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L-2014-086
10 CFR 50.36b

FPL.

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
2013 Annual Radiological
Environmental Operating Report

Enclosed is the 2013 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 Robert J. Tomonto at (305) 246-7327.

Sincerely,

Michael Kiley
Vice President
Turkey Point Nuclear Plant

SM
Enclosure

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

IE25
NRR

2013
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT – UNITS 3 & 4

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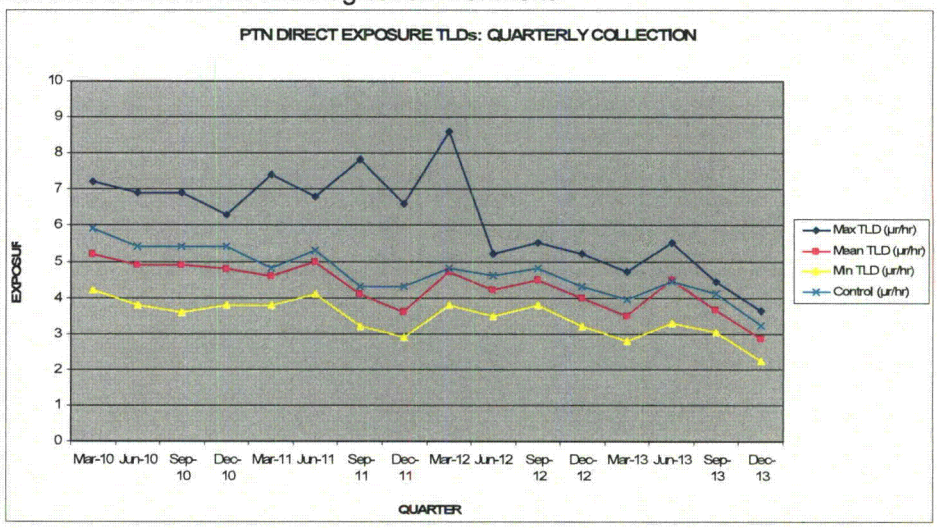
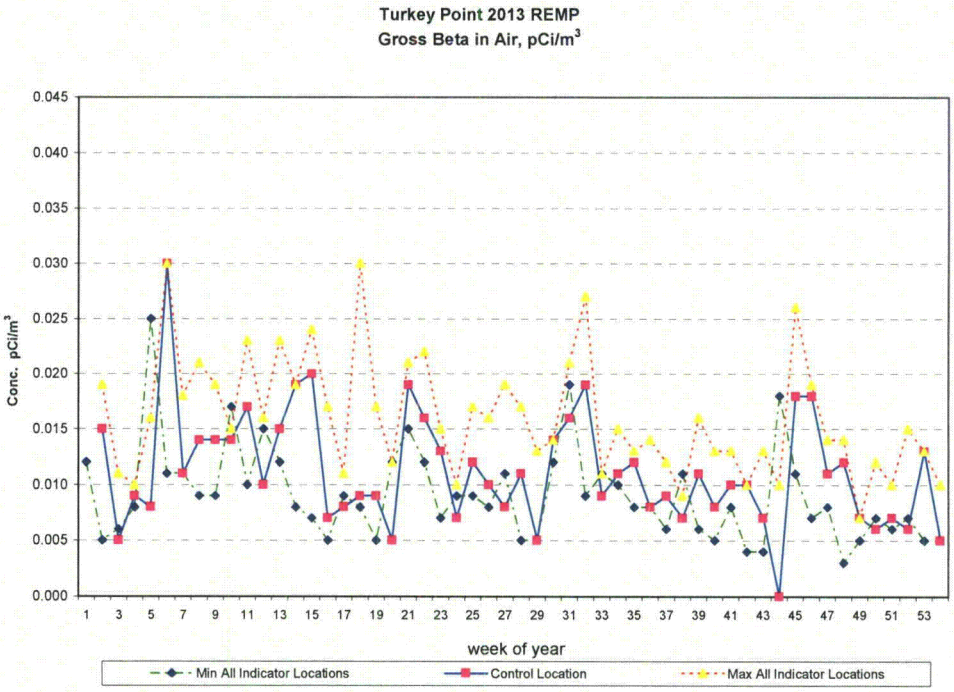
2013
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT – UNITS 3 & 4

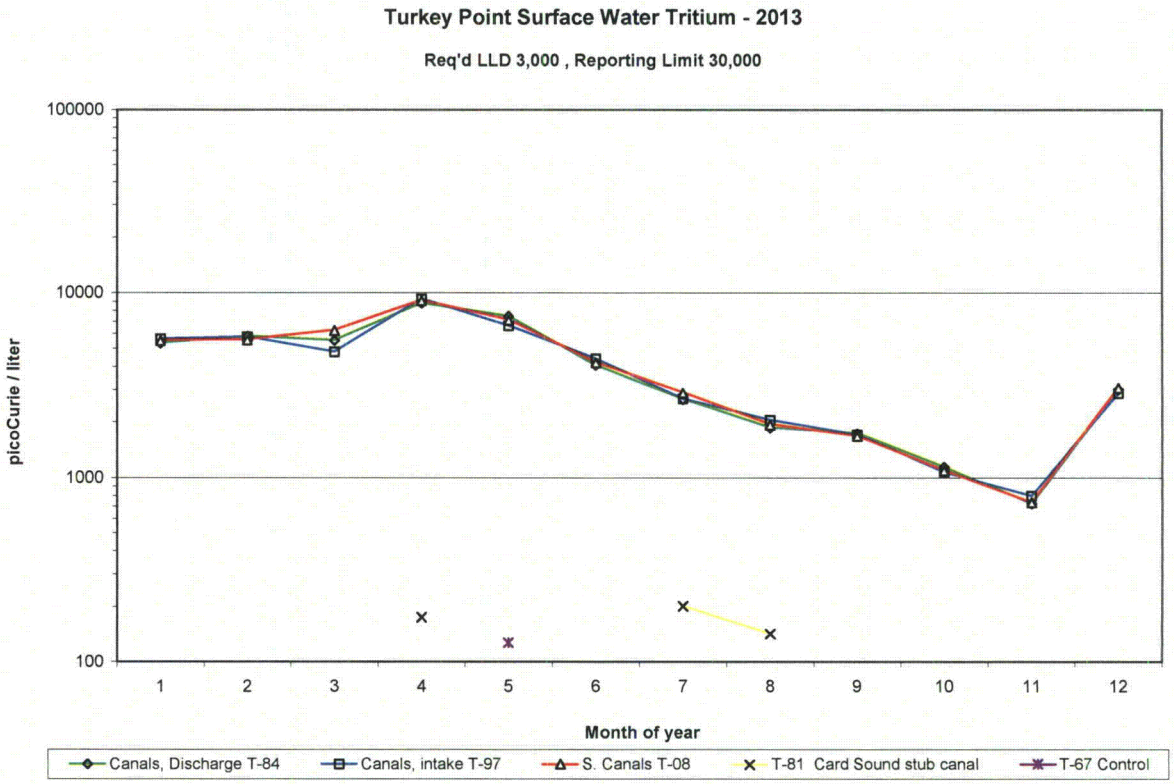
EXECUTIVE SUMMARY

The data obtained through the Turkey Point Radiological Environmental Monitoring Program 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, 2013 to December 31, 2013.

Additionally, supplemental samples collected by the State of Florida, DOH, do not indicate adverse trends in the radiological environment.







T-84, T-97, and T-08 are supplemental samples to track cooling canal tritium levels.

2013
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT – UNITS 3 & 4

I. INTRODUCTION

This report is submitted pursuant to Specification 6.9 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.

B. Program Description

The Radiological Environmental Monitoring Program (REMP) 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.

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 intercomparison 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.

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 exposure rates that were observed during the pre-operational surveillance program. Direct radiation monitoring results are summarized in Table 1.

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 measurements that were made during the pre-operational surveillance program. 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 five of 24 indicator location and zero of 12 control location surface water samples collected. These results are consistent with the known subsurface interchange that occurs between the closed cooling canal and its surrounding waters, and the pressure gradients caused by the flow of aquifer subsurface waters in South Florida. The highest reported tritium is 6.7% of the required detection level specified by ODCM Table 5.1-3.

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. The maximum concentration reported was 11.5% of the reporting level specified by ODCM Table 5.1-2. No other fission products were detected.

7. Land Use Census

There were no additions to the land use relative to last year's report.

No locations yielding a calculated dose or dose commitment greater than the values currently being calculated were identified by the land use census.

No locations yielding a calculated dose or dose commitment (via the same exposure pathway) 20% greater than locations currently being sampled in the radiological environmental monitoring program were identified by the land use census.

8. Interlaboratory Comparison Program

The State laboratory participated in MAPEP 28 and 29. 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 are consistent with exposure rates that were observed during the pre-operational surveillance program.
The results for air particulate/radioiodine samples are consistent with measurements that were made during the pre-operational surveillance program.
The highest value of tritium in surface water was 6.7% of 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 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.

TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

Name of Facility Turkey Point Units 3 & 4, Docket No(s). 50-250 & 50-251

Location of Facility Miami-Dade, Florida , Reporting Period January 1 - December 31, 2013

(County, State)

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: Name[c] Distance & Direction	Location with Highest Annual Mean: Mean (f)[b] Range	Control Locations Mean (f)[b] Range
Exposure Rate, 92[d]	---	3.51 (86/88) 2.2. - 5.5	NW-10 10 mi., NW	4.39 (4/4) 3.5 - 5.0	3.91 (4/4) 3.2 - 4.4

Number of Non-routine Reported Measurements = 0

TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

Name of Facility Turkey Point Units 3 & 4, Docket No(s). 50-250 & 50-251

Location of Facility Miami-Dade, Florida , Reporting Period January 1 - December 31, 2013

(County, State)

PATHWAY: AIRBORNE

SAMPLES COLLECTED: RADIOIODINE AND PARTICULATES

UNITS: pCi/m^3

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: Name[c] Distance & Direction	Location with Highest Annual Mean: Mean (f)[b] Range	Control Locations Mean (f)[b] Range
^{131}I, 311	0.012	<MDA	---	---	< MDA
Gross Beta, 318	0.0064	0.013 (263/265) 0.003 - 0.030	T-57 4 mi, NW	0.0133 (53/53) 0.005 - 0.030	0.012 (52/53) 0.005 - 0.030
Composite Gamma Isotopic, 32					
^{7}Be	0.0006	0.1064 (28/28) 0.0805 - 0.1462	T-72 < 1 mi., WSW	0.1105 (4/4) 0.0894 - 0.1258	0.0994 (4/4) 0.0832 - 0.1139
^{40}K	---	< MDA	---	---	0.00033 (1/4) 0.00033 - 0.00033
^{134}Cs	0.0008	< MDA	---	---	< MDA
^{137}Cs	0.0008	< MDA	---	---	< MDA
^{210}Pb	---	0.0121 (19/28) 0.0093 - 0.0170	T-72 < 1 mi., WSW	0.0149 (3/4) 0.0139 – 0.0154	0.0224 (4/4) 0.0091 – 0.0556

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

Number of Non-routine Reported Measurements = 0

TABLE 1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility Turkey Point Units 3 & 4, Docket No(s). 50-250 & 50-251
Location of Facility Miami-Dade, Florida , Reporting Period January 1 - December 31, 2013
(County, State)

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: Name[c] Distance & Direction	Location with Highest Annual Mean: Mean (f)[b] Range	Control Locations Mean (f)[b] Range
Tritium, 36	172	173 (4/24) 142 - 201	T-81 6 mi., S	173 (3/12) 142 - 201	127 (1/12) 127 -127
Gamma Isotopic, 36					
^{40}K	58	270 (24/24) 81 - 361	T-81 6 mi., S	308 (12/12) 196 - 361	138 (8/12) 20 - 285
^{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

TABLE 1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility Turkey Point Units 3 & 4, Docket No(s). 50-250 & 50-251
Location of Facility Miami-Dade, Florida , Reporting Period January 1 - December 31, 2013
(County, State)

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: Name[c] Distance & Direction	Location with Highest Annual Mean: Mean (f)[b] Range	Control Locations Mean (f)[b] Range
Gamma Isotopic, 6					
^{7}Be	56	67 (3/4) 54 - 86	T-42 <1 mi., ENE	86 (1/2)	77 (1/2)
^{40}K	100	147 (4/4) 122 - 175	T-81 6 mi., S	169 (2/2) 163 – 175	236 (2/2) 231 - 241
^{58}Co	6	<MDA	---	---	< MDA
^{60}Co	7	<MDA	---	---	< MDA
^{134}Cs	7	<MDA	---	---	< MDA
^{137}Cs	7	<MDA	---	---	5.5 (2/2) 5 - 6
^{210}Pb	---	628 (4/4) 584 - 676	T-81 6 mi., S	644 (2/2) 612 - 676	606 (2/2) 523 - 688
^{226}Ra	15	447 (4/4) 328 - 566	T-81 6 mi., S	492 (2/2) 418 - 566	327 (2/2) 243 - 411
^{235}U	---	55 (3/4) 43 - 64	T-81 6 mi., S	61.5 (2/2) 59 - 64	42.5 (2/2) 38 - 47
^{238}U	---	472 (3/4) 418 - 537	T-81 6 mi., S	498.5 (2/2) 460 - 537	478.5 (2/2) 336 - 621

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

Number of Non-routine Reported Measurements = 0

TABLE 1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility Turkey Point Units 3 & 4, Docket No(s). 50-250 & 50-251
Location of Facility Miami-Dade, Florida , Reporting Period January 1 - December 31, 2013
(County, State)

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: Name[c] Distance & Direction	Location with Highest Annual Mean: Mean (f)[b] Range	Control Locations Mean (f)[b] Range
Gamma Isotopic, 3					
^{40}K	270	1509 (3/3) 1067 - 1900	T-81 6 mi., S	1509 (3/3) 1067 - 1900	---
^{226}Ra	300	---	---	---	---
^{54}Mn	16	---	---	---	---
^{59}Fe	28	---	---	---	---
^{58}Co	15	---	---	---	---
^{60}Co	16	---	---	---	---
^{65}Zn	32	---	---	---	---
^{134}Cs	16	---	---	---	---
^{137}Cs	16	27 (1/3)	T-81 6 mi., S	27 (1/3)	---

Blue Crabs were collected in the location T-81. No crustacea was collected at the control location in 2013.

Number of Non-routine Reported Measurements = 0

TABLE 1
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility Turkey Point Units 3 & 4, Docket No(s). 50-250 & 50-251
Location of Facility Miami-Dade, Florida , Reporting Period January 1 - December 31, 2013
(County, State)

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: Name[c] Distance & Direction	Location with Highest Annual Mean: Mean (f)[b] Range	Control Locations Mean (f)[b] Range
Gamma Isotopic, 4					
^{7}Be	---	<MDA	---	---	<MDA
^{40}K	270	2419 (2/2) 2252- 2586	T-81 6 mi., S	2419 (2/2) 2252- 2586	2367 (2/2) 2272 - 2462
^{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

TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

Name of Facility Turkey Point Units 3 & 4, Docket No(s). 50-250 & 50-251

Location of Facility Miami-Dade, Florida , Reporting Period January 1 - December 31, 2013

(County, State)

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: Name[c] Distance & Direction	Location with Highest Annual Mean: Mean (f)[b] Range	Control Locations Mean (f)[b] Range
Gamma Isotopic, 36					
^{7}Be	64	1642(24/24) 952 - 2410	T-40 3 mi., W	1644 (12/12) 952 - 2386	1607 (12/12) 995 - 2692
^{40}K	120	4595 (24/24) 1931 - 6493	T-40 3 mi., W	4649 (12/12) 1931 - 6144	4946 (12/12) 4195 - 6512
^{58}Co	6	<MDA	---	---	<MDA
^{60}Co	8	<MDA	---	---	<MDA
^{131}I	9	<MDA	---	---	<MDA
^{134}Cs	8	<MDA	---	---	<MDA
^{137}Cs	8	69.2 (24/24) 18 - 231	T-41 2 mi., W/NW	96 (12/12) 18 - 231	14 (2/12) 5 - 23
^{210}Pb	---	390 (7/24) 264 – 792	T-41 2 mi., W/NW	508 (3/12) 325 - 792	566 (6/12) 246 - 1270
^{226}Ra	189	796 (1/24)	T-40 3 mi., W	796 (1/24)	<MDA

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

Number of Non routine Reported Measurements = 0

TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

Name of Facility Turkey Point Units 3 & 4, Docket No(s). 50-250 & 50-251

Location of Facility Miami-Dade, Florida , Reporting Period January 1 - December 31, 2013

(County, State)

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).

MDA refers to minimum detectable activity.

2013
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
TURKEY POINT PLANT – UNITS 3 & 4
TABLE 1A

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DEVIATIONS / MISSING DATA

A)	Pathway:	Direct Exposure - TLDs
	Location:	W-1 On site north side of discharge canal. 0.7 miles West
	Dates:	12/11/12 to 3/26/13
	Deviation:	Failure to provide continuous monitoring.
	Description of Problem:	TLD missing; discovered at collection attempt
	Corrective action	Replaced TLD
B)	Pathway	Airborne – Particulates and iodine
	Location:	T-58, 1.3 miles Northwest
	Dates:	2/6/13
	Deviation:	Estimated run time of 119.7 out of 168.2 hours.
	Description of Problem:	Pump failure.
	Corrective Action:	Pump replaced upon discovery.
C)	Pathway	Airborne – Particulates and iodine
	Location:	T-51, 2.2 miles North Northwest
	Dates:	2/12/13
	Deviation:	Estimated run time 107.5 out of 144.3 hours.
	Description of Problem:	Power failure resulted in shorter collection time for sample.
	Corrective Action	Power was restored upon discovery.
D)	Pathway	Airborne – Particulates and iodine
	Location:	T-51, 2.2 miles North Northwest
	Dates:	2/18/13
	Deviation:	Estimated run time 117.4 out of 141.3
	Description of Problem:	Lower sample flow rate discovered.
	Corrective Action:	Sample flow adjusted to correct flow rate.

TABLE 1A

DEVIATIONS / MISSING DATA

E)	Pathway	Airborne – Particulates and iodine
	Location:	T-57, 4 miles Northwest
	Dates:	2/18/13
	Deviation:	Estimated run time of 94 out of 144 hours.
	Description of Problem:	Lower sample flow rate discovered.
	Corrective Action:	Sample flow adjusted to correct flow rate.
F)	Pathway:	Direct Exposure - TLDs
	Location:	WSW-8, 7.8 miles West Southwest
	Dates:	3/26/13 to 5/4/13
	Deviation:	No data reported
	Description of Problem:	Data lost due to a computer error.
	Corrective Action:	Compared sample results from the first and fourth quarter. Doses within acceptable range.
G)	Pathway	Airborne – Particulates and iodine
	Location:	T-57, 4 miles Northwest
	Dates:	4/24/13
	Deviation:	Estimated run time of 62.3 out of 168.2 hours.
	Description of Problem:	Lower sample flow rate discovered.
	Corrective Action	Sample flow adjusted to correct flow rate.
H)	Pathway	Airborne – Particulates and iodine
	Location:	T-51, 2.2 miles North Northwest
	Dates:	5/29/13
	Deviation:	Estimated run time 155 out of 193.4 hours.
	Description of Problem:	Power failure resulted in shorter collection time for sample.
	Corrective Action	Power was restored upon discovery.

DEVIATIONS / MISSING DATA

I)	Pathway	Direct Exposure - TLDs
	Location:	WNW2 Palm Drive West of FPL Satellite School, near site boundary
	Dates:	N/A
	Deviation:	WNW2 State of FL DOH had been reporting this TLD as part of the supplemental report. WNW2 TLD is part of the ODCM.
	Description of Problem:	Supplemental TLD was moved from the Supplemental samples to the ODCM required samples and quarterly reports from FL DOH did not reflect change.
	Corrective Action	FL DOH has fixed report and will report WNW2 as part of the ODCM required samples. The ODCM has bee updated to reflect WNW2 as part of the required TLDs and removed T-41. No samples were missed.
J)	Pathway	MAPEP
	Location:	N/A
	Dates:	7/10/1013
	Deviation:	REMP MAPEP series 28 results for Beta on Air Filter not acceptable from the State of FL DOH.
	Description of Problem:	FL DOH analyst used incorrect spreadsheet to calculate the Gross Beta. This resulted in a value of 1.53 Bq/sample which was outside the range of .43 to 1.28 Bq/sample. The unacceptable results were not verified by FL DOH prior to sending to MAPEP.
	Corrective Action	Correct spreadsheet used for the calculation and the final result was 1.04 Bq/sample, which is well within the limits. State of FL DOH updated procedure QP-F "Quality Verification" to ensure results are verified prior to submittal.
K)	Pathway	Airborne – Particulates and iodine
	Location:	T-64 Natoma Substation, 2475 SW 16 Ct. 22 miles from site.
	Dates:	7/17/13 - 7/30/13
	Deviation:	Air sampler T-64 experienced low sample flow three weeks in a row. First week 108.6 out of 169.9 hours of run time, second week 97.4 out of 144 hours, and the third week 73 out of 168.8 and pump was found not running.
	Description of Problem:	Sample pump failure led to lower sample run time.
	Corrective Action	Pump was replaced.

TABLE 1A

(Page 4 of 4)

DEVIATIONS / MISSING DATA

L)	Pathway	MAPEP
	Location:	N/A
	Dates:	11/30/13
	Deviation:	Not acceptable results for Co-57
	Description of Problem:	False positive results due to incorrect analyte library used in the gamma spec system.
	Corrective Action	FLDOH procedures changed to use the Nuclear Power library in the gamma spec analysis. Once the Nuclear Power library was used Co-57 was no longer misidentified.
M)	Pathway	Airborne – Particulates and iodines
	Location:	T-58, Turkey Point entrance road, 1.3 miles NW
	Dates:	10/16/13 - 10/21/13
	Deviation:	No sample taken due to power outage
	Description of Problem:	Damaged power supply caused lost of sampler. Estimated run time 116.6 of 192.1 hours.
	Corrective Action	Power supply repaired on 10/21/13 at 1800 with a temporary power line since the permanent is under ground. Permanent repairs are scheduled for 2014.
N)	Pathway	Airborne – Particulates and iodine
	Location:	Entrance to Homestead Bay Front Park, 2.2 mi NNW
	Dates:	12/16/13 to 12/23/13
	Deviation:	Power failure
	Description of Problem:	Power failure with an estimated runtime of 30.6 out of 122.3 hours.
	Corrective Action	Power restored on 12/17/13 at 1700.
O)	Pathway	Crustacea
	Location:	T-67 Biscayne Bay, vicinity of Cutler Plant nor to Matheson Hammock Park. N, NNE 13-18 miles from the plant.
	Dates:	1/1/13 to 12/31/13
	Deviation:	No crustacea collected in the control site for 2013.
	Description of Problem:	No comparison to blue crab collected in T81 could be made.
	Corrective Action	State of FL continues to set traps with proper bate.

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TABLE 1B

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ANALYSIS WITH LLDs ABOVE ODCM TABLE 5.1-3 DETECTION CAPABILITIES
1/1/2013 – 12/31/2013

None

The values specified in ODCM Table 5.1-3, Detection Capabilities

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TABLE 2

LAND USE CENSUS
(Page 1 of 5)

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	3.7 mi @ 302° 4.5 mi @ 303°	4.5 mi @ 303° 4.7 mi @ 303°	*
NW	3.7 mi @ 311° 3.9 mi @ 314°	*	*
NNW	4.4 mi @ 333°	4.6 mi @ 327°	*

(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.

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LAND USE CENSUS
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Sector	Range Bearing	Nearest Residence Location
N (A)	1.9 miles 349°	This is the Homestead Bayfront Park complex. Contact is Jim White. Hours are 6 a.m. to 12 a.m. with security from 5 p.m. to 7 a.m. There is occasional overnight recreational occupancy (up to 4 nights) on boats at the marina. There are 30 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). New restaurant called LaPlaya opened at the park with 6 to 8 employees. N25° 27.683' W80° 20.200'.
N (B)	2.0 miles 354°	Biscayne National Park at Convoy Point. There are 3 trailer pads with full utility hookups for volunteers who provide their own RV's or trailers staying for up to 6 months. There are 2 residences: one is for up to 4 occupants, volunteers and/or interns and the other for a law enforcement officer and family. From Monday to Friday up to 50 daytime workers may be present. During the weekend, up to 20 events may be occurring. 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)	1.7 miles 302°	FP&L operates a daycare center for its employees and a shooting range near the entrance to the Turkey Point Plant. These facilities are occupied during normal business hours and can have anywhere from 20-40 people present at the facility for training purposes. N25° 26.817' W80° 21.217'.

TABLE 2

LAND USE CENSUS
(Page 3 of 5)

Sector	Range Bearing	Nearest Residence Location
WNW (B)	3.7 miles 302°	Usually three people (a couple and their son) live at 11790 Canal Drive on the south side of Canal Drive (SW 328 St) west of SW 117th Avenue (no gardens). This year the gate was locked. N25° 27.767' W80° 22.867'.
WNW (C)	4.5 miles 303°	Usually two people (an Asian man and his wife) live on a small farm where mainly guava is grown south of Mowry Dr. (SW 320th St) and about 0.6 miles west of Allapattah Road (SW 117th Ave). There are three small trailers onsite. This year a driveway chain prevented access. N25° 28.217' W80° 23.467', N25° 28.126' W80° 23.439' and N25° 28.156' W80° 23.439'.
NW (A)	3.6 miles 304°	The Delta Homestead Landfill (a subsidiary of Waste Management) is located north of Canal Drive (SW 328th St) and east of SW 117th Ave. There are 10 full time workers onsite Monday thru Friday usually from 7 a.m. to 4 p.m., although the schedules can sometimes vary. N25° 27.833' W80° 22.767'.
NW (B)	3.7 miles 311°	Employees at Snapper Creek Nurseries indicated they have seen a couple of people working at this location but not known if they live at an old farmhouse just south of the Mowry Canal east of SW 117th Ave. The information could not be confirmed because gates were locked which prevents access to the property. N25° 28.217' W80° 22.567'.
NW (C)	3.9 miles 314°	There is 24-hour security staffing at the Snapper Creek Nurseries located at 316th Street and 117th Avenue. There is one man who lives in a trailer on the premises and 8 workers that work Monday thru Saturday 7 am to 5 pm. N25° 28.444' W80° 22.560'.
NNW (A)	4.4 miles 333°	This nursery recently changed ownership. Louis Rodriguez is new owner, but nursery does not have a name. There are 2 workers Monday thru Friday during the day at 29800 SW 107th Ave, just north of the Military Canal on the west side of Allapattah Rd (SW 107th Av). N25° 29.450' W80° 21.817'.
NNW (B)	4.6 miles 327°	Unable to gain access because of a locked gate or locate someone to obtain more information in order to verify past data. In years past someone had lived at this location west of SW 107th Ave and north of Military Canal. N25° 29.367' W80° 22.283'.

TABLE 2

LAND USE CENSUS
(Page 4 of 5)

Sector	Range Bearing	Nearest Garden Location (with estimated total area of 500 square feet, or more, and producing green leafy vegetables).
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)	4.5 miles 303°	Mint, guava (mostly), peppers and bananas have been grown at the 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). This year a locked chain link fence prevented access, but site appears unchanged. N25° 28.217' W80° 23.467'.
WNW (B)	4.7 miles 303°	Guava, small amounts of squash and eggplant are being grown at a small farm north of Mowry Dr. (SW 320th St) and about 0.8 miles west of Allapattah Rd. (SW 117th Ave) (run by an Asian man, who does not live on the farm). N25° 28.265' W80° 23.618'.

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LAND USE CENSUS
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Sector	Range Bearing	Nearest Garden Location (with estimated total area of 500 square feet, or more, and producing green leafy vegetables).
WNW (C)	4.8 miles 302°	Located at the northeast corner of the intersection of SW 127th Ave and SW 320th 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'.
WNW (D)	6.0 miles 295°	Farm Share, Inc at 14125 SW 320th St, where farmers donate locally grown produce to be given to charitable organizations. Produce donations usually start in November and run through April. There are usually 15 workers present from 8 am to 4:30pm Monday thru Friday. The produce usually donated is tomatoes, squash and green beans. N25° 28.255' W80° 25.111'.
NNW	4.6 miles 327°	Unable to gain access because of a locked gate or locate someone to obtain more information. In years past someone had lived at this location west of SW 107th Ave and north of Military Canal. Bananas, plantains and coconuts have been seen growing here. N25° 29.367' W80° 22.283'.

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.

ATTACHMENT A

KEY TO SAMPLE LOCATIONS

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NEAR SITE SAMPLING LOCATIONS

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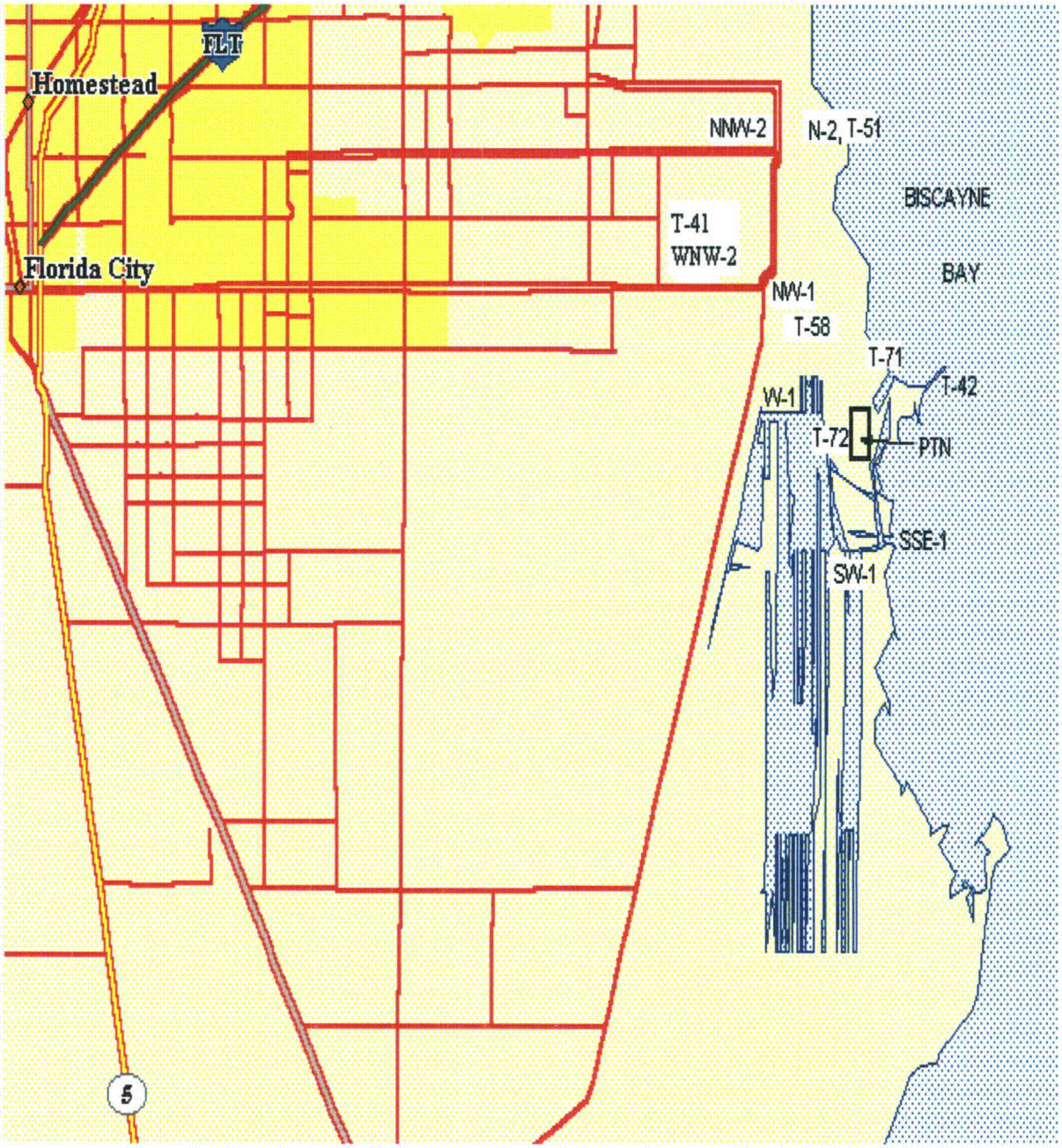

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DISTANT REMP SAMPLING LOCATIONS

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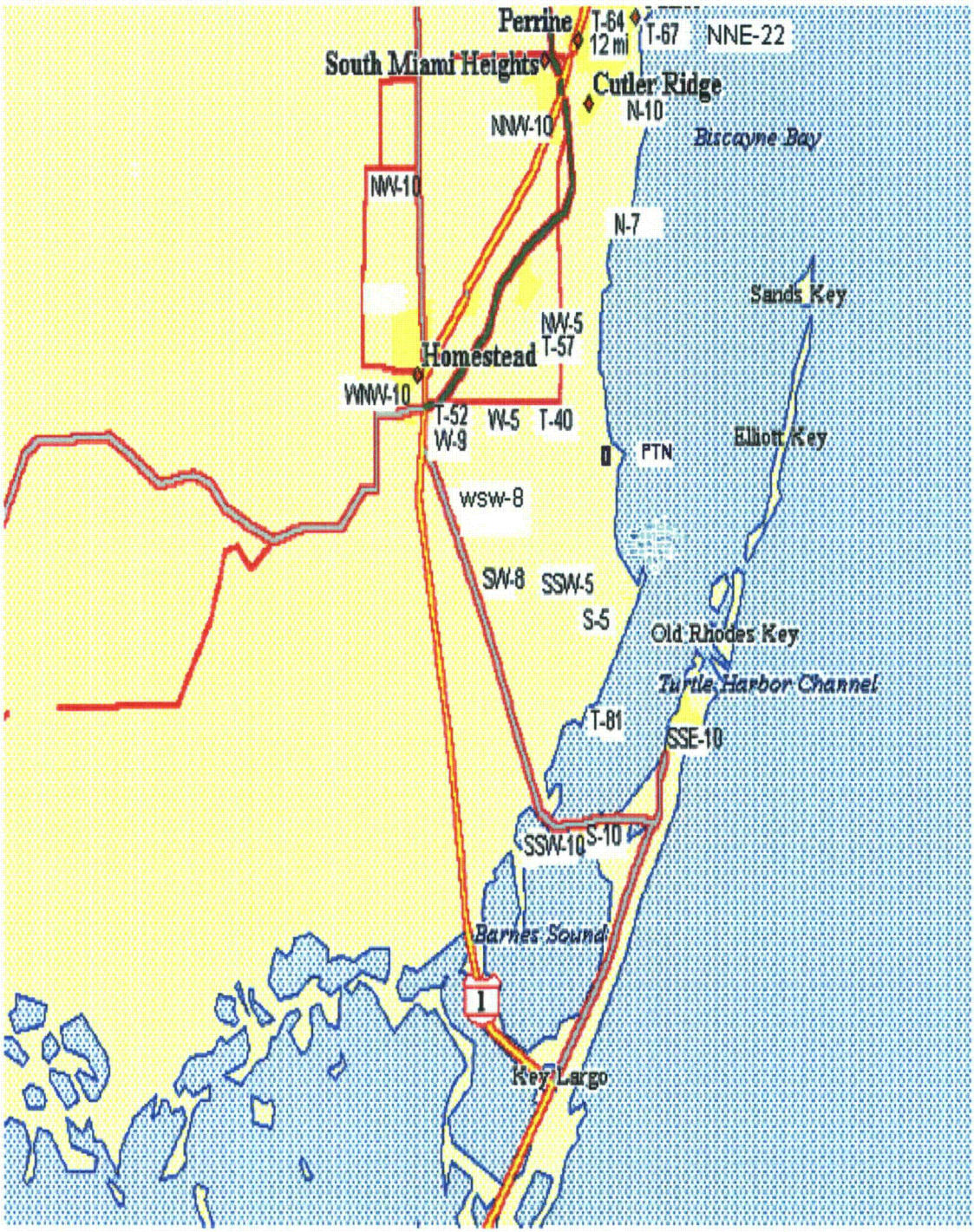

ATTACHMENT A

PATHWAY: DIRECT RADIATION
SAMPLES COLLECTED: TLD
SAMPLE COLLECTION FREQUENCY: QUARTERLY

Location [a] Name	Description
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
Control	
NNE-22	Natoma Substation, 2475 SW 16 Ct.

[a]The location name is the direction sector - approximate distance (miles)

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

Location Name	Direction Sector	Approximate Distance (miles)	Description
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.
Control:			
T-64	NNE	22	Natoma Substation , 2475 SW 16 Ct.

ATTACHMENT A

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

Location Name	Direction Sector	Approximate Distance (miles)	Description
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

Location Name	Direction Sector	Approximate Distance (miles)	Description
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

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

Location Name	Direction Sector	Approximate Distance (miles)	Description
T-81	S	6	Card Sound Vicinity of Turkey Point Facility
Control:			
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

Location Name	Direction Sector	Approximate Distance (miles)	Description
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
Control:			
T-67	N, NNE	13-18	Near Biscayne Bay, Vicinity of Cutler Plant, North to Matheson Hammock Park

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ATTACHMENT B

RADIOLOGICAL SURVEILLANCE OF

FLORIDA POWER AND LIGHT COMPANY'S

TURKEY POINT SITE

2013

First Quarter, 2013

Second Quarter, 2013

Third Quarter, 2013

Fourth Quarter, 2013

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ATTACHMENT B

FLORIDA DEPARTMENT OF
HEALTH

RADIOLOGICAL SURVEILLANCE

OF

FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT SITE

FIRST QUARTER 2013

BUREAU OF RADIATION CONTROL

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TURKEY POINT SITE

Offsite Dose Calculation Manual Sampling

First Quarter, 2013

Sample Type	Collection Frequency	Number of Sample Locations	Number of Samples
1. Direct Radiation	Quarterly	22	21
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	2
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.

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

Sample Site	Deployment 11-Dec-12 Collection 26-Mar-13
N-2	4.15 ± 0.05
N-7	3.28 ± 0.26
N-10	3.72 ± 0.25
NNW-2	3.26 ± 0.22
NNW-10	3.67 ± 0.31
NW-1	4.15 ± 0.39
NW-5	3.18 ± 0.03
NW-10	4.68 ± 0.34
WNW-10	4.14 ± 0.21
W-1	(A)
W-5	3.31 ± 0.18
W-9	3.43 ± 0.04

Sample Site	Deployment 11-Dec-12 Collection 26-Mar-13
WSW-8	3.37 ± 0.07
SW-1	3.11 ± 0.27
SW-8	2.98 ± 0.20
SSW-5	3.11 ± 0.20
SSW-10	3.25 ± 0.31
S-5	3.01 ± 0.53
S-10	3.51 ± 0.31
SSE-1	2.79 ± 0.10
SSE-10	3.11 ± 0.25
NNE-22	3.93 ± 0.15

(A) TLD missing.

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

Collection Date	T41	T51	T57	T58	T64	T72
02-Jan-13	<0.03	<0.03	<0.02	<0.02	<0.02	<0.03
08-Jan-13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
16-Jan-13	<0.02	<0.03	<0.02	<0.02	<0.02	<0.03
23-Jan-13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
30-Jan-13	<0.03	<0.03	<0.02	<0.03	<0.03	<0.03
06-Feb-13	<0.02	<0.02	<0.02	<0.03(A)	<0.02	<0.02
12-Feb-13	<0.02	<0.02(B)	<0.02	<0.02	<0.03	<0.02
18-Feb-13	<0.04	<0.02(C)	<0.02(D)	<0.04	<0.04	<0.04
25-Feb-13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
05-Mar-13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
12-Mar-13	<0.03	<0.03	<0.03	<0.04	<0.03	<0.04
18-Mar-13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.04
25-Mar-13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03

(A) Pump failed and was replaced. Estimated run time 119.7 out of 168.2 hours.
(B) Power failure to air station. Estimated run time 107.5 out of 144.3 hours.
(C) Estimated run time 117.4 out of 141.3 hours; unknown reason for a lower flow rate.
(D) Estimated run time 94 out of 144 hours; unknown reason for a lower flow rate.

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

Collection Date	T41	T51	T57	T58	T64	T72
02-Jan-13	0.014 ± 0.002	0.012 ± 0.002	0.016 ± 0.002	0.015 ± 0.002	0.015 ± 0.002	0.019 ± 0.002
08-Jan-13	0.010 ± 0.002	0.011 ± 0.002	0.006 ± 0.002	0.008 ± 0.002	0.005 ± 0.002	0.010 ± 0.002
16-Jan-13	0.008 ± 0.002	0.006 ± 0.002	0.010 ± 0.002	0.007 ± 0.002	0.009 ± 0.002	0.008 ± 0.002
23-Jan-13	0.014 ± 0.002	0.012 ± 0.002	0.011 ± 0.002	0.016 ± 0.002	0.008 ± 0.002	0.013 ± 0.002
30-Jan-13	0.025 ± 0.003	0.025 ± 0.003	0.025 ± 0.003	0.025 ± 0.002	0.030 ± 0.003	0.027 ± 0.003
06-Feb-13	0.014 ± 0.002	0.018 ± 0.002	0.016 ± 0.002	0.013 ± 0.003(A)	0.011 ± 0.002	0.012 ± 0.002
12-Feb-13	0.017 ± 0.002	0.014 ± 0.003(B)	0.017 ± 0.002	0.015 ± 0.002	0.014 ± 0.002	0.011 ± 0.002
18-Feb-13	0.014 ± 0.002	0.012 ± 0.003(C)	0.017 ± 0.003(D)	0.014 ± 0.002	0.014 ± 0.002	0.009 ± 0.002
25-Feb-13	0.013 ± 0.002	0.009 ± 0.002	0.011 ± 0.002	0.012 ± 0.002	0.014 ± 0.002	0.012 ± 0.002
05-Mar-13	0.020 ± 0.002	0.022 ± 0.002	0.021 ± 0.002	0.017 ± 0.002	0.017 ± 0.002	0.017 ± 0.002
12-Mar-13	0.014 ± 0.002	0.016 ± 0.002	0.010 ± 0.002	0.011 ± 0.002	0.010 ± 0.002	0.012 ± 0.002
18-Mar-13	0.020 ± 0.003	0.023 ± 0.003	0.019 ± 0.003	0.020 ± 0.003	0.015 ± 0.002	0.020 ± 0.003
25-Mar-13	0.016 ± 0.002	0.014 ± 0.002	0.015 ± 0.002	0.017 ± 0.002	0.019 ± 0.002	0.013 ± 0.002
Average:	0.015 ± 0.001	0.015 ± 0.001	0.015 ± 0.001	0.014 ± 0.001	0.014 ± 0.001	0.014 ± 0.001

(A) Pump failed and was replaced. Estimated run time 119.7 out of 168.2 hours.
(B) Power failure to air station. Estimated run time 107.5 out of 144.3 hours.
(C) Estimated run time 117.4 out of 141.3 hours; unknown reason for a lower flow rate.
(D) Estimated run time 94 out of 144 hours; unknown reason for a lower flow rate.

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	0.1180 ± 0.0124	<0.0216	<0.0009	<0.0009	<0.0648
T51	0.1080 ± 0.0099	<0.0234	<0.0013	<0.0009	<0.0643
T57	0.1124 ± 0.0106	<0.0281	<0.0014	<0.0008	<0.0563
T58	0.1036 ± 0.0079	<0.0175	<0.0012	<0.0012	<0.0083
T64	0.1071 ± 0.0101	<0.0181	<0.0017	<0.0012	0.0556 ± 0.0175
T72	0.1120 ± 0.0105	<0.0228	<0.0014	<0.0010	<0.0688

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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	09-Jan-13	<137	245 ± 17	<3	<2	<6	<3	<5	<4	<4	<3	<3	<4
	18-Feb-13	<140	249 ± 29	<5	<5	<7	<8	<13	<9	<6	<5	<6	<8
	19-Mar-13	<141	262 ± 20	<3	<3	<6	<3	<7	<6	<5	<3	<3	<4
T67	09-Jan-13	<137	88 ± 21	<6	<5	<11	<6	<15	<13	<11	<7	<7	<9
	19-Feb-13	<168	81 ± 22	<5	<5	<10	<8	<12	<8	<6	<5	<6	<9
	18-Mar-13	<141	20 ± 7	<3	<3	<6	<3	<7	<5	<5	<3	<3	<5
T81	08-Jan-13	<169	317 ± 32	<4	<4	<9	<6	<8	<7	<7	<4	<4	<5
	19-Feb-13	<140	339 ± 63	<3	<3	<6	<3	<8	<5	<4	<3	<3	<5
	18-Mar-13	<141	361 ± 65	<3	<3	<7	<3	<7	<5	<6	<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
T42	09-Jan-13	<75	127 ± 22	<8	<7	<7	<7	584 ± 88	328 ± 126	<32	44 ± 6	377 ± 24
T67	09-Jan-13	<78	241 ± 31	<8	<7	<8	5 ± 2	523 ± 83	411 ± 99	<38	47 ± 3	336 ± 28
T81	08-Jan-13	54 ± 15	175 ± 26	<8	<8	<8	<8	676 ± 101	418 ± 117	<35	59 ± 6	537 ± 30

4.a.1. CRUSTACEA - Mixed Species - (pCi/kg, wet weight)

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
T67	This sample to be collected.										
T81	This sample to be collected.										

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

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
T67	30-Jan-13	2462 ± 482	<18	<19	<41	<20	<42	<23	<22	<372	<79
T81	10-Jan-13	2586 ± 170	<22	<18	<38	<18	<48	<22	<22	<370	<89

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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	Ra-226	Ra-228
T40	10-Jan-13	1168 ± 83	4304 ± 235	<11	<6	32 ± 3	<149	<166	<33
	19-Feb-13	1921 ± 139	5456 ± 275	<29	<21	51 ± 11	<3594	<415	<76
	19-Mar-13	1644 ± 102	6144 ± 233	<20	<11	22 ± 3	<1048	<256	<45
T41	10-Jan-13	1719 ± 54	6493 ± 130	<12	<9	23 ± 5	792 ± 292	<196	<35
	19-Feb-13	1715 ± 110	2567 ± 179	<29	<14	201 ± 14	<3087	<314	<60
	19-Mar-13	1443 ± 121	6043 ± 319	<19	<11	<6	325 ± 62	<219	<43
T67	09-Jan-13	1075 ± 81	4341 ± 164	<20	<13	<16	<1198	<292	<50
	19-Feb-13	2015 ± 133	4764 ± 230	<30	<20	<17	<3646	<359	<80
	18-Mar-13	2264 ± 73	5413 ± 289	<18	<8	23 ± 1	754 ± 96	<206	<34

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TURKEY POINT SITE

Supplemental Sampling

First Quarter, 2013

Sample Type	Collection Frequency	Number of Sample Locations	Number of Samples
1. Direct Radiation	Quarterly	11	11
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	1
4. Ingestion			
4.a. Milk	Semiannually	1	0
4.b. Marine Life	Semiannually	1	1
4.c. Food Crops	At Harvest	3	2
			Total: 89

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.

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

Sample Site	Deployment 11-Dec-12 Collection 26-Mar-13
NNW-6	3.45 ± 0.29
NW-7	3.98 ± 0.26
NW-8	3.97 ± 0.45
WNW-2	3.63 ± 0.64
WNW-3	3.84 ± 0.10
WNW-6	3.64 ± 0.17
W-8	3.77 ± 0.44
ENE-1	3.00 ± 0.05
T72	3.58 ± 0.42
PTN-1	3.47 ± 0.43
PTN-2	3.10 ± 0.04

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

Collection Date	T52	T56
02-Jan-13	<0.02	<0.02
08-Jan-13	<0.03	<0.03
16-Jan-13	<0.02	<0.02
23-Jan-13	<0.02	<0.02
30-Jan-13	<0.03	<0.03
06-Feb-13	<0.02	<0.02
12-Feb-13	<0.02	<0.02
18-Feb-13	<0.04	<0.04
25-Feb-13	<0.03	<0.03
05-Mar-13	<0.03	<0.03
12-Mar-13	<0.03	<0.03
18-Mar-13	<0.03	<0.03
25-Mar-13	<0.03	<0.03

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

Collection Date	T52	T56
02-Jan-13	0.019 ± 0.002	0.014 ± 0.002
08-Jan-13	0.010 ± 0.002	0.007 ± 0.002
16-Jan-13	0.006 ± 0.002	0.009 ± 0.002
23-Jan-13	0.015 ± 0.002	0.008 ± 0.002
30-Jan-13	0.030 ± 0.003	0.025 ± 0.003
06-Feb-13	0.016 ± 0.002	0.016 ± 0.002
12-Feb-13	0.014 ± 0.002	0.021 ± 0.003
18-Feb-13	0.015 ± 0.002	0.019 ± 0.003
25-Feb-13	0.015 ± 0.002	0.012 ± 0.002
05-Mar-13	0.023 ± 0.002	0.018 ± 0.002
12-Mar-13	0.016 ± 0.002	0.011 ± 0.002
18-Mar-13	0.022 ± 0.003	0.021 ± 0.003
25-Mar-13	0.012 ± 0.002	0.012 ± 0.002
Average:	0.016 ± 0.001	0.015 ± 0.001

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

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
T52	0.1122 ± 0.0108	<0.0237	<0.0016	<0.0012	<0.0645
T56	0.0984 ± 0.0117	<0.0221	<0.0011	<0.0010	<0.0511

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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	08-Jan-13	5487 ± 124	393 ± 64	<3	<3	<6	<3	<6	<4	<4	<2	<3	<5
	19-Feb-13	5530 ± 125	553 ± 61	<5	<5	<12	<8	<12	<7	<7	<7	<6	<11
	18-Mar-13	6223 ± 132	566 ± 70	<3	<3	<7	<4	<7	<6	<6	<3	<4	<6
T75	08-Jan-13	<137	<26	<2	<2	<4	<3	<4	<4	<4	<3	<2	<4
	19-Feb-13	<140	<75	<5	<4	<8	<8	<9	<9	<7	<5	<5	<9
	18-Mar-13	<141	<61	<5	<4	<9	<7	<10	<9	<10	<4	<5	<8
T84	08-Jan-13	5317 ± 122	467 ± 54	<3	<3	<6	<3	<6	<5	<4	<2	<3	<4
	19-Feb-13	5798 ± 127	493 ± 60	<5	<6	<12	<7	<13	<9	<7	<6	<5	<14
	18-Mar-13	5499 ± 125	621 ± 80	<6	<5	<12	<7	<11	<9	<10	<5	<6	<8
T97	09-Jan-13	5610 ± 125	413 ± 66	<2	<2	<6	<3	<6	<5	<4	<2	<3	<3
	18-Feb-13	5736 ± 127	571 ± 82	<3	<3	<6	<3	<7	<5	<4	<3	<3	<5
	19-Mar-13	4780 ± 117	641 ± 126	<4	<5	<11	<7	<11	<10	<10	<5	<6	<8

(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	09-Jan-13	<113	259 ± 54	<12	<13	<10	<10	<690	1159 ± 148	<42	<97	517 ± 177
T02	09-Jan-13	427 ± 98	2678 ± 139	<20	47 ± 5	<20	29 ± 9	1765 ± 436	3803 ± 301	193 ± 26	<160	2375 ± 331
T03	09-Jan-13	<186	2278 ± 121	<21	<27	<19	29 ± 4	2749 ± 117	3594 ± 477	169 ± 17	<37	<285
T04	08-Jan-13	<115	189 ± 61	<12	<14	<10	<12	2512 ± 335	1614 ± 143	<48	<102	<420
T07	09-Jan-13	<130	585 ± 78	<12	<17	<14	36 ± 6	1941 ± 334	1132 ± 155	<63	<121	<483
T08	09-Jan-13	<155	1059 ± 111	<16	30 ± 5	<16	43 ± 5	1525 ± 480	1397 ± 190	<71	<128	<523
T09	09-Jan-13	<108	368 ± 55	<11	<12	<10	<12	<703	1259 ± 150	<48	<101	418 ± 155
T10	09-Jan-13	<98	695 ± 182	<12	<11	<10	<13	<205	905 ± 185	<47	<19	<140
T84*	08-Jan-13	<167	1219 ± 102	<16	64 ± 6	<16	42 ± 7	1423 ± 394	2894 ± 253	<70	<146	<579
T85*	08-Jan-13	<93	121 ± 22	<10	17 ± 2	<9	<10	823 ± 122	1326 ± 145	<40	<12	503 ± 30

*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	18-Feb-13	962 ± 83	3158 ± 164	<12	<20	<20	<15	<15	<17	<15	464 ± 131	<81

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

Sample Site	Collection Date	K-40	I-131	Cs-134	Cs-137	Ba-140 La-140 (A)
T99	This sample to be collected.					

(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)

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Ag-110m	Cs-134	Cs-137	Ra-226	Ra-228
T84	19-Mar-13	1137 ± 181	<34	<35	<65	<58	<72	<36	<36	<36	<672	<150

4.c. FOOD CROPS (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
T43(A)	10-Jan-13	<73	3133 ± 131	<7	<8	<13	<8	<13	<11	<10	<210	<38
T44(B)	10-Jan-13	<107	2396 ± 145	<12	<12	<23	<11	<24	<17	<15	<317	<51
T45	This sample to be collected.											

(A) Green string beans
(B) Corn

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ATTACHMENT B

FLORIDA DEPARTMENT OF
HEALTH

RADIOLOGICAL SURVEILLANCE

OF

FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT SITE

SECOND QUARTER 2013

BUREAU OF RADIATION CONTROL

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TURKEY POINT SITE

Offsite Dose Calculation Manual Sampling

Second Quarter, 2013

Sample Type	Collection Frequency	Locations Sampled	Number of Samples
1. Direct Radiation	Quarterly	22	22
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	1
4.a.2. Fish	Semiannually	2	0
4.b. Broadleaf Vegetation	Monthly	3	9
			Total: 197

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.

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

Sample Site	Deployment 26-Mar-13 Collection 04-June-13
N-2	4.45 ± 0.14
N-7	3.74 ± 0.14
N-10	4.19 ± 0.52
NNW-2	3.60 ± 0.23
NNW-10	4.18 ± 0.18
NW-1	4.52 ± 0.31
NW-5	4.77 ± 0.95
NW-10	4.96 ± 0.25
WNW-10	4.69 ± 0.03
W-1	4.62 ± 0.44
W-5	3.77 ± 0.18
W-9	3.75 ± 0.09

Sample Site	Deployment 26-Mar-13 Collection 04-June-13
WSW-8	(A)
SW-1	3.67 ± 0.18
SW-8	3.47 ± 0.01
SSW-5	3.49 ± 0.11
SSW-10	3.70 ± 0.31
S-5	3.61 ± 0.25
S-10	3.98 ± 0.28
SSE-1	3.33 ± 0.12
SSE-10	3.59 ± 0.26
NNE-22	4.37 ± 0.17

(A) Data lost due to computer error.

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

Collection Date	T41	T51	T57	T58	T64	T72
02-Apr-13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
10-Apr-13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
17-Apr-13	<0.03	<0.03	<0.02	<0.03	<0.03	<0.03
24-Apr-13	<0.02	<0.02	<0.02(A)	<0.02	<0.02	<0.02
29-Apr-13	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
07-May-13	<0.03	<0.02	<0.02	<0.03	<0.03	<0.03
14-May-13	<0.03	<0.03	<0.03	<0.04	<0.04	<0.04
21-May-13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
29-May-13	<0.02	<0.02(B)	<0.02	<0.02	<0.02	<0.02
05-Jun-13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
11-Jun-13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
17-Jun-13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
26-Jun-13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

(A) Low flow experienced; unknown reason. Estimated run time 62.3 out of 168.2 hours.
(B) Power failure experienced during sample run. Estimated run time 155 out of 193.4 hours.

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

Collection Date	T41	T51	T57	T58	T64	T72
02-Apr-13	0.020 ± 0.002	0.021 ± 0.002	0.021 ± 0.002	0.020 ± 0.002	0.020 ± 0.002	0.024 ± 0.002
10-Apr-13	0.014 ± 0.002	0.014 ± 0.002	0.015 ± 0.002	0.015 ± 0.002	0.007 ± 0.001	0.017 ± 0.002
17-Apr-13	0.006 ± 0.002	0.005 ± 0.001	0.005 ± 0.001	0.008 ± 0.002	0.008 ± 0.002	0.011 ± 0.002
24-Apr-13	0.012 ± 0.002	0.009 ± 0.002	0.030 ± 0.005(A)	0.012 ± 0.002	0.009 ± 0.002	0.009 ± 0.002
29-Apr-13	0.015 ± 0.003	0.014 ± 0.003	0.009 ± 0.002	0.015 ± 0.003	0.009 ± 0.003	0.011 ± 0.003
07-May-13	0.012 ± 0.002	0.010 ± 0.002	0.011 ± 0.002	0.009 ± 0.002	0.005 ± 0.001	0.011 ± 0.002
14-May-13	0.018 ± 0.002	0.017 ± 0.002	0.021 ± 0.002	0.020 ± 0.002	0.019 ± 0.002	0.021 ± 0.002
21-May-13	0.015 ± 0.002	0.018 ± 0.002	0.020 ± 0.002	0.019 ± 0.002	0.016 ± 0.002	0.016 ± 0.002
29-May-13	0.013 ± 0.002	0.013 ± 0.002(B)	0.014 ± 0.002	0.012 ± 0.002	0.013 ± 0.002	0.012 ± 0.002
05-Jun-13	0.010 ± 0.002	0.009 ± 0.002	0.010 ± 0.002	0.008 ± 0.002	0.007 ± 0.002	0.010 ± 0.002
11-Jun-13	0.010 ± 0.002	0.009 ± 0.002	0.014 ± 0.002	0.011 ± 0.002	0.012 ± 0.002	0.017 ± 0.002
17-Jun-13	0.014 ± 0.002	0.009 ± 0.002	0.010 ± 0.002	0.009 ± 0.002	0.010 ± 0.002	0.016 ± 0.002
26-Jun-13	0.018 ± 0.002	0.018 ± 0.002	0.015 ± 0.002	0.017 ± 0.002	0.008 ± 0.001	0.013 ± 0.002
Average:	0.014 ± 0.001	0.013 ± 0.001	0.015 ± 0.001	0.014 ± 0.001	0.011 ± 0.001	0.014 ± 0.001

(A) Low flow experienced; unknown reason. Estimated run time 62.3 out of 168.2 hours.
(B) Power failure experienced during sample run. Estimated run time 155 out of 193.4 hours.

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

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
T41	0.1052 ± 0.0089	<0.0178	<0.0013	<0.0015	<0.0103
T51	0.1069 ± 0.0174	<0.0158	<0.0014	<0.0015	0.0170 ± 0.0065
T57	0.1098 ± 0.0040	<0.0143	<0.0009	<0.0009	0.0115 ± 0.0040
T58	0.1081 ± 0.0138	<0.0140	<0.0009	<0.0009	0.0102 ± 0.0016
T64	0.0935 ± 0.0134	<0.0139	<0.0009	<0.0009	0.0095 ± 0.0043
T72	0.1148 ± 0.0162	<0.0175	<0.0011	<0.0009	0.0154 ± 0.0050

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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	16-Apr-13	<138	320 ± 93	<3	<3	<7	<4	<7	<5	<4	<3	<3	<5
	15-May-13	<140	320 ± 34	<5	<4	<9	<8	<11	<8	<6	<5	<6	<9
	04-Jun-13	<146	224 ± 29	<5	<5	<9	<7	<9	<9	<7	<5	<5	<7
T67	15-Apr-13	<138	<67	<4	<5	<10	<7	<11	<9	<7	<5	<6	<8
	13-May-13	127 ± 27	70 ± 18	<3	<4	<8	<4	<8	<6	<4	<4	<4	<8
	03-Jun-13	<138	33 ± 12	<2	<2	<4	<3	<5	<3	<3	<2	<2	<3
T81	15-Apr-13	175 ± 34	196 ± 17	<3	<3	<7	<3	<6	<5	<4	<3	<3	<5
	13-May-13	<139	325 ± 45	<6	<5	<11	<6	<13	<10	<8	<7	<7	<9
	03-Jun-13	<138	348 ± 23	<1	<1	<3	<1	<3	<2	<2	<1	<1	<2

(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
These samples were previously collected.										

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

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
T67	There was no sample available during the quarter.										
T81	24-Jun-13	1509 ± 510	<27	<29	<59	<27	<59	<29	<22	1265 ± 139	<132

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

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
T67	This sample was previously collected.										
T81	This sample was previously collected.										

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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	16-Apr-13	1492 ± 139	6100 ± 360	<31	<19	24 ± 10	<4551	<130	<410	<99
	15-May-13	952 ± 95	5121 ± 294	<17	<23	32 ± 9	<3636	<100	<324	<80
	03-Jun-13	1700 ± 129	4566 ± 268	<20	<20	43 ± 8	<3264	<90	796 ± 168	<69
T41	16-Apr-13	1493 ± 94	3320 ± 171	<18	<12	187 ± 11	<2196	<61	<218	<50
	15-May-13	998 ± 137	3078 ± 171	<16	<13	171 ± 18	<1358	<28	<322	<60
	03-Jun-13	1448 ± 104	2427 ± 181	<17	<16	119 ± 11	<2932	<83	<296	<63
T67	15-Apr-13	1258 ± 142	5251 ± 249	<30	<14	<17	<1470	21 ± 5	<370	<59
	13-May-13	1483 ± 107	5865 ± 318	<20	<21	<14	<3173	<98	<313	<73
	03-Jun-13	1554 ± 53	6512 ± 293	<11	<8	<8	390 ± 83	<15	<175	<33

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TURKEY POINT SITE

Supplemental Sampling

Second Quarter, 2013

Sample Type	Collection Frequency	Locations Sampled	Number of Samples
1. Direct Radiation	Quarterly	11	11
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	1
4. Ingestion			
4.a. Milk	Semiannually	1	0
4.b. Marine Life	Semiannually	1	0
4.c. Food Crops	At Harvest	3	1
			Total: 77

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.

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

Sample Site	Deployment 26-Mar-13 Collection 04-June-13
NNW-6	3.81 ± 0.10
NW-7	4.44 ± 0.15
NW-8	4.41 ± 0.16
WNW-2	4.00 ± 0.22
WNW-3	4.23 ± 0.30
WNW-6	3.91 ± 0.30
W-8	4.20 ± 0.10
ENE-1	3.63 ± 0.16
T72	4.11 ± 0.10
PTN-1	3.91 ± 0.18
PTN-2	3.36 ± 0.16

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

Collection Date	T52	T56
02-Apr-13	<0.03	<0.03
10-Apr-13	<0.02	<0.02
17-Apr-13	<0.03	<0.03
24-Apr-13	<0.02	<0.02
29-Apr-13	<0.04	<0.04
07-May-13	<0.02	<0.02
14-May-13	<0.03	<0.03
21-May-13	<0.03	<0.03
29-May-13	<0.02	<0.02
05-Jun-13	<0.03	<0.03
11-Jun-13	<0.03	<0.03
17-Jun-13	<0.03	<0.03
26-Jun-13	<0.02	<0.02

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

Collection Date	T52	T56
02-Apr-13	0.018 ± 0.002	0.008 ± 0.001
10-Apr-13	0.016 ± 0.002	0.015 ± 0.002
17-Apr-13	0.009 ± 0.002	0.008 ± 0.002
24-Apr-13	0.009 ± 0.002	0.009 ± 0.002
29-Apr-13	0.008 ± 0.002	0.017 ± 0.003
07-May-13	0.012 ± 0.002	0.011 ± 0.002
14-May-13	0.018 ± 0.002	0.012 ± 0.002
21-May-13	0.022 ± 0.002	0.018 ± 0.002
29-May-13	0.013 ± 0.002	0.015 ± 0.002
05-Jun-13	0.010 ± 0.002	0.008 ± 0.002
11-Jun-13	0.013 ± 0.002	0.009 ± 0.002
17-Jun-13	0.009 ± 0.002	0.014 ± 0.002
26-Jun-13	0.019 ± 0.002	0.015 ± 0.002
Average:	0.014 ± 0.001	0.012 ± 0.001

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

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
T52	0.1180 ± 0.0093	<0.0250	<0.0011	<0.0014	0.0072 ± 0.0017
T56	0.1065 ± 0.0205	<0.0174	<0.0013	<0.0010	<0.0105

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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	15-Apr-13	9039 ± 156	626 ± 66	<5	<5	<10	<6	<14	<9	<7	<6	<5	<8
	13-May-13	7098 ± 140	531 ± 42	<5	<5	<10	<7	<12	<9	<8	<5	<6	<8
	03-Jun-13	4189 ± 111	540 ± 35	<2	<2	<5	<3	<5	<4	<3	<3	<3	<3
T75	15-Apr-13	<138	<72	<5	<3	<10	<5	<10	<7	<5	<5	<4	<7
	13-May-13	<140	<40	<3	<3	<6	<5	<6	<5	<4	<3	<3	<4
	03-Jun-13	<138	<59	<4	<4	<9	<3	<8	<6	<5	<5	<5	<7
T84	15-Apr-13	8744 ± 153	565 ± 36	<2	<2	<4	<2	<5	<4	<3	<3	<2	<3
	13-May-13	7432 ± 143	551 ± 30	<3	<3	<7	<3	<7	<5	<4	<3	<4	<5
	03-Jun-13	4056 ± 109	529 ± 35	<2	<2	<5	<3	<5	<4	<3	<3	<3	<4
T97	16-Apr-13	9234 ± 157	567 ± 44	<5	<5	<10	<7	<11	<9	<8	<5	<6	<9
	15-May-13	6603 ± 136	582 ± 43	<4	<4	<8	<5	<9	<6	<4	<5	<4	<8
	04-Jun-13	4399 ± 113	522 ± 25	<2	<2	<5	<3	<5	<4	<3	<2	<2	<4

(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
These samples were previously collected.										

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	Pb-212	Ra-226	Ra-228
T84	15-May-13	3939 ± 196	1044 ± 113	<14	34 ± 9	<18	<18	<18	<18	<14	287 ± 114	2414 ± 207	178 ± 35

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

Sample Site	Collection Date	K-40	I-131	Cs-134	Cs-137	Ba-140 La-140 (A)
T99	There was no sample available during the 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)

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Ag-110m	Cs-134	Cs-137	Ra-226	Ra-228
T84	This sample was previously collected.											

4.c. FOOD CROPS - Coconut Milk - (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
T43	This sample was previously collected.											
T44	This sample was previously collected.											
T45	03-Apr-13	<238	2892 ± 216	<25	<28	<36	<26	<137	<25	<26	<398	<90

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ATTACHMENT B

Third Quarter, 2013

RADIOLOGICAL SURVEILLANCE

OF

FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT SITE

THIRD QUARTER 2013

BUREAU OF RADIATION CONTROL

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TURKEY POINT SITE

Offsite Dose Calculation Manual Sampling

Third Quarter, 2013

Sample Type	Collection Frequency	Locations Sampled	Number of Samples
1. Direct Radiation	Quarterly	22	22
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	1
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.

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

Sample Site	Deployment 04-June-13 Collection 17-Sep-13
N-2	4.26 ± 0.33
N-7	3.54 ± 0.14
N-10	4.14 ± 0.23
NNW-2	3.25 ± 0.15
NNW-10	3.84 ± 0.13
NW-1	4.23 ± 0.37
NW-5	3.57 ± 0.23
NW-10	4.44 ± 0.05
WNW-10	4.26 ± 0.24
W-1	3.95 ± 0.36
W-5	3.60 ± 0.21
W-9	3.42 ± 0.13

Sample Site	Deployment 04-June-13 Collection 17-Sep-13
WSW-8	3.64 ± 0.28
SW-1	3.23 ± 0.02
SW-8	3.04 ± 0.20
SSW-5	3.14 ± 0.13
SSW-10	3.15 ± 0.24
S-5	3.13 ± 0.37
S-10	3.93 ± 0.30
SSE-1	3.05 ± 0.23
SSE-10	3.32 ± 0.03
NNE-22	4.13 ± 0.28

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

Collection Date	T41	T51	T57	T58	T64	T72
02-Jul-13	<0.02	<0.03	<0.02	<0.02	<0.02	<0.03
09-Jul-13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
17-Jul-13	<0.02	<0.03	<0.02	<0.02	<0.02(A)	<0.02
23-Jul-13	<0.03	<0.03	<0.03	<0.03	<0.02(B)	<0.03
30-Jul-13	<0.03	<0.03	<0.03	<0.03	<0.02(C)	<0.03
08-Aug-13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
14-Aug-13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
21-Aug-13	<0.02	<0.02	<0.02	<0.03	<0.02	<0.02
27-Aug-13	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
04-Sep-13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
11-Sep-13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
18-Sep-13	<0.03	<0.03	<0.03	<0.03	<0.02	<0.03
25-Sep-13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

(A) Experienced low volume; gas meter changed out. Estimated run time 108.6 out of 169.9 hours.
(B) Experienced low volume again. Estimated run time 97.4 out of 144 hours.
(C) Pump not operating upon arrival; changed out vacuum pump. Estimated run time 73 out of 168.8 hours.

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

Collection Date	T41	T51	T57	T58	T64	T72
02-Jul-13	0.014 ± 0.002	0.016 ± 0.002	0.012 ± 0.002	0.016 ± 0.002	0.011 ± 0.002	0.017 ± 0.002
09-Jul-13	0.013 ± 0.002	0.013 ± 0.002	0.010 ± 0.002	0.010 ± 0.002	0.005 ± 0.002	0.010 ± 0.002
17-Jul-13	0.005 ± 0.001	0.008 ± 0.002	0.007 ± 0.002	0.011 ± 0.002	0.014 ± 0.003(A)	0.006 ± 0.002
23-Jul-13	0.012 ± 0.002	0.018 ± 0.002	0.021 ± 0.003	0.013 ± 0.002	0.016 ± 0.003(B)	0.020 ± 0.003
30-Jul-13	0.019 ± 0.002	0.026 ± 0.003	0.022 ± 0.002	0.025 ± 0.003	0.019 ± 0.004(C)	0.027 ± 0.003
08-Aug-13	0.009 ± 0.001	0.009 ± 0.001	0.011 ± 0.002	0.011 ± 0.002	0.009 ± 0.001	0.010 ± 0.002
14-Aug-13	0.014 ± 0.002	0.013 ± 0.002	0.011 ± 0.002	0.014 ± 0.002	0.011 ± 0.002	0.015 ± 0.002
21-Aug-13	0.012 ± 0.002	0.010 ± 0.002	0.011 ± 0.002	0.012 ± 0.002	0.012 ± 0.002	0.012 ± 0.002
27-Aug-13	0.013 ± 0.002	0.013 ± 0.002	0.011 ± 0.002	0.013 ± 0.002	0.008 ± 0.002	0.010 ± 0.002
04-Sep-13	0.010 ± 0.002	0.008 ± 0.002	0.010 ± 0.002	0.011 ± 0.002	0.009 ± 0.002	0.008 ± 0.002
11-Sep-13	0.009 ± 0.002	0.007 ± 0.002	0.008 ± 0.002	0.007 ± 0.002	0.007 ± 0.002	0.006 ± 0.002
18-Sep-13	0.012 ± 0.002	0.012 ± 0.002	0.013 ± 0.002	0.015 ± 0.002	0.011 ± 0.002	0.016 ± 0.002
25-Sep-13	0.010 ± 0.002	0.013 ± 0.002	0.011 ± 0.002	0.012 ± 0.002	0.008 ± 0.002	0.006 ± 0.002
Average:	0.012 ± 0.001	0.013 ± 0.001	0.012 ± 0.001	0.013 ± 0.001	0.011 ± 0.001	0.013 ± 0.001

(A) Experienced low volume; gas meter changed out. Estimated run time 108.6 out of 169.9 hours.
(B) Experienced low volume again. Estimated run time 97.4 out of 144 hours.
(C) Pump not operating upon arrival; changed out vacuum pump. Estimated run time 73 out of 168.8 hours.

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

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
T41	0.0889 ± 0.0082	<0.0224	<0.0013	<0.0012	0.0097 ± 0.0018
T51	0.0871 ± 0.0043	<0.0113	<0.0007	<0.0006	0.0104 ± 0.0010
T57	0.0842 ± 0.0042	<0.0100	<0.0006	<0.0006	0.0130 ± 0.0028
T58	0.0805 ± 0.0065	<0.0141	<0.0011	<0.0011	<0.0102
T64	0.0832 ± 0.0033	0.0033 ± 0.0013	<0.0005	<0.0004	0.0153 ± 0.0011
T72	0.0894 ± 0.0074	<0.0063	<0.0005	<0.0004	0.0139 ± 0.0028

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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	09-Jul-13	<147	236 ± 29	<4	<5	<9	<7	<10	<8	<9	<5	<5	<8
	13-Aug-13	<135	223 ± 20	<3	<3	<6	<3	<6	<6	<3	<3	<3	<5
	18-Sep-13	<147	81 ± 14	<3	<3	<6	<3	<6	<5	<3	<3	<3	<7
T67	10-Jul-13	<147	279 ± 31	<5	<5	<11	<7	<10	<9	<8	<5	<5	<9
	12-Aug-13	<142	<52	<3	<3	<6	2	<6	<5	<4	<3	<3	<4
	18-Sep-13	<141	<47	<3	<3	<6	<3	<6	<4	<3	<3	<3	<6
T81	09-Jul-13	201 ± 28	311 ± 59	<3	<3	<6	<3	<7	<6	<5	<3	<3	<5
	12-Aug-13	142 ± 27	277 ± 31	<4	<5	<10	<7	<11	<8	<7	<5	<5	<8
	16-Sep-13	<137	338 ± 32	<5	<4	<10	<7	<12	<9	<7	<5	<5	<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)

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
T42	09-Jul-13	86 ± 14	122 ± 22	<7	<7	<7	<7	640 ± 96	474 ± 121	<35	43 ± 10	418 ± 25
T67	10-Jul-13	77 ± 19	231 ± 37	<10	<14	<10	6 ± 2	688 ± 161	915 ± 102	68 ± 9	38 ± 6	621 ± 57
T81	09-Jul-13	62 ± 18	163 ± 35	<11	<13	<10	<12	612 ± 156	566 ± 91	<45	64 ± 16	460 ± 47

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

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
T67	This sample not yet collected.										
T81	This sample not yet collected.										

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

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
T67	This sample not yet collected.										
T81	31-Jul-13	2252 ± 443	<31	<25	<61	<41	<50	<26	<31	<515	<127

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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	09-Jul-13	2386 ± 79	3935 ± 152	<19	<10	125 ± 6	359 ± 62	<19	<212	<34
	14-Aug-13	1931 ± 72	5389 ± 215	<15	<9	36 ± 3	286 ± 58	<18	<211	<40
	16-Sep-13	1674 ± 68	4199 ± 171	<21	<10	31 ± 3	<993	<22	<273	<43
T41	09-Jul-13	1576 ± 79	3583 ± 189	<29	<14	231 ± 11	<1442	<31	<348	<58
	14-Aug-13	2003 ± 76	5934 ± 237	<17	<11	80 ± 5	406 ± 68	<22	<236	<48
	16-Sep-13	2410 ± 94	5115 ± 215	<30	<13	18 ± 4	<1266	<28	<345	<57
T67	10-Jul-13	1548 ± 77	5145 ± 239	<28	<11	<15	<1338	<29	<323	<58
	12-Aug-13	2692 ± 102	4322 ± 193	<29	<13	<16	1270 ± 226	<29	<345	<66
	18-Sep-13	1922 ± 70	4376 ± 180	<14	<8	<10	246 ± 56	<17	<214	<38

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TURKEY POINT SITE

Supplemental Sampling

Third Quarter, 2013

Sample Type	Collection Frequency	Locations Sampled	Number of Samples
1. Direct Radiation	Quarterly	11	11
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	1
4. Ingestion			
4.a. Milk	Semiannually	1	1
4.b. Marine Life	Semiannually	1	0
4.c. Food Crops	At Harvest	3	0
			Total: 79

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.

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

Sample Site	Deployment 04-Jun-13 Collection 17-Sep-13
NNW-6	3.57 ± 0.39
NW-7	4.21 ± 0.38
NW-8	4.22 ± 0.17
WNW-2	3.84 ± 0.09
WNW-3	4.01 ± 0.31
WNW-6	3.86 ± 0.12
W-8	3.97 ± 0.27
ENE-1	3.19 ± 0.24
T72	3.81 ± 0.07
PTN-1	3.73 ± 0.26
PTN-2	3.24 ± 0.33

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

Collection Date	T52	T56
02-Jul-13	<0.03	<0.03
09-Jul-13	<0.02	<0.02
17-Jul-13	<0.02	<0.02
23-Jul-13	<0.03	<0.03
30-Jul-13	<0.03	<0.03
08-Aug-13	<0.02	<0.02
14-Aug-13	<0.03	<0.03
21-Aug-13	<0.02	<0.02
27-Aug-13	<0.04	<0.04
04-Sep-13	<0.03	<0.03
11-Sep-13	<0.03	<0.03
18-Sep-13	<0.03	<0.03
25-Sep-13	<0.02	<0.02

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

Collection Date	T52	T56
02-Jul-13	0.013 ± 0.002	0.011 ± 0.002
09-Jul-13	0.007 ± 0.002	0.013 ± 0.002
17-Jul-13	0.006 ± 0.002	0.007 ± 0.002
23-Jul-13	0.018 ± 0.003	0.016 ± 0.002
30-Jul-13	0.021 ± 0.002	0.021 ± 0.002
08-Aug-13	0.011 ± 0.002	0.011 ± 0.002
14-Aug-13	0.015 ± 0.002	0.015 ± 0.002
21-Aug-13	0.010 ± 0.002	0.013 ± 0.002
27-Aug-13	0.011 ± 0.002	0.014 ± 0.002
04-Sep-13	0.010 ± 0.002	0.012 ± 0.002
11-Sep-13	0.006 ± 0.002	0.009 ± 0.002
18-Sep-13	0.012 ± 0.002	0.013 ± 0.002
25-Sep-13	0.013 ± 0.002	0.011 ± 0.002
Average:	0.012 ± 0.001	0.013 ± 0.001

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

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
T52	0.0675 ± 0.0060	<0.0162	<0.0011	<0.0007	0.0119 ± 0.0080
T56	0.0865 ± 0.0036	<0.0070	<0.0005	<0.0004	0.0090 ± 0.0009

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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	09-Jul-13	2881 ± 94	508 ± 42	<5	<6	<12	<8	<13	<12	<11	<5	<6	<8
	12-Aug-13	1932 ± 81	581 ± 33	<3	<3	<7	<3	<7	<5	<4	<3	<3	<5
	16-Sep-13	1672 ± 76	622 ± 43	<5	<6	<11	<8	<12	<8	<7	<4	<5	<9
T75	09-Jul-13	<130	<37	<3	<3	<7	<3	<6	<5	<5	<3	<3	<4
	12-Aug-13	<135	<76	<5	<5	<8	<7	<10	<9	<7	<5	<5	<7
	16-Sep-13	<141	<64	<5	<5	<9	<7	<10	<8	<7	<4	<6	<7
T84	09-Jul-13	2654 ± 91	518 ± 42	<4	<6	<12	<7	<11	<10	<9	<6	<5	<8
	12-Aug-13	1855 ± 47	601 ± 43	<4	<4	<12	<8	<12	<9	<7	<5	<6	<8
	16-Sep-13	1731 ± 77	547 ± 40	<4	<5	<11	<8	<13	<9	<8	<5	<6	<8
T97	09-Jul-13	2674 ± 92	497 ± 32	<5	<5	<11	<8	<11	<10	<12	<6	<6	<7
	13-Aug-13	2042 ± 82	588 ± 30	<3	<3	<6	<5	<7	<5	<5	<3	<4	<4
	18-Sep-13	1701 ± 80	579 ± 33	<3	<3	<7	<3	<7	<5	<3	<3	<3	<6

(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
T84	09-Jul-13	171 ± 26	479 ± 49	<13	32 ± 3	<13	<14	965 ± 198	1497 ± 124	59 ± 9	<18	403 ± 67
T85	09-Jul-13	65 ± 20	180 ± 35	<13	19 ± 3	<11	<14	755 ± 176	1005 ± 105	33 ± 7	49 ± 16	380 ± 53

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	Pb-210	Pb-212	Ra-226	Ra-228
T84	13-Aug-13	1878 ± 58	946 ± 50	7 ± 1	21 ± 2	<9	17 ± 1	<17	<10	<10	881 ± 70	132 ± 5	5695 ± 266	452 ± 15

Others: Sb-125 134 ± 5 pCi/kg

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

Sample Site	Collection Date	K-40	I-131	Cs-134	Cs-137	Ba-140 La-140 (A)
T99	01-Aug-13	1633 ± 47	<1	<1	37 ± 1	<3

(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)

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Ag-110m	Cs-134	Cs-137	Ra-226	Ra-228
T84	This sample not yet collected.											

4.c. FOOD CROPS - (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
T43	This sample was previously collected.											
T44	This sample was previously collected.											
T45	This sample was previously collected.											

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ATTACHMENT B

Fourth Quarter, 2013

RADIOLOGICAL SURVEILLANCE

OF

FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT SITE

FOURTH QUARTER 2013

BUREAU OF RADIATION CONTROL

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TURKEY POINT SITE

Offsite Dose Calculation Manual Sampling

Fourth Quarter, 2013

Sample Type	Collection Frequency	Locations Sampled	Number of Samples
1. Direct Radiation	Quarterly	23	23
2. Airborne			
2.a. Air Iodines	Weekly	6	84
2.b. Air Particulates	Weekly	6	84
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	1
4.b. Broadleaf Vegetation	Monthly	3	9
			Total: 212

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.

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

Sample Site	Deployment 17-Sep-13 Collection 18-Dec-13
N-2	3.10 ± 0.08
N-7	2.82 ± 0.26
N-10	3.08 ± 0.29
NNW-2	2.55 ± 0.19
NNW-10	3.28 ± 0.12
NW-1	3.46 ± 0.23
NW-5	2.77 ± 0.19
NW-10	3.48 ± 0.19
WNW-10	3.64 ± 0.35
W-1	3.06 ± 0.04
W-5	2.84 ± 0.19
W-9	2.79 ± 0.27

Sample Site	Deployment 17-Sep-13 Collection 18-Dec-13
WSW-8	2.77 ± 0.05
SW-1	2.49 ± 0.18
SW-8	2.31 ± 0.06
SSW-5	2.60 ± 0.19
SSW-10	2.60 ± 0.20
S-5	2.45 ± 0.12
S-10	2.93 ± 0.29
SSE-1	2.24 ± 0.15
SSE-10	2.43 ± 0.20
NNE-22	3.22 ± 0.39
WNW-2	2.92 ± 0.21

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

Collection Date	T41	T51	T57	T58	T64	T72
01-Oct-13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
08-Oct-13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
16-Oct-13	<0.02	<0.02	<0.02	<0.01(A)	<0.02	<0.02
22-Oct-13	<0.02	<0.02	<0.02	<0.05(B)	<0.02	<0.02
30-Oct-13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
05-Nov-13	<0.03	<0.03	<0.03	<0.03	<0.04	<0.03
12-Nov-13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
18-Nov-13	<0.04	<0.03	<0.03	<0.03	<0.03	<0.04
26-Nov-13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
02-Dec-13	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
11-Dec-13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
16-Dec-13	<0.03	<0.05(C)	<0.03	<0.03	<0.03	<0.03
23-Dec-13	<0.03	<0.04(D)	<0.03	<0.03	<0.03	<0.03
31-Dec-13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03

(A) Power failure, estimated run time 116.6 out of 192.1 hours.
(B) Power restored on 10/21/13 at 1800 hours.
(C) Power failure, estimated run time 30.6 out of 122.3 hours.
(D) Power restored 12/17/13 at approximately 1700 hours.

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

Collection Date	T41	T51	T57	T58	T64	T72
01-Oct-13	0.010 ± 0.002	0.011 ± 0.002	0.013 ± 0.002	0.007 ± 0.002	0.010 ± 0.002	0.013 ± 0.002
08-Oct-13	0.009 ± 0.002	0.008 ± 0.002	0.009 ± 0.002	0.010 ± 0.002	0.010 ± 0.002	0.008 ± 0.002
16-Oct-13	0.007 ± 0.001	0.005 ± 0.001	0.007 ± 0.001	0.013 ± 0.003(A)	0.007 ± 0.001	0.008 ± 0.002
22-Oct-13	0.007 ± 0.002	0.010 ± 0.002	0.006 ± 0.002	<0.053(B)	<0.002	0.007 ± 0.002
30-Oct-13	0.026 ± 0.002	0.023 ± 0.002	0.023 ± 0.002	0.019 ± 0.002	0.018 ± 0.002	0.023 ± 0.002
05-Nov-13	0.015 ± 0.002	0.019 ± 0.003	0.015 ± 0.002	0.014 ± 0.002	0.018 ± 0.003	0.018 ± 0.003
12-Nov-13	0.008 ± 0.002	0.008 ± 0.002	0.014 ± 0.002	0.012 ± 0.002	0.011 ± 0.002	0.007 ± 0.002
18-Nov-13	0.009 ± 0.002	0.013 ± 0.002	0.009 ± 0.002	0.014 ± 0.002	0.012 ± 0.002	0.008 ± 0.002
26-Nov-13	0.006 ± 0.001	0.003 ± 0.001	0.005 ± 0.001	0.005 ± 0.001	0.007 ± 0.001	0.006 ± 0.001
02-Dec-13	0.006 ± 0.002	0.008 ± 0.002	0.012 ± 0.002	0.010 ± 0.002	0.006 ± 0.002	0.010 ± 0.002
11-Dec-13	0.009 ± 0.001	0.008 ± 0.001	0.007 ± 0.001	0.009 ± 0.001	0.007 ± 0.001	0.010 ± 0.001
16-Dec-13	0.013 ± 0.002	0.015 ± 0.006(C)	0.014 ± 0.002	0.010 ± 0.002	0.006 ± 0.002	0.011 ± 0.002
23-Dec-13	0.010 ± 0.002	0.009 ± 0.002(D)	0.011 ± 0.002	0.013 ± 0.002	0.013 ± 0.002	0.012 ± 0.002
31-Dec-13	<0.004	0.010 ± 0.002	0.006 ± 0.001	0.005 ± 0.001	0.005 ± 0.001	0.006 ± 0.001
Average:	<0.010	0.011 ± 0.001	0.011 ± 0.001	<0.014	<0.009	0.011 ± 0.001

(A) Power failure, estimated run time 116.6 out of 192.1 hours.
(B) Power restored on 10/21/13 at 1800 hours.
(C) Power failure, estimated run time 30.6 out of 122.3 hours.
(D) Power restored 12/17/13 at approximately 1700 hours.

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

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
T41	0.0868 ± 0.0169	<0.0198	<0.0011	<0.0011	0.0093 ± 0.0039
T51	0.1137 ± 0.0188	<0.0129	<0.0012	<0.0009	<0.0106
T57	0.0948 ± 0.0176	<0.0223	<0.0012	<0.0013	0.0096 ± 0.0016
T58	0.1064 ± 0.0051	<0.0095	<0.0008	<0.0006	0.0103 ± 0.0043
T64	0.0951 ± 0.0060	<0.0138	<0.0008	<0.0009	0.0091 ± 0.0037
T72	0.1002 ± 0.0071	<0.0116	<0.0009	<0.0009	0.0153 ± 0.0022

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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	15-Oct-13	<148	139 ± 16	<3	<3	<6	<3	<6	<5	<4	<3	<3	<5
	18-Nov-13	<146	266 ± 29	<5	<5	<10	<7	<12	<9	<7	<5	<7	<11
	18-Dec-13	<140	235 ± 14	<2	<2	<3	<2	<4	<3	<3	<2	<2	<3
T67	14-Oct-13	<148	251 ± 28	<5	<5	<9	<7	<10	<10	<7	<5	<6	<7
	19-Nov-13	<146	<70	<5	<4	<8	<6	<9	<8	<6	<5	<6	<8
	18-Dec-13	<140	285 ± 21	<3	<3	<6	<3	<6	<5	<4	<3	<3	<6
T81	14-Oct-13	<148	265 ± 22	<3	<3	<7	<3	<8	<5	<4	<3	<3	<5
	18-Nov-13	<146	313 ± 31	<5	<5	<10	<7	<9	<9	<7	<4	<6	<9
	18-Dec-13	<140	300 ± 22	<3	<3	<5	<3	<6	<5	<4	<3	<3	<6

(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	Others:
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)

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
T67	This sample was previously collected.										
T81	14-Oct-13	1900 ± 207	<21	<21	<40	<33	<44	<22	27 ± 4	389 ± 53	<86
T81	30-Oct-13	1067 ± 122	<21	<31	<80	<22	<53	<26	<23	<507	<92

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

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
T67	18-Dec-13	2272 ± 215	<26	<22	<54	<40	<56	<27	<27	<450	<112
T81	This sample was previously collected.										

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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	16-Oct-13	1289 ± 55	4538 ± 186	<14	<8	46 ± 3	264 ± 50	<17	<214	<35
	19-Nov-13	1543 ± 56	4003 ± 162	<9	<7	28 ± 3	300 ± 48	<15	<183	<31
	18-Dec-13	2039 ± 85	5491 ± 231	<20	<11	40 ± 5	<1361	<30	<383	<63
T41	16-Oct-13	1697 ± 82	5774 ± 246	<26	<15	27 ± 4	<1480	<32	<381	<61
	19-Nov-13	1381 ± 64	4698 ± 196	<15	<12	51 ± 5	<1144	<25	<271	<50
	18-Dec-13	1803 ± 77	5464 ± 225	<17	<13	20 ± 4	<1300	<27	<336	<62
T67	14-Oct-13	1312 ± 69	4811 ± 216	<29	<16	<17	<1162	<27	<334	<69
	19-Nov-13	1171 ± 51	4361 ± 181	<10	<9	5 ± 2	420 ± 55	<18	<198	<36
	18-Dec-13	995 ± 44	4195 ± 170	<9	<8	<8	318 ± 52	<16	<176	<33

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TURKEY POINT SITE

Supplemental Sampling

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Sample Type	Collection Frequency	Locations Sampled	Number of Samples
1. Direct Radiation	Quarterly	10	9
2. Airborne			
2.a. Air Iodines	Weekly	2	28
2.b. Air Particulates	Weekly	2	28
3. Waterborne			
3.a. Surface Water	Monthly	4	12
3.b. Shoreline Sediment	Semiannually	2	0
3.c. Aquatic Vegetation	Quarterly	1	1
4. Ingestion			
4.a. Milk	Semiannually	1	1
4.b. Marine Life	Semiannually	1	0
4.c. Food Crops	At Harvest	3	0
			Total: 79

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.

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

Sample Site	Deployment 17-Sep-13 Collection 18-Dec-13
NNW-6	2.85 ± 0.39
NW-7	3.25 ± 0.22
NW-8	3.27 ± 0.06
WNW-3	3.18 ± 0.06
WNW-6	2.88 ± 0.16
W-8	3.10 ± 0.32
ENE-1	2.45 ± 0.22
T72	2.89 ± 0.15
PTN-1	2.90 ± 0.16
PTN-2	(A)

(A) TLD lost when the surrounding area was cleared.

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

Collection Date	T52	T56
01-Oct-13	<0.03	<0.03
08-Oct-13	<0.03	<0.03
16-Oct-13	<0.02	<0.02
22-Oct-13	<0.02	<0.02
30-Oct-13	<0.03	<0.02
05-Nov-13	<0.04	<0.04
12-Nov-13	<0.03	<0.03
18-Nov-13	<0.03	<0.04
26-Nov-13	<0.02	<0.02
02-Dec-13	<0.04	<0.04
11-Dec-13	<0.02	<0.02
16-Dec-13	<0.03	<0.03
23-Dec-13	<0.03	<0.03
31-Dec-13	<0.03	<0.02

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

Collection Date	T52	T56
01-Oct-13	0.005 ± 0.002	0.010 ± 0.002
08-Oct-13	0.010 ± 0.002	0.010 ± 0.002
16-Oct-13	0.004 ± 0.001	0.010 ± 0.002
22-Oct-13	0.004 ± 0.002	0.005 ± 0.002
30-Oct-13	0.023 ± 0.002	0.019 ± 0.002
05-Nov-13	0.011 ± 0.002	0.015 ± 0.002
12-Nov-13	0.007 ± 0.002	0.010 ± 0.002
18-Nov-13	0.011 ± 0.002	0.011 ± 0.002
26-Nov-13	0.003 ± 0.001	0.006 ± 0.001
02-Dec-13	0.005 ± 0.002	0.009 ± 0.002
11-Dec-13	0.007 ± 0.001	0.008 ± 0.001
16-Dec-13	0.012 ± 0.002	0.008 ± 0.002
23-Dec-13	0.010 ± 0.002	0.007 ± 0.001
31-Dec-13	0.005 ± 0.001	0.003 ± 0.001
Average:	0.008 ± 0.001	0.009 ± 0.001

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

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
T52	0.0795 ± 0.0073	<0.0196	<0.0012	<0.0013	<0.0089
T56	0.0922 ± 0.0069	<0.0117	<0.0009	<0.0009	<0.0101

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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	14-Oct-13	1093 ± 69	587 ± 34	<3	<3	<7	<3	<8	<6	<4	<3	<3	<6
	18-Nov-13	732 ± 62	674 ± 45	<5	<5	<11	<8	<11	<9	<7	<5	<6	<7
	18-Dec-13	3057 ± 94	657 ± 45	<4	<5	<10	<8	<13	<9	<6	<6	<6	<9
T75	14-Oct-13	<148	<71	<4	<5	<8	<7	<9	<7	<7	<5	<5	<6
	18-Nov-13	<146	<74	<5	<5	<11	<6	<10	<9	<7	<5	<5	<7
	18-Dec-13	<140	<40	<3	<3	<6	<4	<6	<5	<4	<3	<3	<7
T84	14-Oct-13	1138 ± 69	541 ± 41	<4	<5	<10	<7	<11	<9	<8	<5	<6	<8
	18-Nov-13	722 ± 61	687 ± 36	<3	<3	<8	<4	<8	<6	<4	<3	<3	<6
	18-Dec-13	2993 ± 93	645 ± 35	<3	<3	<7	<3	<8	<5	<4	<3	<4	<5
T97	15-Oct-13	1071 ± 68	604 ± 43	<5	<5	<11	<8	<11	<9	<7	<5	<5	<11
	18-Nov-13	797 ± 63	627 ± 35	<3	<3	<7	<3	<7	<5	<4	<3	<3	<6
	18-Dec-13	2866 ± 92	680 ± 45	<5	<6	<11	<8	<12	<9	<7	<5	<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)

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

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	Pb-212	Ra-226	Ra-228
T84	18-Nov-13	1122 ± 35	811 ± 41	<8	<8	7 ± 1	<8	<12	<8	<8	96 ± 4	4103 ± 146	350 ± 12

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

Sample Site	Collection Date	K-40	I-131	Cs-134	Cs-137	Ba-140 La-140 (A)
T99	19-Dec-13	866 ± 52	<4	<4	<5	<15

(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)

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

4.c. FOOD CROPS - (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
T43	This sample was previously collected.											
T44	This sample was previously collected.											
T45	This sample was previously collected.											

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ATTACHMENT C

RESULTS FROM THE 2013

INTERLABORATORY COMPARISON PROGRAM

CONDUCTED BY

DEPARTMENT OF ENERGY

DOE-MAPEP 28 RESULTS

Program status	Radionuclide	Result	Ref. Value	Flag (Evaluation)	Acceptance Range
Matrix: RdF Air Filter Bq/filter					
Required	MN54	4.8	4.26	A	2.98 – 5.54
Required	CO57	2.2	2.36	A	1.65 –3. 07
Required	CO60	0.02		A	False Positive Test (acceptable)
	ZN65	3.6	3.13	A	2.19 - 4.07
Required	CS134	1.70	1.78	A	1.25 – 2.31
Required	CS137	2.8	2.6	A	1.82 – 2.38
Matrix: GrF Air Filter Bq/filter					
Required	Gross Beta	1.04	.85	A	.43 – 1.28
Matrix: MaS Soil Bq/kg					
Required	K40	667	625.3	A	437.7 - 812.9
	MN54	-0.7		A	False Positive Test (acceptable)
	CO57	0.7		A	False Positive Test (acceptable)
	CO60	695	691	A	484 - 898
	ZN65	1077	995	A	697 - 1294
	CS134	795	887	A	621 - 1153
Required	CS137	603	587	A	411 - 763
Matrix: MaW Water Bq/L					
Required	H3	489	507	A	355 – 659
	MN54	29.8	27.4	A	19.2 – 35.6
	CO57	32.1	30.9	A	21.6 – 40.2
Required	CO60	20.7	19.56	A	13.69 - 25.43
	NI63	NR	33.4	N	23.4 – 43.4 (Not Reporting Previously Reported Analyte)
	ZN65	34.7	30.4	A	21.3 - 39.5
Required	CS134	25.6	24.4	A	17.1 - 31.7
Required	CS137	-0.06		A	False Positive Test (acceptable)
	SR90	0.03	10.5	N	7.4 - 13.7
Matrix: RdV Vegetation, Bq/sample :					
	MN54	-0.01		A	False Positive Test (acceptable)
	CO57	7.9	8.68	A	6.08 – 11.28

Required	CO60	5.8	5.85	A	4.10 – 7.67
	ZN65	6.3	6.25	A	4.38 – 8.13
	CS134	7.91	8.43	A	5.90 - 10.96
Required	CS137	0.18	0.04	N	False Positive Test

Evaluation : A = Acceptable, W = Acceptable with Warning, N = Not Acceptable
* Acceptable Uncertainty Value for False Positive.

There are two relevant data flags. A false positive flag on Potassium-40 in water was reported. The MAPEP criteria for reporting require a value to be reported, regardless of significance. The value reported (0.7 Bq/L) was below any level of significance for reporting, is a value for a naturally occurring radioactive material, and thus is not a concern for environmental monitoring. A review of the data revealed no anomaly. No further actions will be taken as a result of this flag. The second flag is of concern because it was on the gross beta determination on an air filter and was a not acceptable flag.
The value reported was 1.8x the reference value. After the flag result was indicated, an investigation revealed a cause. The laboratory supervisor departed the program with minimal notice two weeks before the reporting date of the study. The analyst that calculated the reported values did not verify that the correct data was used in the spreadsheet (The same spreadsheet is used each time and it is believed old data was used), and I, being unfamiliar with the process did not catch the error when I reported the data to MAPEP. The corrected spreadsheet resulted in a value of 1.04, well within the acceptance range. A verification process that should have caught the program was also not used due to unfamiliarity with the process. This verification process will be used for subsequent studies. The analyst has also been apprised of the issue.

DOE-MAPEP 29 RESULTS

Program status	Radionuclide	Result	Ref. Value	Flag (Evaluation)	Acceptance Range
Matrix: RdF Air Filter Bq/filter					
Required	MN54	3.7	3.5	A	2.5 -4.6
Required	CO57	3.1	3.4	A	2.4 - 4.4
Required	CO60	2.2	2.3	A	1.6 - 3.0
	ZN65	3.1	2.7	A	1.9 - 3.5
Required	CS134	-0.1	0	A	False Positive within acceptable range
Required	CS137	2.8	2.7	A	1.9 - 3.5
Matrix: GrF Air Filter Bq/filter					
Required	Gross Beta	1.752	1.63	A	0.82 - 2.45
Matrix: MaS Soil Bq/kg					
Required	K40	700	633	A	443 - 823
	MN54	731	674	A	472 - 876
	CO57	606	0	N	False positive (Not required for Soil... See the cause and action taken below)
	CO60	492	451	A	316 - 586
	ZN65	-0.5	0	A	False Positive
	CS134	1266	1172	A	820 - 1524
Required	CS137	1061	977	A	684 - 1270
Matrix: MaW Water Bq/L					
Required	H3	6.8	0	N	False Positive... See the cause and action taken below
	MN54	-0.1	0	A	False Positive within acceptable range
	CO57	0.1	0	A	False Positive within acceptable range
Required	CO60	24.6	23.58	A	16.51 - 30.65
	NI63	10.5	26.4	N	18.5 - 34.3
					Analysis not required
	ZN65	39.7	34.6	A	24.2 - 45.0
Required	CS134	32.3	30.0	A	21.0 - 39.0
Required	CS137	34.6	31.6	A	22.1 - 41.1
	SR90	-0.2	7.22	N	5.05 - 9.39
					Analysis not required

Matrix: RdV Vegetation, Bq/sample :

	MN54	7.2	7.88	A	5.52 - 10.24
	CO57	0.1	0	A	False Positive within acceptable range
Required	CO60	0.1	0	A	False Positive within acceptable range
	ZN65	2.5	2.63	A	1.84 - 3.42
	CS134	5.0	5.20	A	3.64 - 6.76
Required	CS137	6.0	6.60	A	4.62 - 8.58

Evaluation : A = Acceptable, W = Acceptable with Warning, N = Not Acceptable
* Acceptable Uncertainty Value for False Positive.

There were two relevant data flags. A false positive flag on Tritium in water was reported. This was caused by static discharge on the vial. The analyst did not follow the procedure which indicated that the vials should be wiped to remove static. When the sample was rerun, and anti-static wipes were used on the vial, the value obtained was not sufficient to cause a false positive signal. The laboratory procedure was modified to require the use of anti-static wipes on all vials prior to placement in the liquid scintillation counter.

The second flag is a false positive on Co-57 in water. This was caused because the lab used a gamma analysis library that is specific for MAPEP analytes. The false positive was caused by the presence of Eu-152 which is not in the MAPEP gamma library. When the nuclear power library (the library used for all power plant samples) was used, Co-57 was no longer identified. The state of Florida lab process has been changed to require the use of the nuclear power library for analysis in the future.

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ATTACHMENT D

Industry Initiative

Ground Water Protection Program

Tritium in Ground Water Monitoring

2013

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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 0-ADM-654, Ground Water Protection Program.

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

Sample assay is performed by a private contractor for the first two quarters. The last two quarters were sampled by trained in house Technicians in accordance with procedure 0-NCAP-103.

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 4,011 pCi/L in 2013. 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 2013 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).

88 'routine' samples were collected.

C. Results

Tritium was detected in those locations reasonably affected by the cooling canal. The tritium results were from <MDA to 11,200 pico curies per liter. 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. Cooling canal tritium values typically vary from 722 to 9234 pCi/L.

Tabular results follow:

C. Results (continued)

Turkey Point 2013 Well Sampling Results, pCi/L

Note: --- denotes less than detectable, Typical MDAs K-40: 90 pCi/L Cs-137: 7 pCi/L
Blank boxes indicate not sampled this period.
Gray boxes in bold denote samples analyzed additionally for hard to detect beta emitters for isotopes Fe-55, Ni-63, Sr-89/90 and alpha (all were < LLD) based on GWI program requirements.

Well number	First Quarter 2013			Second Quarter 2013			Third Quarter 2013			Fourth Quarter 2013		
	H-3	K-40	Cs-137	H-3	K-40	Cs-137	H-3	K-40	Cs-137	H-3	K-40	Cs-137
PTPED-1	312	6.881	**14.38**	353	---	**10.73**	206	88.04	**6.35**	203	---	---
CD-1	300	107.7	**27.24**	724	---	---	247	---	---	383	---	---
P-94-2	975	215.4	---				761	243.8	--			
P-94-4	242	---	---	560	---	---	549	--	--	782	---	**6.93**
STP-1	---	---	---				167	---	---			
PTN-MW-1s	---	---	---				81.8	---	---			
PTN-MW-1i	592	436.6	---				324	344.5	---			
PTN-MW-1d	1850	499	---				1980	422.3	---			
PTN-MW-2s	---	---	---				72.2	---	---			
PTN-MW-3s	---	---	---				196	---	---			
PTN-MW-4s	---	---	---	115	---	---	116	---	---	918	---	---
PTN-MW-4i	3490	531.6	---	3300	555.7	---	**2990**	526.1	---	140	---	---
PTN-MW-4d	3480	502	---	3550	630.8	---	**3560**	617.5	---	78.5	---	---
PTN-MW-5s	---	272.2	---	284	231.2	---	280	307.5	---	304	---	---
PTN-MW-5i	468	340.2	---	411	465	---	345	431.9	---	234	---	---
PTN-MW-5d	3390	612.4	---	2670	629.3	---	2150	588	---	418	---	---
PTN-MW-6s	---	93.4	---				---	---	--			
PTN-MW-6d	1500	391.2	---				176	438.7	--			
PTN-MW-7s	2580	---	---	1630	---	---	**620**	27.13	--	370	---	---
PTN-MW-7i	1160	289.2	---	263	336.4	---	**2420**	220.5	--	1810	---	---
PTN-MW-7d	2330	289	---	2190	336	---	75.1	---	--	---	---	---
PTN-MW-8s	2810	148.8	---	360	137.5	10.75	1700	--	---	**11,200**	---	**14.3**
PTN-MW-9s	475	120	---	667	91.04	---	247	--	--	376	---	---

C. Results (continued)

Turkey Point 2013 Well Sampling Results, pCi/L

Note: -- denotes less than detectable, Typical MDAs K-40: 90 pCi/L Cs-137: 7 pCi/L
Blank boxes indicate not sampled this period.
Gray boxes in bold denote samples analyzed additionally for hard to beta emitters for isotopes Fe-55, Ni-63, Sr-89/90 and alpha (all were < LLD) based on GWI program requirements.

Well number	First Quarter 2013			Second Quarter 2013			Third Quarter 2013			Fourth Quarter 2013		
	H-3	K-40	Cs-137	H-3	K-40	Cs-137	H-3	K-40	Cs-137	H-3	K-40	Cs-137
PTN-MW-10s	---	---	---				---	78.22	--			
PTN-MW-10i	1790	345.9	---				1530	334.5	---			
PTN-MW-10d	3140	551.1	---				2620	552.8	---			
PTN-MW-11s	---	---	---	129	---	---	80.5	--	--	---	---	---
PTN-MW-12s	820	---	---	635	---	---	786	103.7	---	658	---	---

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

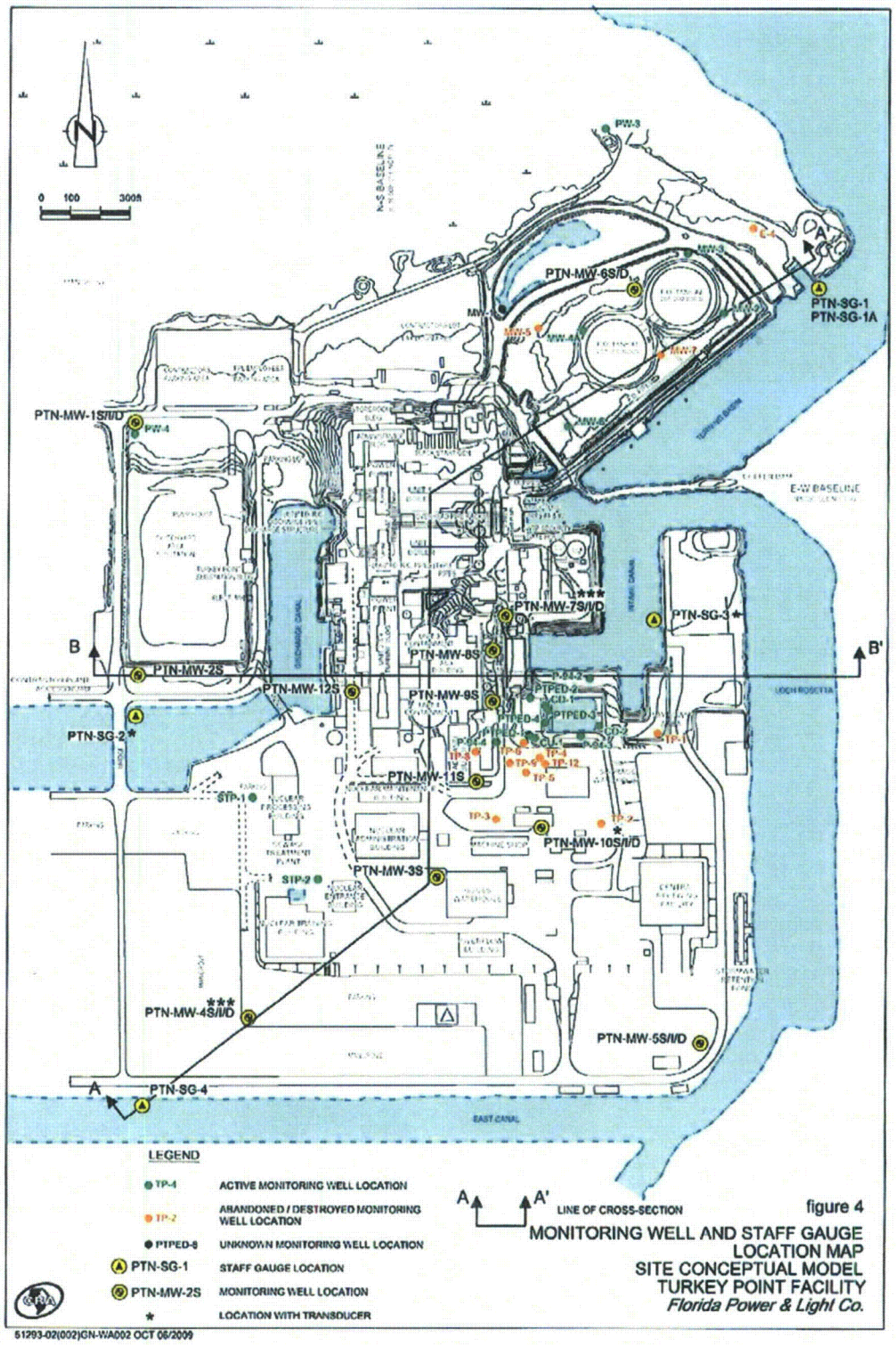

figure 4
MONITORING WELL AND STAFF GAUGE LOCATION MAP
SITE CONCEPTUAL MODEL
TURKEY POINT FACILITY
Florida Power & Light Co.