FPL

April 13, 2016

L-2016-076
10 CFR 50.4
10 CFR 50.36

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

RE: St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
Annual Radiological Environmental
Operating Report for Calendar Year 2015

The enclosed report is being submitted pursuant to Technical Specification 6.9.1.8. The *Annual Radiological Environmental Operating Report* provides information summaries and analytical results of the Radiological Environmental Monitoring Program (REMP) for calendar year 2015.

Please contact us should there be any questions regarding this report.

Sincerely,

Michael J. Snyder
Licensing Manager
St. Lucie Plant

Enclosure: 2015 Annual Radiological Environmental Operating Report (69 pages)

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2015

ANNUAL

RADIOLOGICAL ENVIRONMENTAL

OPERATING REPORT

ST. LUCIE PLANT

UNITS 1 & 2

LICENSE NOS. DPR-67, NPF-16

DOCKET NOS. 50-335, 50-389

Data Submitted by: Florida DOH

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2015
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT – UNITS 1 & 2

TABLE OF CONTENTS

2015
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT – UNITS 1 & 2

I. INTRODUCTION

This report is submitted pursuant to Specification 6.9.1.8 of St. Lucie Unit 1 and St. Lucie Unit 2 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 meeting the requirements of Unit 1 and Unit 2 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 to 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 St. Lucie Plant (PSL) is conducted pursuant to the St. Lucie Units 1 and 2 Offsite Dose Calculation Manual (ODCM) Section 3/4.12.1, Monitoring Program.

1. Sample Locations, Types and Frequencies:

   a. Direct radiation gamma exposure rate is monitored continuously at 27 locations by thermoluminescent dosimeters (TLDs). TLDs are collected and analyzed quarterly.

   b. Airborne radioiodine and particulate samplers are operated continuously at five locations. Samples are collected and analyzed weekly. Analyses include Iodine-131, gross beta, and gamma isotopic measurements.

   c. Surface water samples are collected from two locations. Samples are collected and analyzed weekly and monthly, respectively. Analyses include gamma isotopic and tritium measurements.

   d. Shoreline sediment samples are collected from two 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. 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 St. Lucie Plant is conducted by the State of Florida, Department of Health (DOH), Bureau of Radiation Control (BRC). Samples are collected and analyzed by DOH personnel.

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

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 or missing data, if any, are noted and explained in Table 1A. Samples not meeting the specified "A PRIORI" LLD, if any, are noted and explained in Table 1B. Analysis data for all specified samples analyzed during the surveillance period is provided in Attachment B.

D. Land Use Census

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

E. Interlaboratory Comparison Program

The interlaboratory comparison program consists of participating in the DOE Mixed Analyte Performance Evaluation Program (MAPEP).

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

The samples are analyzed using the methods applicable to the REMP (Gamma Spectroscopy, Gross Beta, and Tritium for Water).

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

The results for nuclides associated with the REMP are listed in ATTACHMENT C, RESULTS FROM THE INTERLABORATORY COMPARISON PROGRAM.

III. DISCUSSION AND INTERPRETATION OF RESULTS

A. Reporting of Results

The Annual Radiological Environmental Operating Report contains the summaries, interpretations and information required by St. Lucie Plant ODCM. Table 1 provides a summary of the measurements made for the nuclides required by ODCM, Table 4.12-1, for all samples specified by Table 3.12-1. 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 adverse 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.

   The BRC has performed a comprehensive investigation to determine the cause of a potential decreasing Direct Exposure TLD trend at St. Lucie. Results indicate that TLDs may be experiencing age related degradation and the BRC plans to replace the TLD inventory in 2016. A site tracking action has been generated to track the issue to ensure closure.

   Direct radiation monitoring results are summarized in Table 1 and are trended in Figure 1 below.

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 and are trended in Figure 2 below.

Figure 1 - St. Lucie Direct Radiation Gamma Exposure (via TLD)

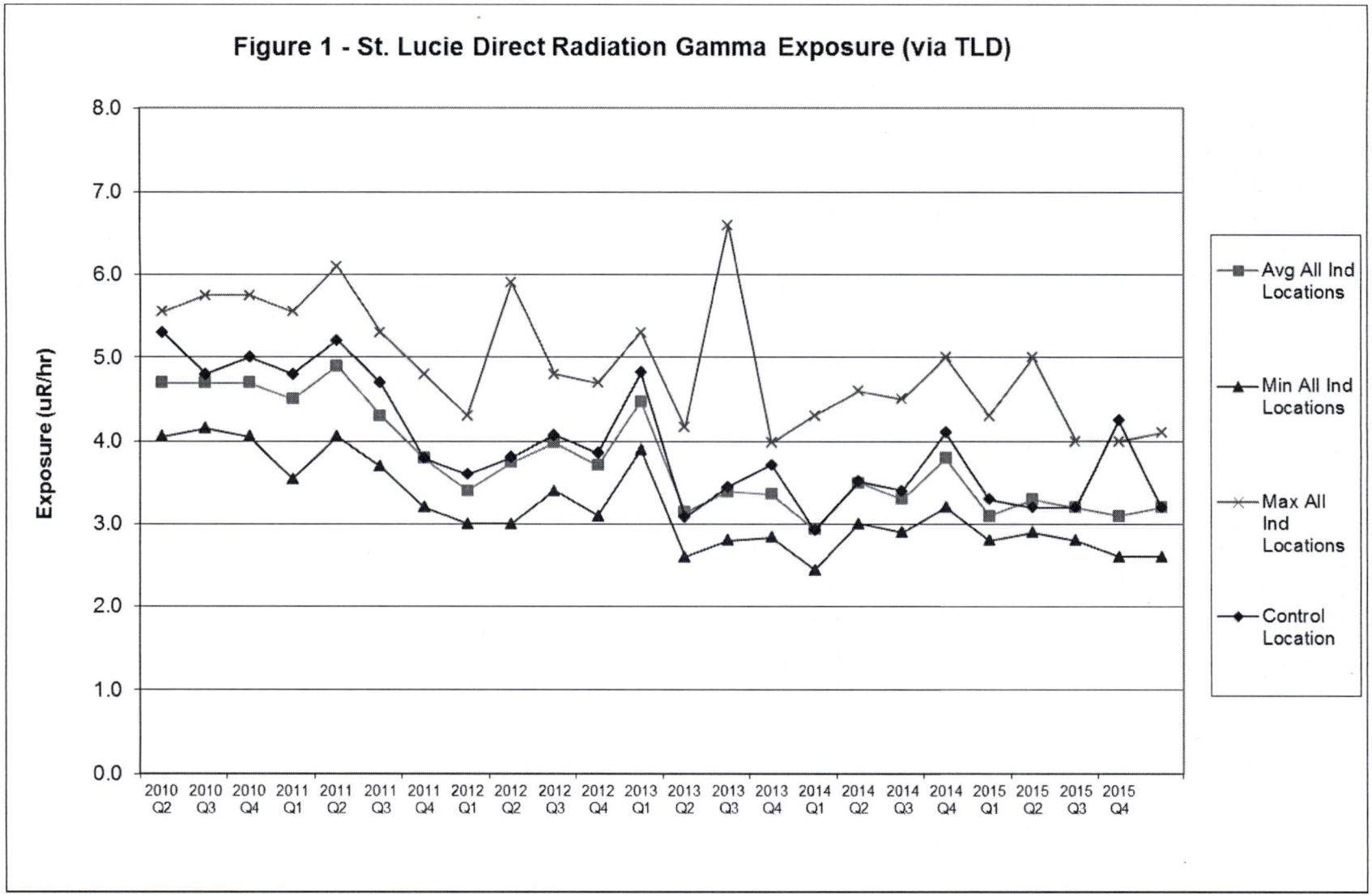
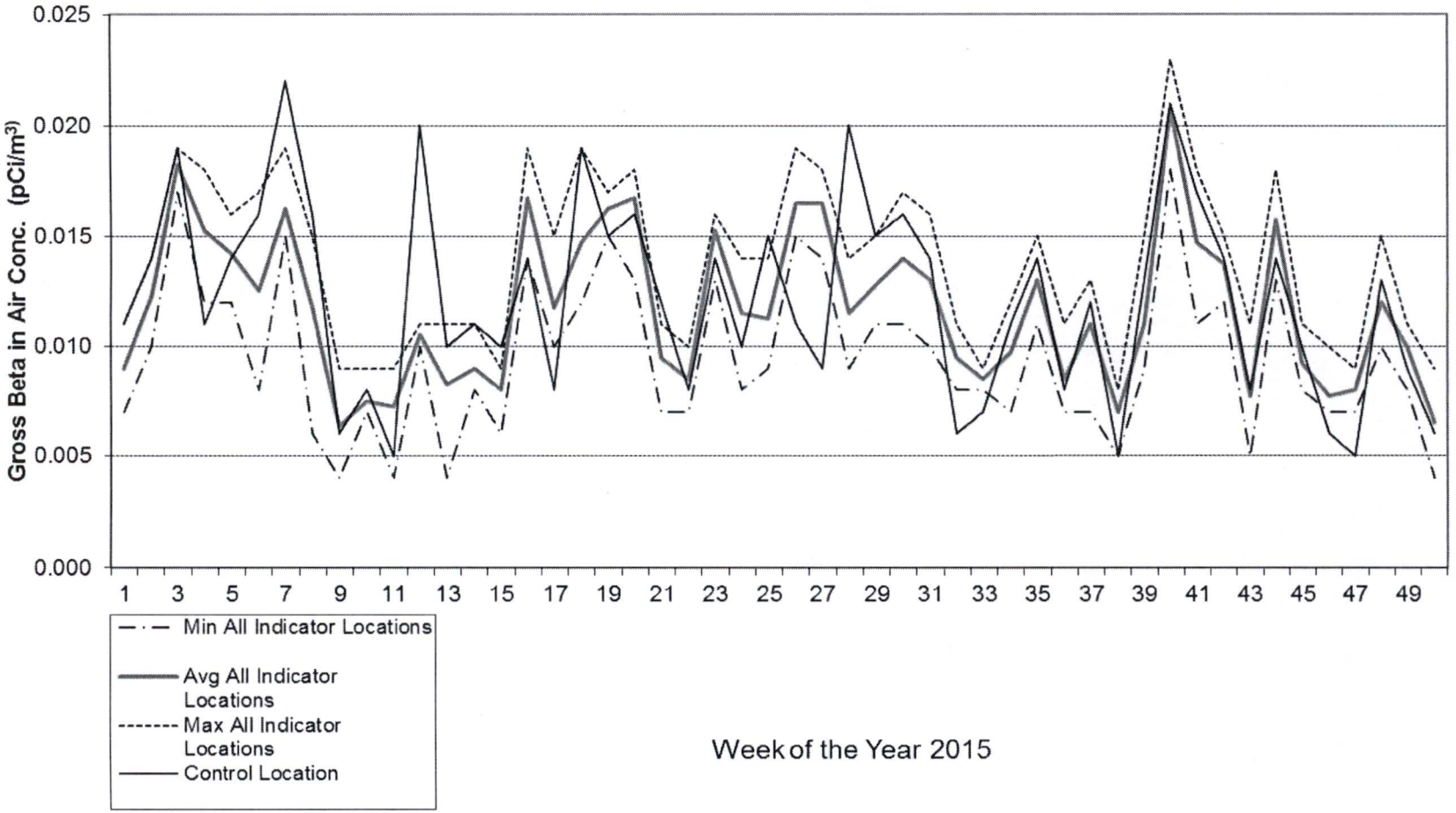


Figure 2 - St. Lucie 2015 REMP Program
Gross Beta in Air, pCi/m^3



3. Waterborne, Surface Water:

The results for radioactivity measurements in surface water are consistent with past measurements and with measurements made during the pre-operational surveillance program. Tritium was reported as present in 3 of the 52 ODCM required samples for the indicator location and none of the 12 samples of the control location surface water samples collected. The highest value was 11.1% of the required lower limit of detection and 1.1% of the reporting level listed in ODCM Table 4.12-1. There were no indications of any other nuclides that could be attributed to plant effluents. Results are summarized in Table 1.

4. Waterborne, Sediment and Food Products:

The results for radioactivity measurements in waterborne sediment, fish, and crustacean samples are consistent with past measurements and with measurements made during the pre-operational surveillance program. For the Fish Ingestion Pathway, Cs-137 was not reported for the two samples at the indicator location but was reported in one of the 2 samples at the control location. The control location Cs-137 result is not attributed to plant effluents and the value was only 26.3% of the required lower limit of detection listed in ODCM Table 4.12-1. There were no indications of any other nuclides that could be attributed to plant effluents. Results for the waterborne sediment, fish, and crustacean samples are summarized in Table 1.

5. Broad Leaf Vegetation:

The results for radioactivity measurements in broad leaf vegetation are consistent with past measurements and with measurements made during the pre-operational surveillance program. Cs-137 was reported as present in 2 of the 24 ODCM required samples for the two indicator locations and one of the 12 samples of the control location broad leaf vegetation samples collected. The highest value was 27.5% of the required lower limit of detection and 1.1% of the reporting level listed in ODCM Table 4.12-1. There were no indications of any other nuclides that could be attributed to plant effluents. Results for broad leaf vegetation samples are summarized in Table 1.

6. Land Use Census:

There were no additions or changes identified in the Land Use Census as compared 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 percent greater than locations currently being sampled in the radiological environmental monitoring program were identified by the Land Use Census.

The Land Use Census is summarized in Table 2.

7. Interlaboratory Comparison Program:

The State of Florida laboratory participated in MAPEP 32 and 33. These satisfied the requirements as directed in the PSL Offsite Dose Calculation Manual (ODCM) for the Interlaboratory Comparison Program.

The results are listed in Attachment C.

C. Conclusions

The data obtained through the St. Lucie 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. Measured exposure rates are consistent with exposure rates that were observed during the pre-operational surveillance program.

- Results for air particulate/radioiodine samples are consistent with measurements that were made during the pre-operational surveillance program.
- The highest value for tritium in surface water was 11.1% of the required lower limit of detection and 1.1% of the reporting level listed in ODCM Table 4.12-1. There were no indications of any other nuclides that could be attributed to plant effluents.
- The highest value for Cs-137 in broad leaf vegetation was 27.5% of the required lower limit of detection and 1.1% of the reporting level listed in ODCM Table 4.12-1. There were no indications of any other nuclides that could be attributed to plant effluents.
- The highest value for Cs-137 in the Fish Ingestion Pathway was reported in one of the two samples at the control location. The control location Cs-137 result is not attributed to plant effluents and the value was only 26.3% of the required lower limit of detection listed in ODCM Table 4.12-1.
- There were no indications in the waterborne sediment or food products of any other nuclides that could be attributed to plant effluents.

The measurements verify that the dose or dose commitment to members of the public, due to operation of St. Lucie Units 1 and 2, 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 St. Lucie Units 1 & 2 , Docket No(s). 50-335 & 50-389
Location of Facility St. Lucie, Florida , Reporting Period January 1 - December 31, 2015
(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 [d] Rate, 108	---	3.18 (103/104) 2.61 - 5.04	NW-10 10 mi., NW	4.30 (4/4) 4.02 - 5.04	3.48 (4/4) 3.20 - 4.25

Number of Non-Routine Reported Measurements = 0

TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility St. Lucie Units 1 & 2 , Docket No(s). 50-335 & 50-389
Location of Facility St. Lucie, Florida , Reporting Period January 1 - December 31, 2015
(County, State)

PATHWAY: AIRBORNE
SAMPLES COLLECTED: RADIOIODINE AND PARTICULATES
UNITS: PICO - Ci/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, 260	0.012	<MDA	---	---	<MDA
Gross Beta, 260	0.0064	0.0115 (206/208) 0.0040 - 0.0230	H-08 6 mile, WNW	0.012 (51/52) 0.006 - 0.022	0.012 (52/52) 0.005 - 0.022
Composite Gamma Isotopic, 20					
^{7}Be	0.0006	0.1184 (16/16) 0.0998 - 0.1367	H-14 1 mile, SE	0.1309 (4/4) 0.1025 - 0.1367	0.1141 (4/4) 0.0804 - 0.1309
^{134}Cs	0.0008	<MDA	<MDA	<MDA	<MDA
^{137}Cs	0.0008	<MDA	<MDA	<MDA	<MDA
^{210}Pb	---	0.0127 (10/16) 0.0088 - 0.0173	H-34 0.5 mile, N	0.0139 (2/4) 0.0104 - 0.0173	0.0129 (3/4) 0.0111 – 0.0150

Be-7 & Pb-210 are naturally occurring.

Number of Non-Routine Reported Measurements = 0

TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility St. Lucie Units 1 & 2, Docket No(s). 50-335 & 50-389
Location of Facility St. Lucie, Florida, Reporting Period January 1 - December 31, 2015
(County, State)

PATHWAY: WATERBORNE
SAMPLES COLLECTED: SURFACE WATER
UNITS: PICO - Ci/LITER

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, 64	172	217 (3/52) 78 - 333	H-15 <1 mi., ENE/E/ESE	217 (3/52) 76 - 333	<MDA (0/12)
Gamma Isotopic, 64					
^{40}K	58	362 (52/52) 257 - 424	H-15 <1 mi., ENE/E/ESE	362 (52/52) 257 - 424	343 (12/12) 268 - 398
^{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	6-3	<MDA	---	---	<MDA
^{131}I	4	<MDA	---	---	<MDA
^{134}Cs	4	<MDA	---	---	<MDA
^{137}Cs	4	<MDA	---	---	<MDA
^{140}Ba-La	9-3	<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 St. Lucie Units 1 & 2 , Docket No(s). 50-335 & 50-389
Location of Facility St. Lucie, Florida , Reporting Period January 1 - December 31, 2015
(County, State)

PATHWAY: WATERBORNE
SAMPLES COLLECTED: SHORELINE SEDIMENT
UNITS: PICO - Ci/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, 4					
^{7}Be	56	54 (1/2)	H-15 <1 mi., ENE/E/ESE	54 (1/2)	<MDA
^{40}K	100	273 (2/2) 227 - 318	H-15 <1 mi, ENE/E/ESE	273 (2/2) 227 - 318	159 (2/2) 147- 171
^{58}Co	6	<MDA	---	---	<MDA
^{60}Co	7	<MDA	---	---	<MDA
^{134}Cs	7	<MDA	---	---	<MDA
^{137}Cs	7	<MDA	---	---	<MDA
^{210}Pb	---	276 (2/2) 248 - 303	H-15 <1 mi., ENE/E/ESE	276 (2/2) 248 - 303	212 (1/2)
^{226}Ra	15	595 (2/2) 480 - 709	H-15 <1 mi., ENE/E/ESE	595 (2/2) 480 - 709	456 (2/2) 404 - 507
^{232}Th	25	182 (1/2)	H-15 <1 mi., ENE/E/ESE	182 (1/2)	62.5 (2/2) 50 - 75
^{235}U	---	<MDA	---	---	<MDA
^{238}U	---	348 (2/2) 280 - 416	H-15 <1 mi., ENE/E/ESE	348 (2/2) 280 - 416	230 (2/2) 213 - 247

Be-7, K-40, Pb-210, Ra-226, Th-232, U-235 & U-238 are naturally occurring. Number of Non-Routine Reported Measurements = 0

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility St. Lucie Units 1 & 2 , Docket No(s). 50-335 & 50-389
Location of Facility St. Lucie, Florida , Reporting Period January 1 - December 31, 2015
(County, State)

PATHWAY: INGESTION
SAMPLES COLLECTED: CRUSTACEA
UNITS: PICO - Ci/Kg, WET

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, 4					
^{40}K	270	1513 (2/2) 1275 - 1750	H-15 <1 mi., NE/ENE/E	1513 (2/2) 1275 -1750	1408 (2/2) 1120 -1696
^{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	18	<MDA	---	---	<MDA
^{226}Ra	300	<MDA	---	---	318 (1/2)
^{228}Ra	58	< MDA	---	---	< MDA

K-40, Ra-226 & Ra-228 are naturally occurring.

Number of Non-Routine Reported Measurements = 0

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility St. Lucie Units 1 & 2 , Docket No(s). 50-335 & 50-389
Location of Facility St. Lucie, Florida , Reporting Period January 1 - December 31, 2015
(County, State)

PATHWAY: INGESTION
SAMPLES COLLECTED: FISH
UNITS: PICO - Ci/Kg, WET

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, 4					
^{40}K	270	2971 (2/2) 2160 - 3782	H-15 <1 mi., ENE/E/ESE	2971 (2/2) 2160 - 3782	2845 (2/2) 2383 - 3306
^{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	18	<MDA	---	---	21 (1/2)

K-40 is naturally occurring.

Number of Non-Routine Reported Measurements = 0

TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility St. Lucie Units 1 & 2 , Docket No(s). 50-335 & 50-389
Location of Facility St. Lucie, Florida , Reporting Period January 1 - December 31, 2015
(County, State)

PATHWAY: INGESTION
SAMPLES COLLECTED: BROAD LEAF VEGETATION
UNITS: PICO - Ci/Kg, WET

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, 36					
^{7}Be	64	1151 (24/24) 378 - 2374	H-51 1 mi., N/NNW	1312 (12/12) 378 - 2374	851 (12/12) 270 - 1645
^{40}K	120	4239 (24/24) 2587 - 6193	H-52 1 mi., S/SSE	4310 (12/12) 2587 - 6193	3424 (12/12) 2442 - 4820
^{58}Co	6	<MDA	---	---	<MDA
^{60}Co	8	<MDA	---	---	<MDA
^{131}I	8	<MDA	---	---	<MDA
^{134}Cs	8	<MDA	---	---	<MDA
^{137}Cs	8	15 (2/24) 7 - 22	H-51 1 mi., N/NNW	15 (2/12) 7 - 22	6 (1/12)
^{210}Pb	---	835 (5/24) 340 - 1315	H-51 1 mi., N/NNW	1102 (3/12) 900 – 1315	267 (1/12)
^{212}Pb	---	19 (4/24) 17 - 21	H-52 1 mi., S/SSE	19 (2/12) 17 - 21	<MDA
^{226}Ra	189	<MDA	---	---	<MDA

Be-7, K-40, Pb-210, Pb-212, & Ra-226 are naturally occurring.

Number of Non-Routine Reported Measurements = 0

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility St. Lucie Units 1 & 2 , Docket No(s). 50-335 & 50-389
Location of Facility St. Lucie, Florida , Reporting Period January 1 - December 31, 2015
(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.

2015
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT - UNITS 1 & 2

TABLE 1A

DEVIATIONS / MISSING DATA

There were several instances of missing data and air sampler partial run times as follows:

A) Pathway: Airborne, Particulates and Radioiodines

Location:	H30, 2 miles W
Dates:	3/24/15 – 3/30/15
Deviation:	Failure to Perform Continuous Monitoring
Description of Problem:	Air sampling pump was not operational upon discovery during routine weekly sampling; estimated sampling duration of 53.2 out of 145.3 hour sampling period.
Corrective Action:	Replaced pump; verified equipment as operable.

B) Pathway: Direct Radiation Exposure

Location:	TLD: Location W-10
Dates:	4/1/15 – 6/30/15
Deviation:	Failure to Perform Continuous Monitoring
Description of Problem:	TLD was missing and lost during quarter 2 sampling by the State of Florida Bureau of Radiation Control (BRC) at the ODCM required REMP Program sampling location W-10. The TLD had been attached to a utility pole that was removed due to road construction in the area.
Corrective Action:	The BRC deployed a new TLD/cricket cage on a nearby wooden utility pole. This new utility pole will be more permanent in that it is supporting wires whereas the previous one did not. All other TLD locations analyzed for the quarter were within their normal range.

C) Pathway: Airborne, Particulates and Radioiodines

Location:	H12, 12 miles S (Control Location)
Dates:	6/23/15 – 6/29/15

Deviation:	Failure to Perform Continuous Monitoring
Description of Problem:	Air sampling pump was not operational upon discovery during routine weekly sampling; estimated sampling duration of 105.3 out of 147.1 hour sampling period.
Corrective Action:	Replaced pump; verified equipment as operable.

D) Pathway: Airborne, Particulates and Radioiodines

Location:	H14, 1 mile SE
Dates:	10/6/15 – 10/27/15
Deviation:	Failure to Perform Continuous Monitoring
Description of Problem:	Air sampling pump had intermittent, temporary loss of power for two weeks during the month of October 2015; estimated sampling duration for the week ending on October 13th was 150.6 out of 165.7 hour sampling period and on Oct 27th was 118.6 out of 143.7 hour sampling period. No technical specification surveillance requirements were exceeded for the calculated air sampler run time
Corrective Action:	FPL distribution replaced the air sampler electrical outlet box and completed repairs on 10/28/15. The State of Florida Bureau of Radiation Control was notified; verified equipment as operable.

E) Pathway: Airborne, Particulates and Radioiodines

Location:	H34, 0.5 miles N
Dates:	12/21/15 – 12/28/15
Deviation:	Failure to Perform Continuous Monitoring
Description of Problem:	Air sampler pump connecting suction hose was found disconnected during normal weekly sampling; estimated sampling duration of zero hours for the sampling period.
Corrective Action:	Air sample hose was reconnected; verified equipment as operable.

The above REMP air sampler location partial run time and missing data are documented in the St. Lucie Site Corrective Action Program.

2015
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT - UNITS 1 & 2

TABLE 1B

ANALYSIS WITH LLDs ABOVE THE REQUIRED DETECTION CAPABILITIES
(LLDs) Listed in ODCM TABLE 4.12-1
1/1/2015 – 12/31/2015

The values specified in ODCM Table 4.12-1, Detection Capabilities, were achieved for all samples. REMP Program sampling deviations and missing data are listed in Table 1A.

2015
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT - UNITS 1 & 2

TABLE 2

LAND USE CENSUS
(Page 1 of 2)

The St. Lucie Annual Land Use Census Survey was performed from June through August 2014 - No additions or changes were identified as compared to the 2013 St. Lucie Annual Land Use Census Survey. No locations were identified of potential milk-producing animals (cows or goats).

	Distance to Nearest (a, b)		
Sector	Residence	Garden (d)	Milk Animal (c)
N	O (e)	O	O
NNE	O	O	O
NE	O	O	O
ENE	O	O	O
E	O	O	O
ESE	O	O	O
SE	1.5/142 1.6/145	O	O
SSE	1.8/147 (g) 2.0/149	L (f)	L
S	3.3/190	L	L
SSW	2.2/212	4.4/207	L
SW	1.9/234	L	L
WSW	1.9/240	2.0/250	L
W	1.9/260	L	L
WNW	2.3/281	4.0/282 4.2/284	L
NW	3.4/304	L	L
NNW	2.7/344	L	L

TABLE 2

LAND USE CENSUS
(Page 2 of 2)

NOTES

a. All categories surveyed out to a 5-mile radius from the St. Lucie Plant.

b. The following format is used to denote the location:

distance (miles) / bearing (degrees)

For example, a residence located in the southeast sector at a distance of 1.5 miles bearing 142 degrees is recorded as 1.5/142.

c. Potential milk animal locations.

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

e. "O" denotes that the sector area is predominantly an ocean area.

f. "L" denotes that the sector area is predominantly a land area unoccupied by the category type.

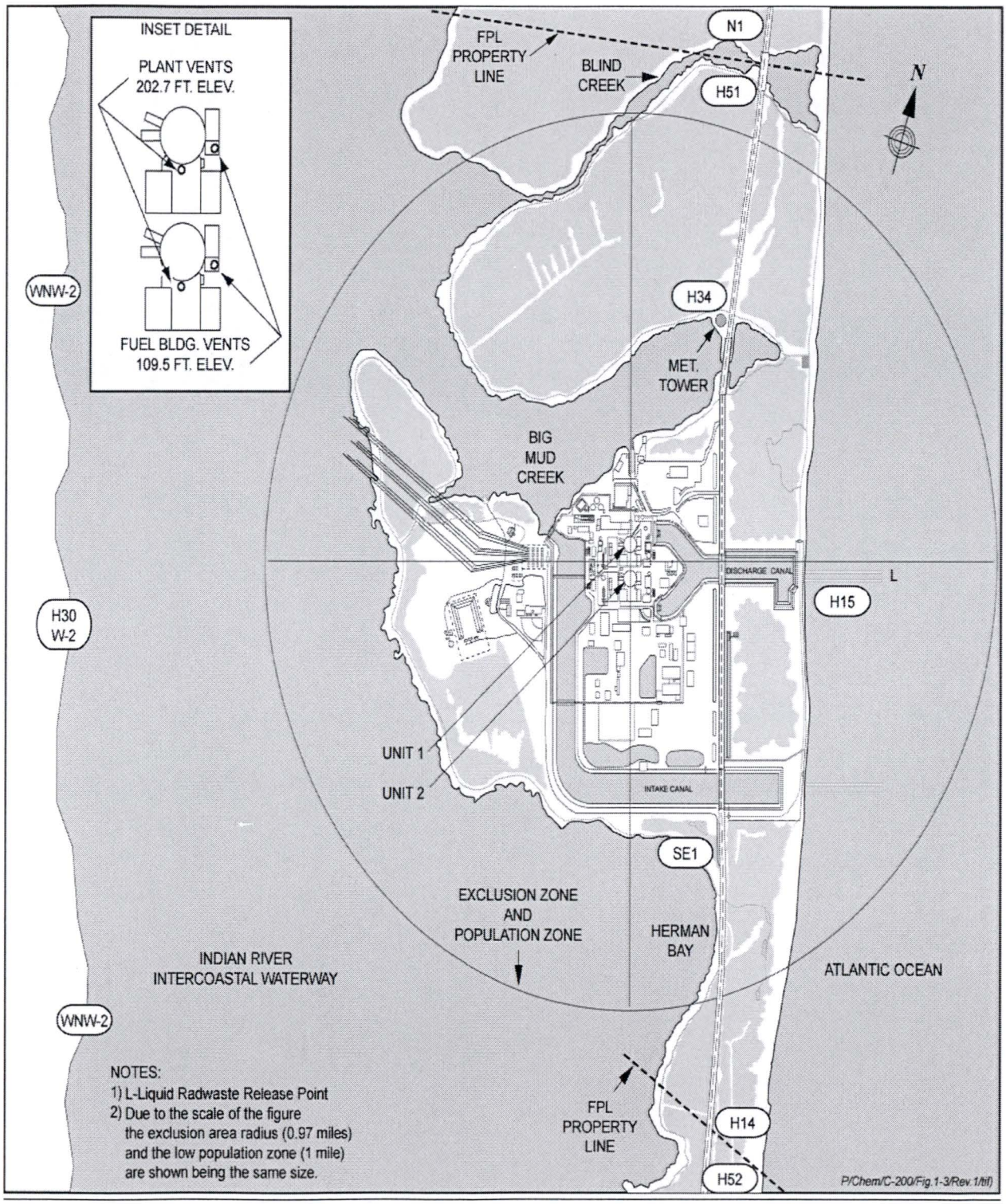
g. Non-residential occupied buildings in these sectors include the following:

Sector	Distance	Description
SSE	1.8/147	Fire Station

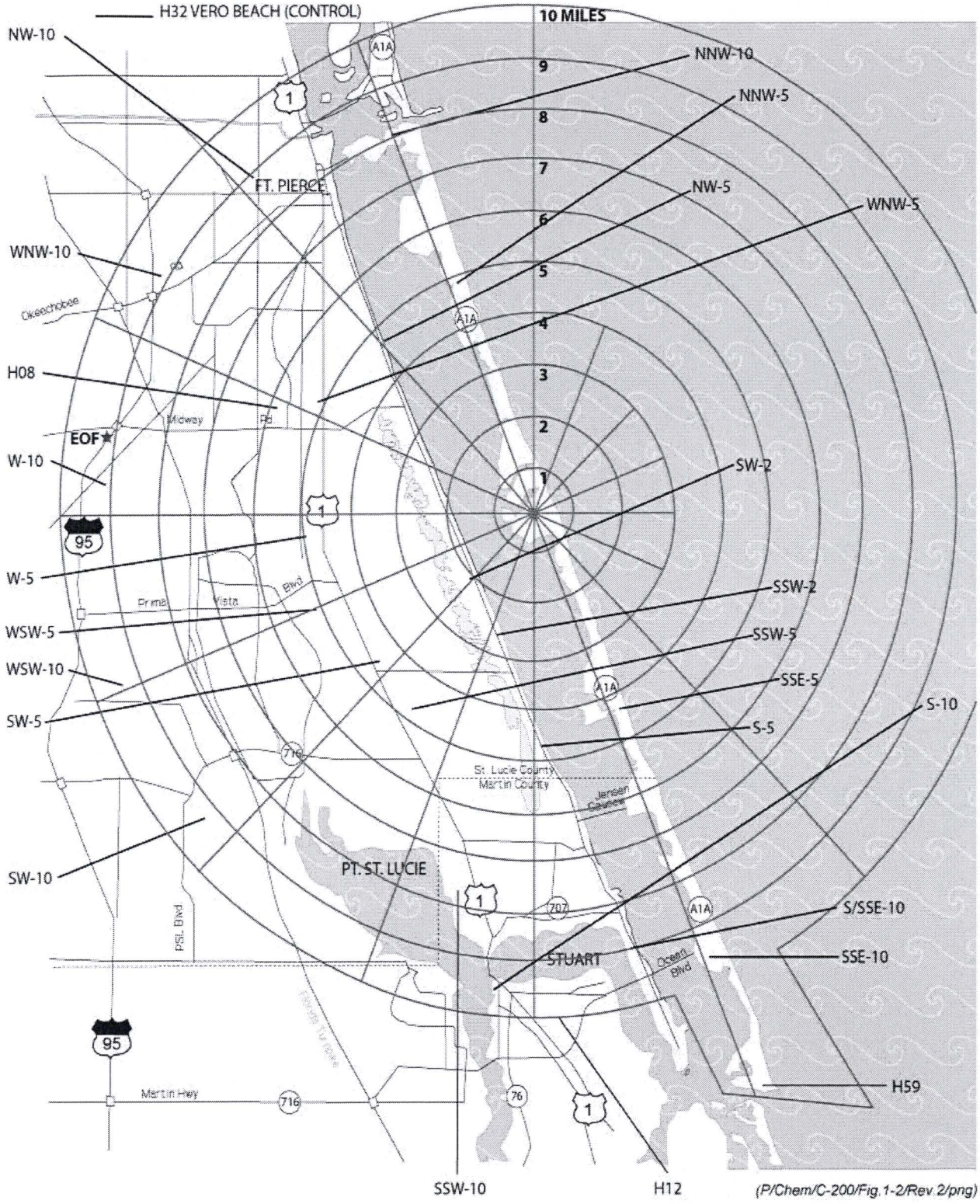
ATTACHMENT A

KEY TO SAMPLE LOCATIONS

SITE AREA MAP & ENVIRONMENTAL SAMPLE LOCATIONS



ENVIRONMENTAL SAMPLE LOCATIONS (10 MILES)



ATTACHMENT A
PAGE 1 OF 3

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

Location Name	Direction Sector	Approximate Distance (miles)	Description
N-1	N	1	A1A, North of Blind Creek
NNW-5	NNW	4.8	Frederick Douglas Beach Entrance
NNW-10	NNW	8.7	Coast Guard Station
NW-5	NW	5.4	Indian River Dr. at Rio Vista Dr.
NW-10	NW	9.6	FPL Facility, S.R. 68 and 33RD St.
WNW-2	WNW	2.3	Cemetery South of 7107 Indian River Dr.
WNW-5	WNW	5.1	U.S. 1 at S.R. 712
WNW-10	WNW	10	S.R. 70, West of Interstate 95
W-2	W	2	Power Line - 77609 Indian River Drive
W-5	W	5.4	Oleander and Sager Street
W-10	W	10.3	Interstate 95 and S.R. 709
WSW-2	WSW	1.8	8503 Indian River Dr.
WSW-5	WSW	5.6	Prima Vista Blvd. at Yacht Club
WSW-10	WSW	10	Del Rio and Davis Street
SW-2	SW	2	9205 Indian River Drive
SW-5	SW	4.5	FPL Walton Service Center
SW-10	SW	10.2	Port St. Lucie Blvd. and Cairo Rd.
SSW-2	SSW	2.6	10307 Indian River Drive
SSW-5	SSW	6	U.S. 1 and Port St. Lucie Blvd.
SSW-10	SSW	8	Pine Valley and Westmoreland Rd.
S-5	S	5.2	13189 Indian River Drive
S-10	S	10.8	U.S. 1 and Palm City Ave
S/SSE-10	SSE	9.9	Indian River Dr. and Quail Run Lane
SSE-5	SSE	5.1	North of Entrance to Miramar
SSE-10	SSE	10.2	Elliot Museum
SE-1	SE	1	South of Cooling Canal
Control:			
H32	NNW	18.1	U. of Florida IFAS Entomology Lab Vero Beach

ATTACHMENT A
PAGE 2 OF 3

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

Location Name	Direction Sector	Approximate Distance (miles)	Description
H08	WNW	6	FPL Substation, Weatherbee Rd.
H14	SE	1	On-Site, near south property line
H30	W	2	Power Line, 7609 Indian River Drive
H34	N	0.5	Onsite at Meteorological Tower
Control:			
H12	S	12	FPL Substation, SR-76 Stuart

PATHWAY: WATERBORNE
SAMPLES COLLECTED: SURFACE WATER (OCEAN)
SAMPLE COLLECTION FREQUENCY: H-15 WEEKLY, H-59 MONTHLY

Location Name	Direction Sector	Approximate Distance (miles)	Description
H15	ENE/E/SSE	<1	Atlantic Ocean, public beaches east side A1A
Control:			
H59	S/SSE	10-20	Near south end of Hutchinson Island

ATTACHMENT A
PAGE 3 OF 3

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

Location Name	Direction Sector	Approximate Distance (miles)	Description
H15	ENE/E/ESE	<1	Atlantic Ocean, public beaches east side A1A
Control:			
H59	S/SSE	10-20	Near south end of Hutchinson Island

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

Location Name	Direction Sector	Approximate Distance (miles)	Description
H15	ENE/E/ESE	<1	Ocean Side, Vicinity of St. Lucie Plant
Control:			
H59	S/SSE	10-20	Near south end of Hutchinson Island

SAMPLES COLLECTED: BROAD LEAF VEGETATION - FOOD PRODUCTS
SAMPLE COLLECTION FREQUENCY: MONTHLY

Location Name	Direction Sector	Approximate Distance (miles)	Description
H51	N/NNW	1	Off-Site Near North Property Line
H52	S/SSE	1	Off-Site Near South Property Line
Control:			
H59	S/SSE	10-20	Near south end of Hutchinson Island

ATTACHMENT B

RADIOLOGICAL SURVEILLANCE OF

FLORIDA POWER AND LIGHT COMPANY

ST. LUCIE SITE

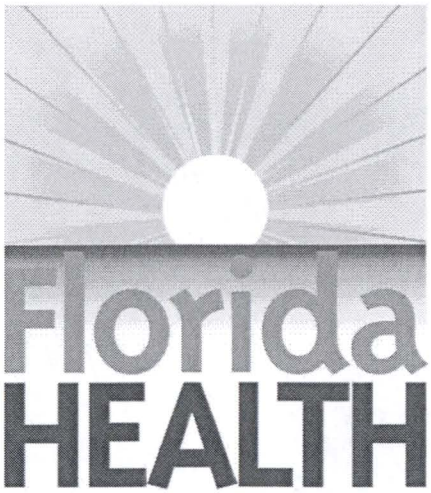
2015

First Quarter 2015

Second Quarter 2015

Third Quarter 2015

Fourth Quarter 2015



RADIOLOGICAL SURVEILLANCE

OF

FLORIDA POWER AND LIGHT COMPANY

ST. LUCIE PLANT

FIRST QUARTER 2015

BUREAU OF RADIATION CONTROL

2015
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT - UNITS 1 & 2

ST. LUCIE SITE

Offsite Dose Calculation Manual Sampling

First Quarter, 2015

Sample Type	Collection Frequency	Number of Sample Locations	Number of Samples
1. Direct Radiation	Quarterly	27	27
2. Airborne			
2.a. Air Iodines	Weekly	5	65
2.b. Air Particulates	Weekly	5	65
3. Waterborne			
3.a. Surface Water	Weekly	1	13
	Monthly	1	3
3.b. Shoreline Sediment	Semiannually	2	2
4. Ingestion			
4.a. Fish and Invertebrates			
4.a.1. Crustacea	Semiannually	2	1
4.a.2. Fish	Semiannually	2	2
4.b. Broadleaf Vegetation	Monthly	3	9
			Total: 187

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

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

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

Sample Site	Deployment 10-Dec-14 Collection 10-Mar-15	Sample Site	Deployment 10-Dec-14 Collection 10-Mar-15
N-1	3.09 ± 0.10	SW-2	2.97 ± 0.18
NNW-5	3.05 ± 0.18	SW-5	3.67 ± 0.50
NNW-10	3.72 ± 0.47	SW-10	3.24 ± 0.38
NW-5	3.44 ± 0.29	SSW-2	2.97 ± 0.46
NW-10	5.04 ± 0.50	SSW-5	3.53 ± 0.48
WNW-2	3.24 ± 0.48	SSW-10	3.43 ± 0.09
WNW-5	3.18 ± 0.21	S-5	3.90 ± 0.16
WNW-10	3.03 ± 0.17	S-10	3.10 ± 0.17
W-2	2.96 ± 0.11	S/SSE-10	2.97 ± 0.60
W-5	3.26 ± 0.55	SSE-5	2.93 ± 0.30
W-10	3.28 ± 0.21	SSE-10	3.15 ± 0.50
WSW-2	3.12 ± 0.27	SE-1	2.87 ± 0.36
WSW-5	3.19 ± 0.25	H-32	3.23 ± 0.20
WSW-10	2.93 ± 0.41		

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

Collection Date	H08	H12	H14	H30	H34
06-Jan-15	<0.03	<0.03	<0.03	<0.03	<0.03
14-Jan-15	<0.03	<0.03	<0.03	<0.03	<0.03
20-Jan-15	<0.04	<0.04	<0.03	<0.03	<0.03
27-Jan-15	<0.03	<0.03	<0.03	<0.03	<0.03
03-Feb-15	<0.03	<0.03	<0.03	<0.03	<0.03
10-Feb-15	<0.03	<0.03	<0.03	<0.03	<0.03
17-Feb-15	<0.03	<0.03	<0.03	<0.03	<0.03
24-Feb-15	<0.03	<0.03	<0.03	<0.03	<0.03
02-Mar-15	<0.04	<0.04	<0.04	<0.04	<0.04
10-Mar-15	<0.03	<0.03	<0.03	<0.03	<0.03
17-Mar-15	<0.03	<0.03	<0.03	<0.03	<0.03
24-Mar-15	<0.03	<0.03	<0.03	<0.03	<0.03
30-Mar-15	<0.04	<0.04	<0.04	<0.04(A)	<0.04

(A) Vacuum pump failed and was replaced. Estimated run time 53.2 out of 145.3 hours.

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

Collection Date	H08	H12	H14	H30	H34
06-Jan-15	0.009 ± 0.002	0.011 ± 0.002	0.011 ± 0.002	0.009 ± 0.002	0.007 ± 0.001
14-Jan-15	0.013 ± 0.002	0.014 ± 0.002	0.010 ± 0.002	0.014 ± 0.002	0.012 ± 0.002
20-Jan-15	0.019 ± 0.002	0.019 ± 0.002	0.019 ± 0.002	0.017 ± 0.002	0.018 ± 0.002
27-Jan-15	0.015 ± 0.002	0.011 ± 0.002	0.012 ± 0.002	0.016 ± 0.002	0.018 ± 0.002
03-Feb-15	0.014 ± 0.002	0.014 ± 0.002	0.016 ± 0.002	0.015 ± 0.002	0.012 ± 0.002
10-Feb-15	0.010 ± 0.002	0.016 ± 0.002	0.017 ± 0.002	0.008 ± 0.002	0.015 ± 0.002
17-Feb-15	0.019 ± 0.002	0.022 ± 0.002	0.015 ± 0.002	0.015 ± 0.002	0.016 ± 0.002
24-Feb-15	0.013 ± 0.002	0.016 ± 0.002	0.015 ± 0.002	0.006 ± 0.001	0.013 ± 0.002
02-Mar-15	<0.007	0.006 ± 0.002	0.004 ± 0.002	0.009 ± 0.002	0.006 ± 0.002
10-Mar-15	0.009 ± 0.001	0.008 ± 0.002	0.007 ± 0.001	0.007 ± 0.001	0.007 ± 0.001
17-Mar-15	0.007 ± 0.002	0.005 ± 0.001	0.009 ± 0.002	0.004 ± 0.001	0.009 ± 0.002
24-Mar-15	0.011 ± 0.002	0.020 ± 0.002	0.011 ± 0.002	0.010 ± 0.002	0.010 ± 0.002
30-Mar-15	0.009 ± 0.002	0.014 ± 0.002	0.011 ± 0.002	0.014 ± 0.005(A)	0.013 ± 0.002
Average:	<0.012	0.014 ± 0.001	0.012 ± 0.001	0.011 ± 0.001	0.012 ± 0.001

(A) Vacuum pump failed and was replaced. Estimated run time 53.2 out of 145.3 hours.

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

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
H08	0.1173 ± 0.0095	<0.0204	<0.0014	<0.0012	<0.0095
H12	0.1309 ± 0.0103	<0.0180	<0.0014	<0.0012	0.0150 ± 0.0021
H14	0.1194 ± 0.0097	<0.0180	<0.0011	<0.0015	0.0088 ± 0.0017
H30	0.0998 ± 0.0076	<0.0143	<0.0010	<0.0009	0.0125 ± 0.0021
H34	0.1155 ± 0.0099	<0.0237	<0.0012	<0.0015	0.0104 ± 0.0019

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)
H15	06-Jan-15	<151	377 ± 19	<2	<2	<4	<2	<4	<3	<2	<2	<2	<4
	14-Jan-15	<150	327 ± 25	<3	<3	<6	<3	<7	<6	<3	<3	<3	<10
	20-Jan-15	<157	353 ± 33	<5	<5	<10	<7	<10	<8	<6	<5	<6	<10
	27-Jan-15	<146	326 ± 25	<3	<3	<5	<3	<7	<5	<3	<3	<3	<11
	03-Feb-15	<150	336 ± 21	<3	<3	<6	<4	<7	<5	<3	<3	<4	<7
	10-Feb-15	<156	304 ± 24	<3	<3	<5	<4	<7	<5	<4	<3	<4	<7
	17-Feb-15	<158	382 ± 26	<3	<3	<7	<4	<7	<5	<4	<3	<3	<5
	24-Feb-15	<152	287 ± 24	<3	<3	<6	<4	<7	<5	<5	<3	<3	<4
	02-Mar-15	<152	257 ± 23	<3	<3	<6	<4	<6	<4	<3	<3	<3	<9
	11-Mar-15	<144	293 ± 24	<3	<3	<5	<3	<7	<4	<4	<3	<3	<7
	17-Mar-15	<153	321 ± 24	<3	<3	<5	<3	<7	<6	<4	<3	<3	<5
	24-Mar-15	<153	308 ± 24	<3	<3	<6	<3	<6	<5	<3	<3	<3	<11
	30-Mar-15	333 ± 21	384 ± 26	<3	<3	<6	<3	<7	<5	<3	<3	<3	<10
H59	20-Jan-15	<157	268 ± 29	<4	<4	<11	<6	<12	<9	<6	<5	<6	<11
	02-Feb-15	<158	325 ± 27	<4	<4	<8	<5	<8	<7	<5	<4	<4	<8
	11-Mar-15	<144	347 ± 33	<5	<4	<10	<6	<11	<8	<6	<4	<7	<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	U-235	U-238
H15	03-Feb-15	<55	227 ± 27	<6	<5	<7	<7	248 ± 45	480 ± 37	<38	<12	280 ± 17
H59	03-Feb-15	<57	147 ± 23	<5	<6	<6	<6	212 ± 40	507 ± 37	50 ± 6	<11	247 ± 16

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

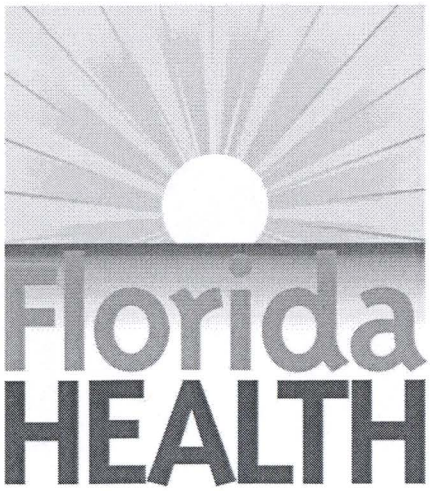
Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
H15	This sample not yet collected.										
H59	11-Mar-15	1696 ± 169	<26	<22	<57	<36	<65	<31	<33	318 ± 82	<122

4.a.2. FISH - Crevalle Jacks - (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
H15	11-Feb-15	3782 ± 261	<26	<25	<54	<43	<59	<24	<31	<411	<115
H59	03-Mar-15	3009 ± 132	<15	<22	<56	<13	<37	<15	21 ± 3	<267	<58

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
H51	20-Jan-15	2073 ± 86	4060 ± 186	<16	<13	<16	<1412	<27	<313	<54
	02-Feb-15	1648 ± 66	3931 ± 143	<16	<5	<6	616 ± 41	<11	<112	<21
	11-Mar-15	686 ± 47	4464 ± 200	<15	<12	<16	<1248	<28	<329	<58
H52	20-Jan-15	665 ± 43	3925 ± 173	<14	<12	<14	<1089	<24	<276	<53
	02-Feb-15	977 ± 54	4139 ± 183	<14	<12	<14	<1160	<23	<275	<58
	11-Mar-15	688 ± 47	4139 ± 189	<16	<13	<16	<1256	<23	<267	<62
H59	20-Jan-15	512 ± 28	3550 ± 150	<9	<8	<8	<244	<14	<163	<28
	02-Feb-15	428 ± 28	3834 ± 167	<11	<8	<10	<282	<15	<198	<35
	11-Mar-15	644 ± 42	2957 ± 145	<14	<11	<12	<1046	<22	<256	<52



RADIOLOGICAL SURVEILLANCE

OF

FLORIDA POWER AND LIGHT COMPANY

ST. LUCIE PLANT

SECOND QUARTER 2015

BUREAU OF RADIATION CONTROL

2015
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT - UNITS 1 & 2

ST. LUCIE SITE

Offsite Dose Calculation Manual Sampling

Second Quarter, 2015

Sample Type	Collection Frequency	Locations Sampled	Number of Samples
1. Direct Radiation	Quarterly	27	26
2. Airborne			
2.a. Air Iodines	Weekly	5	65
2.b. Air Particulates	Weekly	5	65
3. Waterborne			
3.a. Surface Water	Weekly	1	13
	Monthly	1	3
3.b. Shoreline Sediment	Semiannually	2	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: 182

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 <u>not</u> significantly above background are reported as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.

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

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

Sample Site	Deployment 10-Mar-15 Collection 16-Jun-15	Sample Site	Deployment 10-Mar-15 Collection 16-Jun-15
N-1	3.03 ± 0.18	SW-2*	2.95 ± 3.50
NNW-5	2.93 ± 0.24	SW-5	3.52 ± 0.55
NNW-10	3.69 ± 0.15	SW-10	3.22 ± 0.46
NW-5	2.87 ± 0.13	SSW-2*	2.90 ± 3.53
NW-10	4.02 ± 0.42	SSW-5	3.46 ± 0.23
WNW-2*	2.98 ± 3.53	SSW-10	3.48 ± 0.13
WNW-5	3.05 ± 0.06	S-5*	3.78 ± 4.48
WNW-10	2.97 ± 0.08	S-10	3.01 ± 0.10
W-2*	2.87 ± 3.56	S/SSE-10	2.89 ± 0.33
W-5	3.27 ± 0.27	SSE-5*	2.85 ± 3.37
W-10	(A)	SSE-10	2.99 ± 0.10
WSW-2*	3.12 ± 3.72	SE-1	3.00 ± 0.56
WSW-5	3.07 ± 0.26	H-32	3.20 ± 0.17
WSW-10	2.83 ± 0.18		

(A) TLD lost due to utility pole being removed.

* Sites of dual deployed TLD's.

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

Collection Date	H08	H12	H14	H30	H34
07-Apr-15	<0.03	<0.03	<0.03	<0.03	<0.03
14-Apr-15	<0.03	<0.03	<0.03	<0.03	<0.03
20-Apr-15	<0.04	<0.04	<0.04	<0.04	<0.04
27-Apr-15	<0.03	<0.03	<0.03	<0.03	<0.03
06-May-15	<0.03	<0.03	<0.03	<0.03	<0.03
13-May-15	<0.03	<0.03	<0.03	<0.03	<0.03
20-May-15	<0.03	<0.03	<0.03	<0.03	<0.03
27-May-15	<0.03	<0.03	<0.03	<0.03	<0.03
02-Jun-15	<0.03	<0.03	<0.03	<0.03	<0.03
09-Jun-15	<0.04	<0.04	<0.04	<0.03	<0.04
16-Jun-15	<0.03	<0.03	<0.03	<0.03	<0.03
23-Jun-15	<0.03	<0.03	<0.03	<0.03	<0.03
29-Jun-15	<0.03	<0.04(A)	<0.03	<0.03	<0.03

(A) Pump failed and was replaced. Estimated run time 105.3 out of 147.1 hours.

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

Collection Date	H08	H12	H14	H30	H34
07-Apr-15	0.011 ± 0.002	0.010 ± 0.002	0.009 ± 0.002	0.009 ± 0.002	0.004 ± 0.002
14-Apr-15	0.011 ± 0.002	0.011 ± 0.002	0.008 ± 0.002	0.008 ± 0.002	0.009 ± 0.002
20-Apr-15	0.009 ± 0.002	0.010 ± 0.002	0.006 ± 0.002	0.008 ± 0.002	0.009 ± 0.002
27-Apr-15	0.019 ± 0.002	0.014 ± 0.002	0.014 ± 0.002	0.019 ± 0.002	0.015 ± 0.002
06-May-15	0.011 ± 0.002	0.008 ± 0.001	0.010 ± 0.001	0.015 ± 0.002	0.011 ± 0.002
13-May-15	0.019 ± 0.002	0.019 ± 0.002	0.014 ± 0.002	0.014 ± 0.002	0.012 ± 0.002
20-May-15	0.016 ± 0.002	0.015 ± 0.002	0.015 ± 0.002	0.017 ± 0.002	0.017 ± 0.002
27-May-15	0.018 ± 0.002	0.016 ± 0.002	0.018 ± 0.002	0.018 ± 0.002	0.013 ± 0.002
02-Jun-15	0.011 ± 0.002	0.012 ± 0.002	0.009 ± 0.002	0.011 ± 0.002	0.007 ± 0.002
09-Jun-15	0.009 ± 0.002	0.008 ± 0.002	0.007 ± 0.002	0.010 ± 0.002	0.008 ± 0.002
16-Jun-15	0.013 ± 0.002	0.014 ± 0.002	0.016 ± 0.002	0.016 ± 0.002	0.016 ± 0.002
23-Jun-15	0.014 ± 0.002	0.010 ± 0.002	0.011 ± 0.002	0.013 ± 0.002	0.008 ± 0.002
29-Jun-15	0.014 ± 0.002	0.015 ± 0.003(A)	0.011 ± 0.002	0.009 ± 0.002	0.011 ± 0.002
Average:	0.013 ± 0.001	0.012 ± 0.001	0.011 ± 0.001	0.013 ± 0.001	0.011 ± 0.001

(A) Pump failed and was replaced. Estimated run time 105.3 out of 147.1 hours.

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

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
H08	0.1336 ± 0.0098	<0.0152	<0.0015	<0.0010	0.0150 ± 0.0031
H12	0.1306 ± 0.0101	<0.0139	<0.0014	<0.0010	0.0125 ± 0.0032
H14	0.1367 ± 0.0098	<0.0180	<0.0015	<0.0008	0.0135 ± 0.0031
H30	0.1265 ± 0.0070	<0.0092	<0.0010	<0.0008	0.0124 ± 0.0023
H34	0.1202 ± 0.0095	<0.0123	<0.0013	<0.0010	0.0173 ± 0.0032

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)
H15	07-Apr-15	<164	369 ± 26	<3	<3	<6	<3	<7	<6	<3	<3	<3	<11
	14-Apr-15	<161	414 ± 19	<2	<2	<4	<2	<4	<4	<2	<2	<2	<3
	20-Apr-15	<143	342 ± 24	<3	<3	<6	<3	<6	<5	<4	<3	<3	<5
	27-Apr-15	<143	356 ± 25	<3	<3	<5	<3	<7	<5	<3	<3	<4	<8
	06-May-15	78 ± 28	402 ± 20	<3	<2	<4	<3	<6	<4	<3	<2	<3	<4
	13-May-15	<145	325 ± 24	<3	<3	<6	<3	<6	<5	<3	<3	<3	<11
	20-May-15	<157	372 ± 15	<1	<1	<3	<1	<3	<2	<2	<1	<1	<2
	27-May-15	<157	370 ± 22	<2	<2	<5	<3	<5	<4	<2	<2	<2	<9
	02-Jun-15	<144	355 ± 19	<2	<3	<5	<3	<6	<5	<3	<2	<3	<5
	09-Jun-15	<146	397 ± 17	<2	<2	<4	<2	<4	<3	<2	<2	<2	<6
	16-Jun-15	<144	368 ± 19	<2	<2	<5	<3	<5	<4	<3	<2	<3	<5
	23-Jun-15	<143	323 ± 24	<3	<2	<7	<3	<7	<5	<4	<3	<3	<10
	29-Jun-15	<143	383 ± 27	<3	<3	<7	<3	<7	<5	<4	<3	<3	<10
H59	07-Apr-15	<164	294 ± 24	<3	<2	<6	<3	<6	<5	<3	<3	<3	<9
	06-May-15	<138	369 ± 26	<3	<3	<6	<3	<6	<5	<3	<3	<3	<5
	17-Jun-15	<143	370 ± 26	<3	<3	<7	<3	<7	<6	<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
These samples were previously collected.										

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

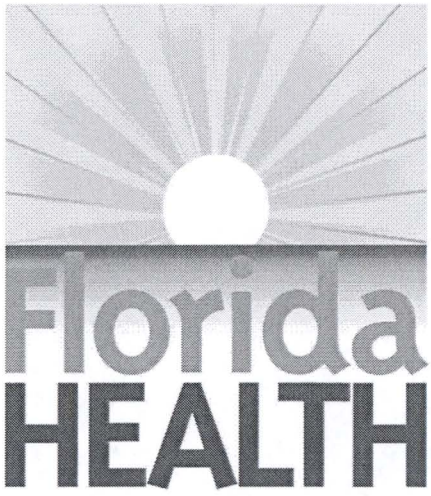
Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
H15	27-May-15	1750 ± 142	<18	<18	<38	<19	<41	<19	<21	<375	<88
H59	This sample was previously collected.										

4.a.2. FISH - Mixed - (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
H15	This sample was previously collected.										
H59	This sample was previously collected.										

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
H51	07-Apr-15	378 ± 33	5265 ± 214	<14	<12	<14	<1144	<25	<293	<60
	06-May-15	1980 ± 93	4150 ± 211	<18	<13	<16	1090 ± 432	17 ± 7	<336	<70
	17-Jun-15	1160 ± 74	2920 ± 165	<15	<12	<16	<1050	<30	<308	<59
H52	07-Apr-15	479 ± 37	4472 ± 192	<13	<12	<15	<1044	17 ± 4	<281	<57
	06-May-15	1050 ± 70	4610 ± 224	<18	<14	<15	<1150	<34	<330	<73
	17-Jun-15	388 ± 54	5560 ± 253	<16	<13	<18	<1360	<31	<313	<66
H59	07-Apr-15	270 ± 29	3411 ± 157	<12	<11	<12	<1026	<23	<271	<47
	06-May-15	504 ± 54	4820 ± 227	<17	<14	<16	<1070	<28	<304	<64
	17-Jun-15	550 ± 36	3250 ± 137	<10	<8	<8	<257	7 ± 3	<183	<38



RADIOLOGICAL SURVEILLANCE

OF

FLORIDA POWER AND LIGHT COMPANY

ST. LUCIE PLANT

THIRD QUARTER 2015

BUREAU OF RADIATION CONTROL

2015
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT - UNITS 1 & 2

ST. LUCIE SITE

Offsite Dose Calculation Manual Sampling

Third Quarter, 2015

Sample Type	Collection Frequency	Locations Sampled	Number of Samples
1. Direct Radiation	Quarterly	27	27
2. Airborne			
2.a. Air Iodines	Weekly	5	65
2.b. Air Particulates	Weekly	5	65
3. Waterborne			
3.a. Surface Water	Weekly	1	13
	Monthly	1	3
3.b. Shoreline Sediment	Semiannually	2	2
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: 185

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

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

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

Sample Site	Deployment 16-Jun-15 Collection 22-Sep-15	Sample Site	Deployment 16-Jun-15 Collection 22-Sep-15
N-1	2.86 ± 0.35	SW-2	3.03 ± 0.15
NNW-5	2.98 ± 0.23	SW-5	3.51 ± 0.16
NNW-10	3.50 ± 0.57	SW-10	3.25 ± 0.15
NW-5	2.95 ± 0.02	SSW-2	2.95 ± 0.45
NW-10	4.02 ± 0.18	SSW-5	3.43 ± 0.22
WNW-2	2.90 ± 0.31	SSW-10	3.44 ± 0.15
WNW-5	3.02 ± 0.44	S-5	3.72 ± 0.09
WNW-10	2.96 ± 0.10	S-10	3.05 ± 0.19
W-2	2.95 ± 0.32	S/SSE-10	2.92 ± 0.13
W-5	3.28 ± 0.04	SSE-5	2.81 ± 0.34
W-10	2.61 ± 0.17	SSE-10	3.08 ± 0.30
WSW-2	2.95 ± 0.28	SE-1	2.96 ± 0.37
WSW-5	2.90 ± 0.25	H-32	4.25 ± 0.06
WSW-10	2.61 ± 0.41		

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

Collection Date	H08	H12	H14	H30	H34
06-Jul-15	<0.04	<0.04	<0.04	<0.04	<0.04
13-Jul-15	<0.04	<0.04	<0.04	<0.04	<0.04
20-Jul-15	<0.03	<0.03	<0.04	<0.03	<0.04
28-Jul-15	<0.03	<0.03	<0.03	<0.03	<0.03
04-Aug-15	<0.04	<0.04	<0.04	<0.04	<0.04
11-Aug-15	<0.03	<0.03	<0.03	<0.03	<0.02
18-Aug-15	<0.03	<0.04	<0.04	<0.04	<0.03
25-Aug-15	<0.03	<0.03	<0.03	<0.03	<0.03
01-Sep-15	<0.03	<0.03	<0.03	<0.03	<0.03
08-Sep-15	<0.03	<0.03	<0.03	<0.03	<0.03
15-Sep-15	<0.02	<0.02	<0.02	<0.02	<0.02
22-Sep-15	<0.03	<0.03	<0.03	<0.03	<0.03
29-Sep-15	<0.03	<0.03	<0.03	<0.03	<0.03

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

Collection Date	H08	H12	H14	H30	H34
06-Jul-15	0.019 ± 0.002	0.011 ± 0.002	0.016 ± 0.002	0.016 ± 0.002	0.015 ± 0.002
13-Jul-15	0.017 ± 0.002	0.009 ± 0.002	0.017 ± 0.002	0.018 ± 0.002	0.014 ± 0.002
20-Jul-15	0.009 ± 0.002	0.020 ± 0.002	0.012 ± 0.002	0.011 ± 0.002	0.014 ± 0.002
28-Jul-15	0.015 ± 0.002	0.015 ± 0.002	0.011 ± 0.002	0.013 ± 0.002	0.012 ± 0.002
04-Aug-15	0.013 ± 0.002	0.016 ± 0.002	0.015 ± 0.002	0.011 ± 0.002	0.017 ± 0.002
11-Aug-15	0.010 ± 0.002	0.014 ± 0.002	0.016 ± 0.002	0.013 ± 0.002	0.013 ± 0.002
18-Aug-15	0.009 ± 0.002	0.006 ± 0.001	0.010 ± 0.002	0.008 ± 0.002	0.011 ± 0.002
25-Aug-15	0.008 ± 0.002	0.007 ± 0.002	0.009 ± 0.002	0.009 ± 0.002	0.008 ± 0.002
01-Sep-15	0.010 ± 0.002	0.011 ± 0.002	0.010 ± 0.002	0.007 ± 0.002	0.012 ± 0.002
08-Sep-15	0.011 ± 0.002	0.014 ± 0.002	0.015 ± 0.002	0.014 ± 0.002	0.012 ± 0.002
15-Sep-15	0.011 ± 0.002	0.008 ± 0.002	0.007 ± 0.002	0.009 ± 0.002	0.007 ± 0.002
22-Sep-15	0.012 ± 0.002	0.012 ± 0.002	0.012 ± 0.002	0.007 ± 0.001	0.013 ± 0.002
29-Sep-15	0.011 ± 0.002	0.005 ± 0.002	0.006 ± 0.002	0.005 ± 0.002	0.006 ± 0.002
Average:	0.012 ± 0.001	0.011 ± 0.001	0.012 ± 0.001	0.011 ± 0.001	0.012 ± 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
H08	0.1095 ± 0.0099	<0.0233	<0.0017	<0.0011	<0.0391
H12	0.0804 ± 0.0072	<0.0166	<0.0014	<0.0011	0.0111 ± 0.0029
H14	0.1025 ± 0.0084	<0.0093	<0.0014	<0.0012	0.0104 ± 0.0027
H30	0.1064 ± 0.0094	<0.0288	<0.0010	<0.0011	<0.0403
H34	0.1180 ± 0.0098	<0.0244	<0.0015	<0.0012	<0.0372

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)
H15	06-Jul-15	<145	372 ± 27	<3	<3	<7	<4	<7	<5	<4	<3	<3	<5
	13-Jul-15	<145	420 ± 28	<3	<3	<7	<4	<7	<5	<4	<3	<3	<5
	20-Jul-15	<144	408 ± 28	<3	<3	<7	<4	<7	<5	<4	<3	<3	<6
	28-Jul-15	<144	406 ± 19	<2	<2	<4	<2	<5	<3	<2	<2	<2	<3
	04-Aug-15	<150	424 ± 36	<5	<5	<10	<5	<12	<8	<5	<4	<5	<11
	11-Aug-15	<150	404 ± 23	<3	<3	<6	<3	<6	<4	<3	<3	<3	<9
	18-Aug-15	<149	369 ± 27	<3	<3	<7	<4	<8	<5	<4	<3	<3	<11
	25-Aug-15	<147	388 ± 19	<2	<2	<4	<2	<4	<3	<2	<2	<2	<5
	01-Sep-15	241 ± 29	358 ± 26	<3	<3	<7	<4	<7	<5	<4	<3	<3	<9
	08-Sep-15	<143	341 ± 25	<3	<3	<6	<3	<8	<5	<3	<3	<4	<11
	15-Sep-15	<166	411 ± 31	<3	<4	<8	<5	<10	<7	<4	<4	<5	<8
	23-Sep-15	<142	358 ± 26	<3	<3	<7	<3	<7	<6	<4	<3	<3	<10
	29-Sep-15	<149	382 ± 26	<3	<3	<6	<4	<7	<6	<4	<3	<3	<7
H59	20-Jul-15	<144	398 ± 27	<3	<4	<7	<3	<7	<5	<4	<3	<3	<5
	12-Aug-15	<150	330 ± 26	<4	<3	<8	<4	<9	<6	<4	<3	<4	<10
	23-Sep-15	<142	350 ± 26	<3	<3	<6	<3	<7	<5	<3	<3	<4	<11

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

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

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

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
H15	20-Aug-15	54 ± 15	318 ± 32	<8	<8	<7	<8	303 ± 75	709 ± 70	182 ± 10	<12	416 ± 27
H59	20-Aug-15	<74	171 ± 37	<9	<9	<8	<10	<833	404 ± 69	75 ± 11	<13	213 ± 50

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

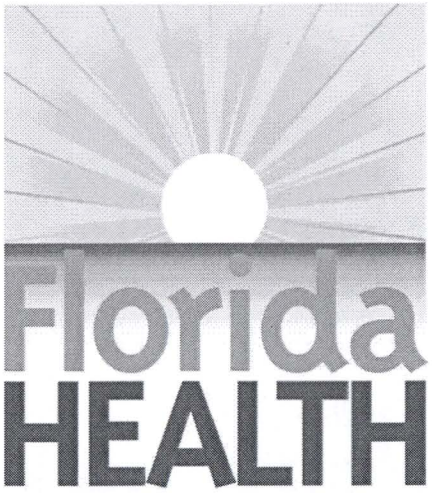
Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
H15	25-Aug-15	1275 ± 178	<25	<25	<57	<20	<60	<22	<26	<398	<118
H59	This sample not yet collected.										

4.a.2. FISH - (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
H15	This sample not yet collected.										
H59	This sample not yet collected.										

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
H51	20-Jul-15	636 ± 54	4373 ± 194	<16	<12	<14	<852	<25	<251	<58
	12-Aug-15	984 ± 69	5164 ± 238	<21	<15	<16	<1067	<28	<310	<69
	23-Sep-15	1673 ± 78	3539 ± 171	<13	<12	22 ± 5	<943	<29	<270	<57
H52	20-Jul-15	1063 ± 48	5020 ± 181	<12	<7	<10	<269	<16	<175	<40
	12-Aug-15	1625 ± 66	6193 ± 222	<16	<8	<11	530 ± 87	<19	<227	<45
	23-Sep-15	1102 ± 49	3603 ± 141	<9	<7	<9	340 ± 65	<16	<178	<34
H59	20-Jul-15	466 ± 49	4279 ± 201	<16	<13	<15	<1114	<24	<291	<62
	12-Aug-15	1594 ± 65	3298 ± 141	<14	<8	6 ± 2	267 ± 64	<17	<216	<33
	23-Sep-15	1505 ± 77	3147 ± 167	<14	<12	<14	<1129	<30	<255	<54



RADIOLOGICAL SURVEILLANCE

OF

FLORIDA POWER AND LIGHT COMPANY

ST. LUCIE SITE

FOURTH QUARTER 2015

BUREAU OF RADIATION CONTROL

2015
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT - UNITS 1 & 2

ST. LUCIE SITE

Offsite Dose Calculation Manual Sampling

Fourth Quarter, 2015

Sample Type	Collection Frequency	Locations Sampled	Number of Samples
1. Direct Radiation	Quarterly	27	27
2. Airborne			
2.a. Air Iodines	Weekly	5	65
2.b. Air Particulates	Weekly	5	65
3. Waterborne			
3.a. Surface Water	Weekly	1	13
	Monthly	1	3
3.b. Shoreline Sediment	Semiannually	2	0
4. Ingestion			
4.a. Fish and Invertebrates			
4.a.1. Crustacea	Semiannually	2	1
4.a.2. Fish	Semiannually	2	2
4.b. Broadleaf Vegetation	Monthly	3	9
			Total: 185

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

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

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

Sample Site	Deployment 22-Sep-15 Collection 09-Dec-15	Sample Site	Deployment 22-Sep-15 Collection 09-Dec-15
N-1	3.18 ± 0.06	SW-2	3.18 ± 0.29
NNW-5	2.93 ± 0.17	SW-5	3.54 ± 0.12
NNW-10	3.79 ± 0.33	SW-10	3.21 ± 0.15
NW-5	3.07 ± 0.14	SSW-2	3.02 ± 0.20
NW-10	4.11 ± 0.17	SSW-5	3.57 ± 0.20
WNW-2	3.16 ± 0.38	SSW-10	3.40 ± 0.25
WNW-5	3.10 ± 0.12	S-5	3.68 ± 0.26
WNW-10	3.11 ± 0.27	S-10	3.12 ± 0.42
W-2	3.12 ± 0.37	S/SSE-10	2.87 ± 0.12
W-5	3.49 ± 0.16	SSE-5	2.89 ± 0.09
W-10	2.76 ± 0.24	SSE-10	3.02 ± 0.37
WSW-2	3.06 ± 0.14	SE-1	2.84 ± 0.19
WSW-5	3.16 ± 0.11	H-32	3.22 ± 0.17
WSW-10	2.63 ± 0.19		

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

Collection Date	H08	H12	H14	H30	H34
06-Oct-15	<0.03	<0.03	<0.04(A)	<0.03	<0.03
13-Oct-15	<0.03	<0.03	<0.02	<0.03	<0.03
21-Oct-15	<0.03	<0.03	<0.03	<0.03	<0.03
27-Oct-15	<0.03	<0.03	<0.02(B)	<0.03	<0.03
03-Nov-15	<0.04	<0.04	<0.05	<0.04	<0.04
10-Nov-15	<0.03	<0.03	<0.02	<0.02	<0.03
18-Nov-15	<0.03	<0.03	<0.03	<0.03	<0.03
24-Nov-15	<0.02	<0.02	<0.02	<0.02	<0.02
02-Dec-15	<0.02	<0.02	<0.02	<0.02	<0.02
08-Dec-15	<0.03	<0.03	<0.03	<0.03	<0.03
14-Dec-15	<0.04	<0.04	<0.05	<0.04	<0.05
21-Dec-15	<0.03	<0.03	<0.03	<0.03	<0.03(C)
28-Dec-15	<0.03	<0.03	<0.03	<0.03	<0.03

(A) Pump not running, problem with power. Returned two days later and power restored. Estimated run time 150.6 out of 165.8 hours.
(B) Pump off again, problem with power. Estimated run time 118.6 out of 143.7 hours.
(C) Hose found not connected, little if any deposition on filter.

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

Collection Date	H08	H12	H14	H30	H34
06-Oct-15	0.007 ± 0.002	0.005 ± 0.001	0.005 ± 0.002(A)	0.008 ± 0.002	0.008 ± 0.002
13-Oct-15	0.010 ± 0.002	0.013 ± 0.002	0.015 ± 0.003	0.009 ± 0.002	0.010 ± 0.002
21-Oct-15	0.022 ± 0.002	0.021 ± 0.002	0.020 ± 0.002	0.018 ± 0.002	0.023 ± 0.002
27-Oct-15	0.013 ± 0.002	0.017 ± 0.002	0.011 ± 0.002(B)	0.017 ± 0.002	0.018 ± 0.002
03-Nov-15	0.012 ± 0.002	0.014 ± 0.002	0.014 ± 0.002	0.015 ± 0.002	0.014 ± 0.002
10-Nov-15	0.006 ± 0.002	0.008 ± 0.002	0.011 ± 0.002	0.005 ± 0.001	0.009 ± 0.002
18-Nov-15	0.018 ± 0.002	0.014 ± 0.002	0.014 ± 0.002	0.018 ± 0.002	0.013 ± 0.002
24-Nov-15	0.011 ± 0.002	0.010 ± 0.002	0.010 ± 0.002	0.008 ± 0.002	0.008 ± 0.002
02-Dec-15	0.007 ± 0.001	0.006 ± 0.001	0.007 ± 0.001	0.010 ± 0.002	0.007 ± 0.001
08-Dec-15	0.009 ± 0.002	0.005 ± 0.002	0.007 ± 0.002	0.008 ± 0.002	0.008 ± 0.002
14-Dec-15	0.015 ± 0.002	0.013 ± 0.002	0.010 ± 0.002	0.013 ± 0.002	0.010 ± 0.002
21-Dec-15	0.011 ± 0.002	0.009 ± 0.002	0.011 ± 0.002	0.008 ± 0.002	<0.005(C)
28-Dec-15	0.009 ± 0.002	0.006 ± 0.001	0.007 ± 0.002	0.006 ± 0.001	0.004 ± 0.001
Average:	0.011 ± 0.001	0.011 ± 0.001	0.011 ± 0.001	0.011 ± 0.001	<0.011

(A) Pump not running, problem with power. Returned two days later and power restored. Estimated run time 150.6 out of 165.8 hours.
(B) Pump off again, problem with power. Estimated run time 118.6 out of 143.7 hours.
(C) Hose found not connected, little if any deposition on filter.

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

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
H08	0.1168 ± 0.0087	<0.0153	<0.0013	<0.0012	0.0124 ± 0.0029
H12	0.1146 ± 0.0086	<0.0162	<0.0014	<0.0011	<0.0128
H14	0.1299 ± 0.0097	<0.0186	<0.0013	<0.0011	0.0142 ± 0.0032
H30	0.1293 ± 0.0105	<0.0264	<0.0015	<0.0013	<0.0383
H34	0.1129 ± 0.0097	<0.0238	<0.0015	<0.0011	<0.0389

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)
H15	06-Oct-15	<151	411 ± 27	<3	<3	<7	<3	<7	<5	<4	<3	<3	<8
	13-Oct-15	<140	368 ± 27	<3	<3	<7	<4	<8	<5	<4	<3	<4	<5
	21-Oct-15	<156	350 ± 18	<2	<2	<4	<2	<5	<3	<2	<2	<2	<3
	27-Oct-15	<155	308 ± 25	<3	<3	<7	<3	<8	<6	<3	<3	<4	<11
	03-Nov-15	<149	407 ± 27	<3	<3	<7	<3	<7	<5	<4	<3	<3	<12
	10-Nov-15	<149	359 ± 26	<3	<3	<6	<3	<8	<5	<4	<3	<4	<5
	18-Nov-15	<157	377 ± 41	<6	<6	<14	<6	<15	<11	<8	<5	<7	<8
	24-Nov-15	<157	397 ± 27	<3	<3	<7	<3	<7	<6	<5	<3	<4	<5
	02-Dec-15	<152	339 ± 26	<3	<3	<6	<4	<7	<5	<3	<3	<3	<9
	09-Dec-15	<148	339 ± 26	<3	<3	<6	<4	<8	<6	<4	<3	<3	<6
	14-Dec-15	<143	365 ± 26	<3	<3	<6	<3	<7	<5	<4	<3	<3	<7
	21-Dec-15	<143	420 ± 20	<2	<2	<4	<2	<4	<3	<2	<2	<2	<4
	28-Dec-15	<143	337 ± 25	<3	<3	<7	<3	<7	<5	<4	<3	<3	<5
H59	13-Oct-15	<140	334 ± 41	<5	<7	<12	<7	<11	<11	<7	<5	<8	<12
	24-Nov-15	<157	352 ± 20	<2	<2	<5	<3	<6	<4	<3	<2	<3	<7
	09-Dec-15	<148	374 ± 27	<4	<4	<7	<4	<7	<6	<4	<3	<4	<9

(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-238
H15	This sample was previously collected.										
H59	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
H15	This sample was previously collected.										
H59	18-Nov-15	1120 ± 164	<22	<26	<55	<29	<58	<22	<28	<502	<129

4.a.2. FISH - (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
H15	09-Dec-15	2160 ± 204	<26	<27	<48	<33	<63	<24	<27	<409	<102
H59	17-Dec-15	2383 ± 214	<30	<26	<54	<30	<66	<24	<29	<506	<112

H15: Porgy
H59: Mangrove Snapper

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
H51	13-Oct-15	2374 ± 100	3832 ± 195	<15	<12	<17	1315 ± 402	20 ± 9	<294	<59
	24-Nov-15	535 ± 35	4620 ± 169	<14	<8	<7	<251	<15	<168	<34
	09-Dec-15	1622 ± 87	3824 ± 196	<16	<13	<16	<1114	<22	<301	<74
H52	13-Oct-15	1203 ± 71	3499 ± 182	<15	<12	<15	<1031	<25	<285	<66
	24-Nov-15	1478 ± 59	2587 ± 115	<15	<7	<8	<260	<16	<112	<30
	09-Dec-15	1175 ± 69	3972 ± 196	<16	<12	<15	<1037	21 ± 9	<265	<66
H59	13-Oct-15	1645 ± 82	3649 ± 181	<13	<11	<16	<942	<26	<281	<64
	24-Nov-15	750 ± 56	2442 ± 144	<19	<10	<15	<864	<21	<276	<57
	09-Dec-15	1341 ± 84	2451 ± 163	<16	<14	<16	<1015	<32	<330	<77

2015
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT – UNITS 1 & 2

ATTACHMENT C

RESULTS FROM THE 2015

INTERLABORATORY COMPARISON PROGRAM

CONDUCTED BY

DEPARTMENT OF ENERGY

2015
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT – UNITS 1 & 2

DOE-MAPEP 32 RESULTS

Radionuclide	Result	Ref. Value	Flag (Evaluation)	Acceptance Range
Matrix: RdF Air Filter (Bq/filter)				
MN54	1.103	1.02	A	0.71 – 1.33
CO57	1.508	1.51	A	1.06 – 1.96
CO60	-0.004	0	A	False Positive Test (within acceptance range)
ZN65	0.983	0.83	A	0.58 – 1.08
CS134	1.089	1.15	A	0.81 – 1.50
CS137	0.003	0	A	False Positive Test (within acceptance range)
Matrix: GrF Air Filter (Bq/filter)				
Gross Beta	0.86	0.75	A	0.38 – 1.13
Matrix: MaS Soil (Bq/kg)				
K40	680.28	622	A	435 – 809
MN54	1264	1198	A	839 – 1557
CO57	0.01	0	A	False Positive Test (within acceptance range)
CO60	838	817	A	572 – 1062
ZN65	1178	1064	A	745 - 1383
CS134	624	678	A	475 – 881
CS137	1.18	0	A	False Positive Test (within acceptance range)
Matrix: MaW Water (Bq/L)				
H3	589.04	563	A	394 – 732
MN54	0.014	0	A	False Positive Test (within acceptance range)
CO57	30.95	29.9	A	20.9 – 38.9
CO60	-0.074	0	A	False Positive Test (within acceptance range)
ZN65	21.5	18.3	A	12.8 – 23.8
CS134	24.599	23.5	A	16.2 – 30.6
CS137	21	19.1	A	13.4 – 24.8
SR90	9.05	9.48	A	6.64 – 12.32

Matrix: RdV Vegetation (Bq/sample)

MN54	-0.002	0	A	False Positive Test (within acceptance range)
CO57	0.043	0	A	False Positive Test (within acceptance range)
CO60	5.582	5.55	A	3.89 – 7.22
ZN65	0.311	0	A	False Positive Test (within acceptance range)
CS134	7.252	7.32	A	5.12 – 9.52
CS137	10.22	9.18	A	6.43 – 11.93

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

In MAPEP 32, the results for gamma on air filters, water, soil, and vegetation matrices for those nuclides associated with nuclear power plant operation and using analytical methods used in the REMP are acceptable. There are no relevant data flags.

2015
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT – UNITS 1 & 2

DOE-MAPEP 33 RESULTS

Radionuclide	Result	Ref. Value	Flag (Evaluation)	Acceptance Range
Matrix: RdF Air Filter (Bq/filter)				
MN54	2.26	2.11	A	1.48 – 2.74
CO57	2.65	2.74	A	1.92 – 3.56
CO60	1.76	1.71	A	1.20 – 2.22
ZN65	1.45	1.32	A	0.92 – 1.72
CS134	2.50	2.45	A	1.72– 3.19
CS137	2.02	1.96	A	1.37 – 2.55
Matrix: GrF Air Filter (Bq/filter)				
Gross Beta	1.54	1.56	A	0.78 – 2.34
Matrix: MaS Soil (Bq/kg)				
K40	609.83	599	A	419 - 779
MN54	1395.00	1340	A	938 - 1742
CO57	1203.33	1180	A	826 - 1534
CO60	1.92	1.30	N (*1)	Sensitivity Evaluation
ZN65	709.5	662	A	463 - 861
CS134	994.21	1010	A	707 - 1313
CS137	850.00	809	A	566 - 1052
Matrix: MaW Water (Bq/L)				
H3	220.17	216	A	151 - 281
MN54	17.011	15.6	A	10.9 - 20.3
CO57	21.700	20.8	A	14.6 - 27.0
CO60	18.300	17.1	A	12.0 - 22.2
ZN65	16.122	13.9	A	9.7 – 18.1
CS134	23.069	23.1	A	16.2 – 30.0
CS137	0.117	0	A	False Positive Test (within acceptance range)

Matrix: RdV Vegetation (Bq/sample)

MN54	8.376	7.68	A	5.38 – 9.98
CO57	6.892	6.62	A	4.63 – 8.61
CO60	4.568	4.56	A	3.19 – 5.93
ZN65	5.896	5.46	A	3.82 – 7.10
CS134	5.947	5.80	A	4.06 – 7.54
CS137	0.041	0	A	False Positive Test (within acceptance range)

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

In MAPEP 33, the results for gamma on air filters, water, and vegetation matrices for those nuclides associated with nuclear power plant operation and using analytical methods used in the REMP are acceptable.

There was one relevant data flag for MAPEP 33 for the soil matrix:

*1) The Co-60 result for the soil matrix for the MAPEP Interlaboratory Crosscheck Program showed "Not Acceptable". The reported result of 1.92 Bq/kg was out of tolerance high as compared to the reference value of 1.30 Bq/kg. The unknown soil matrix analysis was a Sensitivity Evaluation Test where the nuclide is spiked at a very low level. The State of Florida ineffectively evaluated the isotopic spectrum for the analysis. A Site Condition Report was generated to document the failure of the required Co-60 isotopic soil matrix analysis. The unknown result is the only failure this year for the two sets of interlaboratory crosscheck analyses. The failure is not a repeat condition.

2015
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT – UNITS 1 & 2

ATTACHMENT D

Industry Initiative

Ground Water Protection Program

Tritium in Ground Water Monitoring

2015

2015
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT – UNITS 1 & 2

A. Description of Program:

Quarterly sampling & analysis for Tritium & principle gamma emitters is performed by the State of Florida Department of Health (DOH) and Bureau of Radiation Control (BRC), pursuant to an Agreement between FPL and DOH, as part of the ODCM REMP sampling program.

The wells identified for radiological environmental sampling in support of the industry initiative are listed below, and in Appendix B-2 of the ODCM. The ten wells are on the 'outside' perimeter of the protected area. Two locations where the Plant ID ends with "S" are shallower wells adjacent, within a few feet, of a deeper well at the same location.

State ID	St. Lucie Plant ID	Location Description
H70	GIS-MW-ES	West of A1A; between the discharge canal and Gate "B"
H71	GIS-MW-EI	West of A1A; between the discharge canal and Gate "B"
H72	GIS-MW-SI	South of Intake canal and the adjacent access road
H73	GIS-MW-SWS	S/W corner of Intake canal and the adjacent access road
H74	GIS-MW-SWI	S/W corner of Intake canal and the adjacent access road
H75	GIS-MW-WI	West of plant site and intake canal; South of switchyard
H76	H76	North of Simulator; South of Big Mud Creek
H77	H77	East of Barge Slip; By LU bldg
H78	H78	South of North Warehouse
H79	H79	West of A1A and East of Parking Lot

B. St. Lucie 2015 Tritium Results [1] Summary, pCi/L

Well number	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
H70	<146	<143	167	<146
H71	477	387	495	477
H72	<146	<143	<141	<146
H73	<146	<150	<145	<144
H74	<146	<152	<145	<146
H75	<157	<143	<145	<144
H76	<156	102	<145	<144
H77	<146	<143	<145	<146
H78	<146	<143	<145	<146
H79	<146	90	<145	<146

Notes

1. Samples analyzed for H3 and principle gamma emitters; tritium is the only fission product identified. Naturally occurring K-40 is occasionally identified.

2. Laboratory H3 MDA is about 150 pCi/liter

Map depicting the well locations follows.

2015
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT – UNITS 1 & 2

RADIOLOGICAL ENVIRONMENTAL SAMPLING LOCATIONS
IN SUPPORT OF THE INDUSTRY INITIATIVE