - 1.19
Required	Gross Alpha	1.55	1.20	A	0.36 - 2.04

Matrix: MaS Soil Bq/kg

Required	K40	618.83	607	A	425 - 789
	MN54	1195.00	1160	A	812 - 1508
	CO57	1003.17	992	A	694 - 1290
	CO60	1186.67	1190	A	833 - 1547
	ZN65	739.00	692	A	484 - 900
	CS134	1020.09	1030	A	721 - 1339
Required	CS137	1.562		N	False Positive Test

Matrix: MaW Water Bq/L

Required	H3	0.686		A	False Positive Test
	MN54	11.967	11.1	A	7.8 - 14.4
	CO57	-1.44		A	False Positive Test
Required	CO60	12.644	11.8	A	8.3-15.3
	ZN65	15.522	13.6	A	9.5 - 17.7
Required	CS134	16.110	16.1	A	11.3 - 20.9
Required	CS137	23.056	21.2	A	14.8 - 27.6
	SR90	8.77	8.74	A	6.12 - 11.36

Matrix: RdV Vegetation, Bq/sample :

	MN54	-0.032		A	False Positive Test
	CO57	10.580	11.8	A	8.3 – 15.3
Required	CO60	0.031		A	False Positive Test
	ZN65	8.832	9.6	A	6.7 - 12.5
	CS134	9.258	10.62	A	7.43 – 13.81
Required	CS137	5.518	5.62	A	3.93 – 7.31

Evaluation : A = Acceptable, W = Acceptable with Warning, N = Not Acceptable

A false positive test with an “A” designation flag identifies the result as less than the detectable activity, since MAPEP does not report zero values.

In MAPEP 34, the results for gamma on air filters, water, soil, and vegetation matrices for those nuclides associated with nuclear power plant operation and using analytical methods used in the REMP are acceptable.

There were two relevant data flags for MAPEP 34:

A not acceptable result for reporting one false positive on Cs- 137 in soil was received. Upon identification, samples were re-analyzed and determined the Cs-137 results were a false positive. Condition report AR# 2153819 was generated to document the condition.

DOE-MAPEP 35 RESULTS

Program status	Radionuclide	Result	Ref. Value	Flag (Evaluation)	Acceptance Range
Matrix: RdF Air Filter Bq/filter					
Required	MN54	2.95	2.75	A	1.93 – 3.58
Required	CO57	2.40	2.48	A	1.74 – 3.22
Required	CO60	3.28	3.26	A	2.28 – 4.24
	ZN65	-0.029		A	False Positive Test
Required	CS134	1.96	2.04	A	1.43 – 2.65
Required	CS137	1.85	1.78	A	1.25 – 2.31

Matrix: MaS Soil Bq/kg					
Required	K40	581.25	588	A	412 - 764
	MN54	0.718		A	False Positive Test
	CO57	1215	1190	A	833 - 1547
	CO60	872	851	A	596-1101
	ZN65	766.25	695	A	487 - 904
	CS134	-0.073		A	False Positive Test
Required	CS137	1135	1067	A	747 - 1387

Matrix: MaW Water Bq/L					
Required	H3	354.5	334	A	234 - 434
	MN54	15.03	14.8	A	10.4 – 19.2
	CO57	25.16	27.3	A	19.1 – 35.5
Required	CO60	0.208		A	False Positive Test
	ZN65	18.6	17.4	A	12.2 – 22.6
Required	CS134	21.953	23.9	A	16.7 – 31.1
Required	CS137	0.041		A	False Positive Test
	SR90	-0.03		A	False Positive Test

Matrix: RdV Vegetation, Bq/sample :					
	MN54	7.338	7.27	A	5.09 – 9.45
	CO57	7.233	6.81	A	4.77- 8.55
Required	CO60	4.820	4.86	A	3.40 – 6.32
	ZN65	5.535	5.40	A	3.78 – 7.02
	CS134	-0.045	5.80	W	False Positive Test
Required	CS137	5.675	5.54	A	3.88 – 7.20

Evaluation : A = Acceptable, W = Acceptable with Warning, N = Not Acceptable

A false positive test with an “A” designation flag identifies the result as less than the detectable activity, since MAPEP does not report zero values.

The results are from the MAPEP Series 35 for August 2016 and satisfy paragraph 6.8.4 of the technical specification for the Turkey Point.

**We did not receive any “Not Acceptable” ratings for nuclides we normally report to the utilities.
We did not report any false positives.**

ATTACHMENT D

Industry Initiative

Ground Water Protection Program

Tritium in Ground Water Monitoring

2016

A. Description of Program:

Turkey Point maintains a sampling and analysis program to meet the requirements of NEI 07-07, Industry Ground Water Protection Initiative. The procedures that govern the performance are EV-AA-100-1001, *Fleet Ground Water Protection Program Implementing Guideline* and O-ADM-654, *Ground Water Protection Program*.

The sampling frequency is quarterly; more often if conditions warrant.

Sample assay is performed by a private contractor GEL labs.

B. Discussion

The Turkey Point Nuclear site is surrounded on three sides by the closed cooling canal system. This canal system, in addition to being the source of tertiary cooling, is the body of water receiving permitted liquid radiological waste the canal system tritium level averages was 6126 pCi/L in 2016 with a max concentration of 17,456 pCi/L. This supports the expectation to see tritium in subsurface water collected either on-site or off-site close to the (within the Owner Controlled Area) cooling canal system. Twenty eight (28) wells were involved in the 2016 monitoring program; some locations have multiple (two or three) depths.

Samples are analyzed for Tritium & Gamma emitters. As conditions warrant, analysis included Fe-55, Ni-63, Sr-89/90 and alpha (all were < LLD).

C. Results

The tritium results for the groundwater wells were from <MDA to 5500 pCi/L. All results were less than the limits of the Offsite Dose Calculation Manual, Table 5.1-2, Reporting Levels for Radioactivity Concentrations in Environmental Samples. Storm drain outfalls occasionally are below the tidal mark of the canal and will have ingress of canal water into the storm drain. The higher levels of tritium in the storm drain section are due to the canal water ingress into the storm drain.

Tabular results follow:

Groundwater well sampling results 2016

Well number	Q1			Q2			Q3			Q4		
	H-3	K-40	Cs-137									
PTPED-1	488	---	---	<MDC	---	---	<MDC	---	---	320	---	---
CD-1	545	---	---	751	---	---	481	---	---	<MDC	---	---
P-94-2	2010	---	---	N/A	N/A	N/A	386	---	---	N/A	N/A	N/A
P-94-4	2200	---	6	1310	---	---	1170	---	---	903	---	---
STP-1	<MDC	---	---	N/A	N/A	N/A	<MDC	---	---	N/A	---	---

PTN-MW-1s	<MDC	---	---	N/A	N/A	N/A	<MDC	---	---	N/A	N/A	N/A
PTN-MW-1i	700	369	---	N/A	N/A	N/A	380	378	---	N/A	N/A	N/A
PTN-MW-1d	1760	411	---	N/A	N/A	N/A	1950	524	---	N/A	N/A	N/A
PTN-MW-2s	<MDC	---	---	N/A	N/A	N/A	<MDC	---	---	N/A	N/A	N/A
PTN-MW-3s	<MDC	---	---	N/A	N/A	N/A	<MDC	---	---	N/A	N/A	N/A
PTN-MW-4s	1050	---	---	<MDC	---	---	343	---	---	<MDC	---	---
PTN-MW-4i	3570	---	---	<MDC	503	---	<MDC	---	---	<MDC	---	---
PTN-MW-4d	<MDC	---	---	<MDC	576	---	3720	---	---	<MDC	---	---
PTN-MW-5s	5500	397	---	1320	183	---	884	170	---	480	---	---
PTN-MW-5i	521	427	---	2610	495	---	542	341	---	344	319	---
PTN-MW-5d	2500	459	---	2760	646	---	2880	605	---	2700	529	---
PTN-MW-6s	<MDC	163	---	N/A	N/A	N/A	<MDC	97	---	N/A	N/A	N/A
PTN-MW-6d	1530	597	---	N/A	N/A	N/A	1960	495	---	N/A	N/A	N/A
PTN-MW-7s	649	---	---	756	-	---	886	65	---	916	---	---
PTN-MW-7i	1760	242	---	1730	243	---	2400	245	---	2370	---	---
PTN-MW-7d	<MDC	333	---	<MDC	---	---	<MDC	558	---	<MDC	---	---
PTN-MW-8s	1020	125	6.4	2910	---	22	3900	52	16	964	---	28
PTN-MW-9s	561	114	---	455	---	---	<MDC	---	---	422	---	---
PTN-MW-10s	<MDC	-	---	N/A	N/A	N/A	<MDC	---	---	N/A	N/A	N/A
PTN-MW-10i	1290	290	---	N/A	N/A	N/A	<MDC	---	---	N/A	N/A	N/A
PTN-MW-10d	<MDC	---	---	N/A	N/A	N/A	<MDC	---	---	N/A	N/A	N/A
PTN-MW-11s	<MDC	---	---									
PTN-MW-12s	1140	103	---	1080	131	---	1040	---	---	868	---	---

NE StrmDrain	<MDC	---	---	737	---	---	1140	---	---	663	---	---
SE StrmDrain	7480	---	---	5100	---	---	10600	---	---	<MDC	---	---
W StrmDrain	6010	---	---	1010	---	---	528	---	---	1080	---	---
CRF StrmDrain	<MDC	---	---	<MDC	---	---	<MDC	---	---	<MDC	---	---

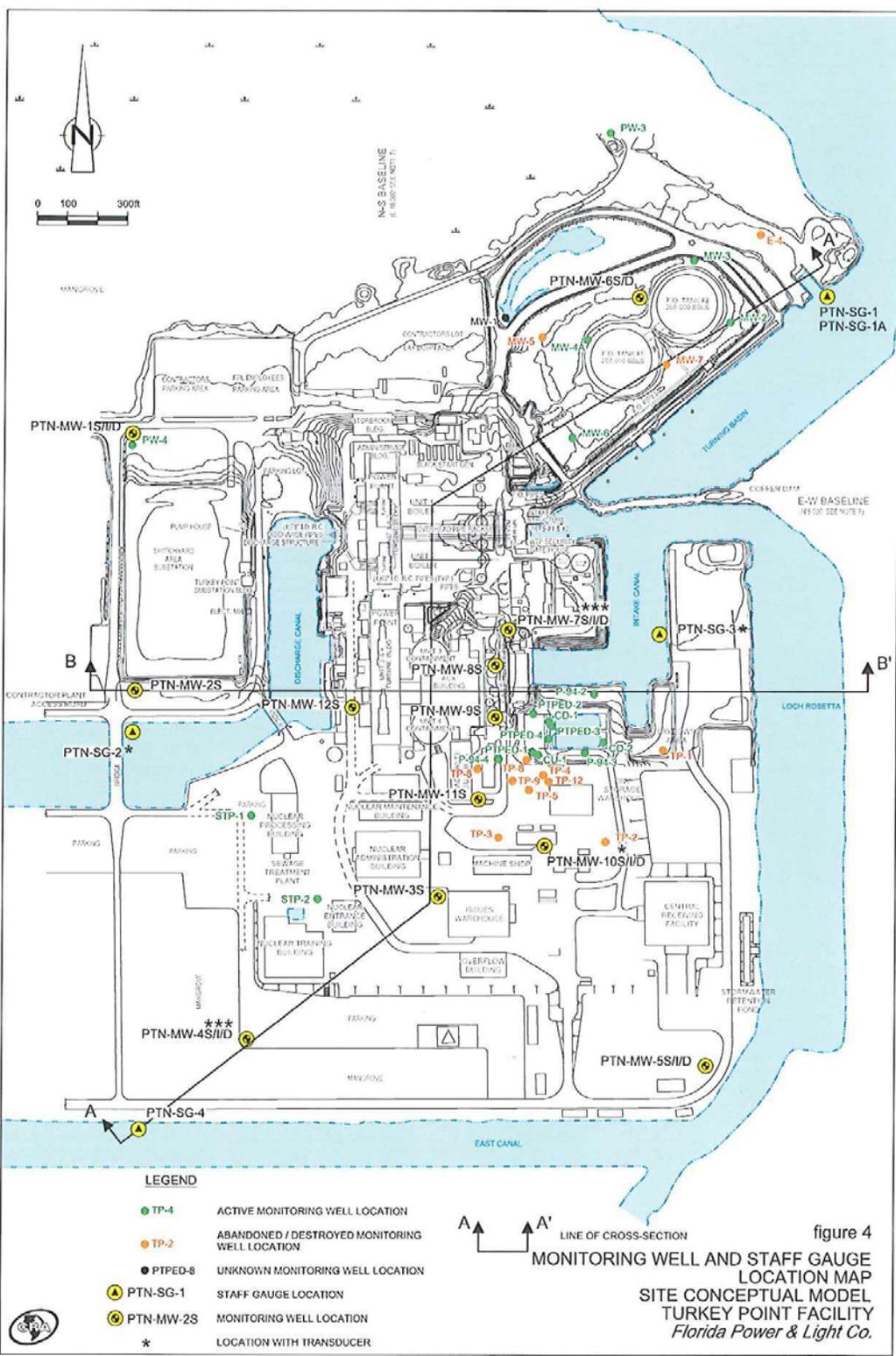
N/A= Denotes not applicable, sampling not required for this period.
 <MDC denotes a value less than 3.00E+02 pCi/L for Tritium

D. List of wells and their locations

Well Name	Location
PTN-MW-1s PTN-MW-1i PTN-MW-1d	Northeast of Switch Yard, South of entrance road to Fossil Plant
PTN-MW-2s	South Switch Yard by parking lot
PTN-MW-3s	Northeast of new Issues Warehouse
PTN-MW-4s PTN-MW-4i PTN-MW-4d	SW corner of parking lot South of Training Bldg
PTN-MW-5s PTN-MW-5i PTN-MW-5d	SW of CRF, by canal
PTN-MW-6s PTN-MW-6d	NE of site in the berm for fossil oil tanks
PTN-MW-7s PTN-MW-7i PTN-MW-7d	NE of RCA, by Neutralization Tank
PTN-MW-8s	Near U3 RWST
PTN-MW-9s	Near U4 RWST
PTN-MW-10s PTN-MW-10i PTN-MW-10d	SE of Radwaste Bldg by S/G Bldg
PTN-MW-11s	South of truck entrance to Rad Waste Bldg
PTN-MW-12s	West of Condenser Polisher road
STP-1	West of Maintenance Bldg on corner or road into parking lot
P-94-4	East of Dressout Building, under delay fence
P-94-2	By Neutralization Basin, East of the RCA
CD-1	By Neutralization Basin, East of the RCA
PTPED-1	By Neutralization Basin, East of the RCA

Note: s, i and d refer to well depth: shallow - 20 ft., intermediate - 40 ft. and deep - 60 ft
Maps depicting the well locations follow.

Onsite Tritium Monitoring Wells



ATTACHMENT E

ERRATA DATA SECTION

2015

**ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT- UNITS 3 & 4**

The following information corrected from the 2015 Annual Radiological Environmental Operating Report:

Section B- Interpretation of Results

Broad Leaf Vegetation:

For results attributed to plant effluents:

The results of radioactivity measurements are consistent with past measurements. Cs-137 was detected in samples collected from the indicator locations. This activity identified could be from weapons fallout testing 30-40 years ago and reactor accidents at Chernobyl and Fukushima are contributors. The maximum concentration reported was 111 pCi/kg well below the required reporting level of 2000 pCi/kg as specified by ODCM Table 5.1-2. No other fission products were detected.