



May 10, 2021
L-2021-099
10 CFR 50.36b

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

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
2020 Annual Radiological
Environmental Operating Report

Enclosed is the 2020 Annual Radiological Environmental Operating Report for Turkey Point Units 3 and 4, as required by Technical Specification 6.9.1.3.

Should there be any questions or comments regarding this information, please contact Mr. Robert J. Hess, Licensing Manager, at (305) 246-4112.

Sincerely,

A handwritten signature in blue ink, appearing to read 'R. Hess', with a long horizontal line extending to the right.

Robert J. Hess
Licensing Manager
Turkey Point Nuclear Plant

SM
Enclosure

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



Plant: Turkey Point Nuclear Units 3 & 4	Page 1 of 54
	YEAR: 2020
Docket NOS Number: 50-250, 50-251	
Annual Radiological Environmental Operating Report	

Annual Radiological Environmental Operating Report

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Annual Radiological Environmental Operating Report**1.1 EXECUTIVE SUMMARY****1.2 Radiological Environmental Monitoring Program**

The data obtained through the Turkey Point Radiological Environmental Monitoring Program (REMP) verifies that the levels of radiation and concentrations of radioactive materials in environmental samples are not increasing. These measurements verify that the dose or dose commitment to members of the public, due to operation of Turkey Point Units 3 & 4, during the surveillance year, is well within the limits established by 10 CFR 50, Appendix I. The sampling period was from January 1, 2020 to December 31, 2020. Additionally, supplemental samples collected by the State of Florida, DOH, do not indicate adverse trends in the radiological environment.

All required lower limit of detection (LLD) capabilities were achieved in all sample analyses during 2020, as required by the Turkey Point Units 3 & 4 Technical Specifications. No measurable levels of radiation above baseline levels attributable to Turkey Point Nuclear operation were detected in the vicinity of PTN. The 2020 Radiological Environmental Monitoring Program thus substantiated the adequacy of source control and effluent monitoring at Turkey Point Nuclear with no observed impact of plant operations on the environment.

Turkey Point Nuclear established the REMP prior to the station's becoming operational to provide data on background radiation and radioactivity normally present in the area. PTN has continued to monitor the environment by sampling air, water, sediment, crustacea, fish and broadleaf vegetation, as well as measuring direct radiation. PTN also samples milk if milk-producing animals used for human consumption are present within five miles (8 km) of the plant.

The REMP includes sampling indicator and control locations within an approximate 20-mile radius of the plant. The REMP utilizes indicator locations near the site to show any increases or buildup of radioactivity that might occur due to station operation and control locations farther away from the site to indicate the presence of only naturally occurring radioactivity. PTN personnel compare indicator results with control results to assess any impact PTN operation might have had on the surrounding environment.

In 2020, environmental samples were collected for radiological analysis. The results of indicator locations were compared with control locations. It was concluded that no significant relationship exists between PTN operation and effect on the area around the plant. The review of 2020 data showed radioactivity levels in the environment were undetectable in many locations and near background levels in significant pathways.

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. The 2020 Radiological Surveillance Quarterly Report data is provided by the State of Florida Bureau of Radiation Control and is presented in Attachment 2.

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

Annual Radiological Environmental Operating Report**1.3 Reporting Levels**

No samples equaled or exceeded reporting levels.

1.4 Sample Deviations

During 2020, environmental sampling was performed for seven media types addressed in the ODCM and for direct radiation. A total of 801 samples of the 802 scheduled were obtained. Of the scheduled samples, 99.9 percent were collected and analyzed in accordance with the requirements specified in the ODCM. Attachment 1 contains the listing of sample deviations and actions taken.

1.5 Program Modifications

- There were no program modifications during the reporting period.

Annual Radiological Environmental Operating Report**2.1 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.

2.2 Radiological Environmental Monitoring Program

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

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.

Sample Locations, Types and Frequencies:

- Direct radiation gamma exposure rate is monitored continuously at 23 locations by thermoluminescent dosimeters (TLDs). TLDs are collected and analyzed quarterly.
- 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.
- Surface water samples are collected from three locations. Samples are collected and analyzed monthly. Analyses include gamma isotopic and tritium measurements.
- 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.
- 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.
- 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.

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Table 1 through 4 provides specific information pertaining to sample locations, types, and frequencies.

Note: Ground Water Protection, NEI Initiative: The program and results are described in Attachment 4.

2.3 Pathways Monitored

The airborne, direct radiation, waterborne and ingestion pathways are monitored as required by Control 5.1 of Turkey Point Unit 3 & 4 ODCM. A description of the REMP utilized to monitor the exposure pathways is described in the attached Tables and Figures.

Section 4.0 of this report provides a discussion of 2020 sampling results with Section 5.0 providing a summary of results for the monitored exposure pathways.

2.4 Land Use Census

PTN conducts a land use census annually, as required by Turkey Point Units 3 & 4 ODCM. The purpose of this census is to identify changes in uses of land within five miles of PTN that would require modifications to the REMP and the Offsite Dose Calculation Manual (ODCM). Section 4.5 on the report contains a narrative on the results of the 2020 land use census.

3.0 RADIOLOGICAL ENVIRONMENTAL SAMPLING PROGRAM REQUIREMENTS

Table 1: Exposure Pathway – Airborne

Requirement	Sample Point Description Distance and Direction	Sampling and Collection Frequency	Type and Frequency of Analyses
<p><u>RADIOIODINE AND PARTICULATES</u> 5 sample indicator locations and 1 sample control location.</p>	<ul style="list-style-type: none"> • T-51 (2 mi. NNW) – Entrance Area to Biscayne National Park. • T-57 (4 mi. NW) – Siren Pole 27, intersection of SW 112th Ave and SW 304th St. • T-58 (1 mi. NW) – Turkey Point Entrance Road. • T-72 (<1 mi. WSW) – Just before entrance to Land Utilizations access gate. • T-41 (1.6 mi. WNW) – Palm Dr. West of FPL Satellite School near the site boundary. • T-64* (22 mi. NNE) – Natoma Substation, 2475 SW 16 Ct. 	<p>Continuous sampler operation with sample collection weekly or more frequently if required by dust loading.</p>	<ul style="list-style-type: none"> • Radioiodine Canisters – I-131 analysis weekly. • Air Particulate – Gross beta radioactivity analysis following filter change. • Air Particulate – Gamma Isotopic analysis quarterly.

*Denotes Control sample

Table 2: Exposure Pathway – Direct Radiation

Requirement	Sample Point Description Distance and Direction	Sampling and Collection Frequency	Type and Frequency of Analyses
<p><u>TLDS</u> 22 indicator sample locations and 1 control sample location.</p>	<ul style="list-style-type: none"> • N-2 (2 mi N) – Convoy Point • N-7 (7.1 mi N) – Black Point Marina parking lot on siren pole • N-10 (10.6 mi N) – Old Cutler Rd across from Perdue Med. Ctr. On siren pole. • NNW-2 (2.2 mi NNW) – East End of N. Canal Dr. on siren pole E. of 117th Ave. • NNW-10 (9.2 mi NNW) – Bailes Rd. E. of US 1 on siren pole. • NW-1 (1.4 mi NW) – Turkey Point Entrance Rd. • NW-5 (3.9 mi NW) – Intersection of Mowry Dr. and 117th Ave. on siren pole. • NW-10 (10 mi NW) – On Newtown Rd. N. of Coconut Palm Drive on siren pole. • W-5 (5.3 mi W) – Palm Drive 0.3 mi west of Tallahassee Rd. • WNW-10 (9.8 mi WNW) – NW 2nd Ave. S. of Campbell Dr. at Hmstd. Middle School on siren pole. • W-1 (0.7 mi W) – On site north side of Discharge Canal. 	<p>Quarterly</p>	<ul style="list-style-type: none"> • mR exposure quarterly.

Table 2: Exposure Pathway – Direct Radiation

Requirement	Sample Point Description Distance and Direction	Sampling and Collection Frequency	Type and Frequency of Analyses
<p><u>TLDS (Cont'd)</u> 22 indicator sample locations and 1 control sample location.</p>	<ul style="list-style-type: none"> • W-9 (8.6 mi W) – Card Sound Rd. 0.6 mi SSE of US 1 on siren pole. • WSW-8 (7.8 mi WSW) – Card Sound Rd. 3.4 mi. SSE of US 1 on siren Pole. • SW-1 (1 mi SW) – On site near land utilization offices. • SSE-1 (1 mi SSE) – On-site South-East side of cooling canals at “Turtle Point”. • SW-8 (8 mi SW) – Card Sound Rd. 5 mi. SSE of US 1 at entrance to Navy facility. • SSW-5 (5 mi SSW) – On site, southwest corner of cooling canals. • SSW-10 (10 mi SSW) – At Card Sound Bridge on siren pole. • S-5 (5 mi S) – On site, south east end of cooling canals. • S-10 (10 mi S) – Card Sound Road at Steamboat Creek. • SSE-10 (9 mi SSE) – Ocean Reef. • NNE-22* (22.6 mi NNE) – Natoma Substation. • WNW2 (1.6 mi WNW) – Palm Dr. West of FPL Satellite School, near Site Boundary. 	<p>Quarterly</p>	<ul style="list-style-type: none"> • mR exposure quarterly.

*Denotes Control sample

Table 3: Exposure Pathway – Waterborne

Requirement	Sample Point Description Distance and Direction	Sampling and Collection Frequency	Type and Frequency of Analyses
<p><u>SURFACE WATER</u></p> <p>2 indicator sample locations and 1 control sample location.</p>	<ul style="list-style-type: none"> • T-42 (<1 mi. ENE) – Biscayne Bay at Turkey Point. • T-81 (6 mi. S) – Card Sound, near Mouth of Old Discharge Canal. • T-67* (13-18 mi. N, NNE) – Near Biscayne Bay, Vicinity of Cutler Plant, North to Matheson Hammock Park 	<p>Grab samples Monthly</p>	<ul style="list-style-type: none"> • Gamma isotopic analysis and tritium analysis monthly.
<p><u>SEDIMENT FROM SHORELINE</u></p> <p>2 indicator sample locations and 1 control sample location. Locations coincide with the surface water sample locations.</p>	<ul style="list-style-type: none"> • T-42 (<1 mi ENE) – Biscayne Bay at Turkey Point. • T-81 (6 mi. S) – Card Sound, near Mouth of Old Discharge Canal. • T-67* (13-18 mi. N, NNE) – Near Biscayne Bay, Vicinity of Cutler Plant, North to Matheson Hammock Park 	<p>Semi-annually</p>	<ul style="list-style-type: none"> • Gamma isotopic analysis semi-annually.

*Denotes Control sample

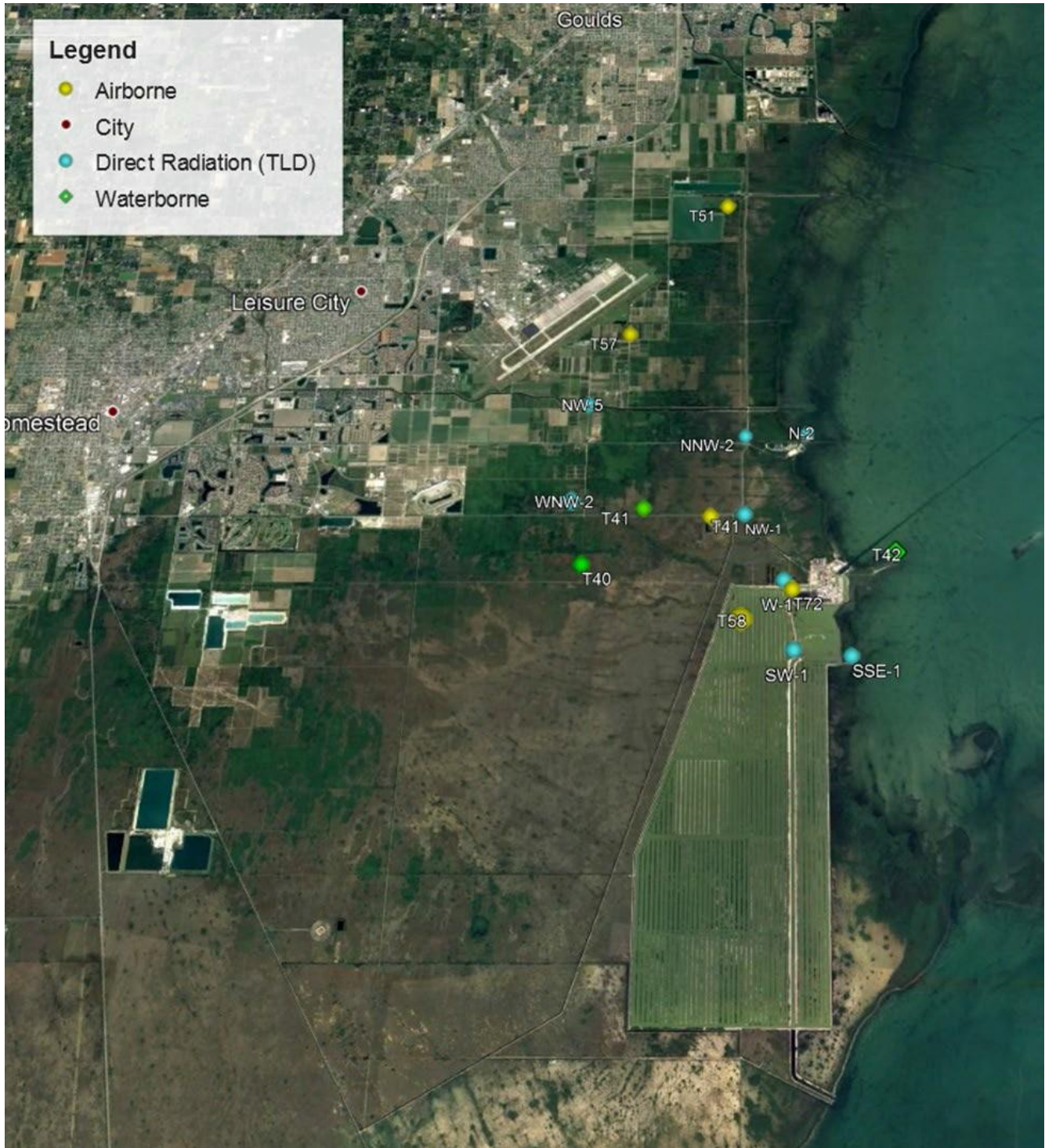
Table 4: Exposure Pathway – Ingestion

Requirement	Sample Point Description Distance and Direction	Sampling and Collection Frequency	Type and Frequency of Analyses
<p><u>CRUSTACEA AND FISH</u></p> <ul style="list-style-type: none"> 1 indicator sample location and 1 control sample location. 	<ul style="list-style-type: none"> T-81 (6 mi. S) – Card Sound, near Mouth of Old Discharge Canal. T-67* (13-18 mi. N, NNE) – Near Biscayne Bay, Vicinity of Cutler Plant, North to Matheson Hammock Park 	Semi-annually	Gamma isotopic analysis semi-annually.
<p><u>BROADLEAF VEGATATION</u></p> <ul style="list-style-type: none"> 2 indicator sample locations and 1 control sample location. 	<ul style="list-style-type: none"> T-40 (3 mi W) – South of Palm Dr. on S.W. 117th Street Extension. T-41 (2 mi WNW) – Palm Dr. West of FPL Satellite School near the site boundary. T-67* (13-18 mi. N, NNE) – Near Biscayne Bay, Vicinity of Cutler Plant, North to Matheson Hammock Park 	Monthly	Gamma isotopic analysis monthly.

*Denotes Control sample

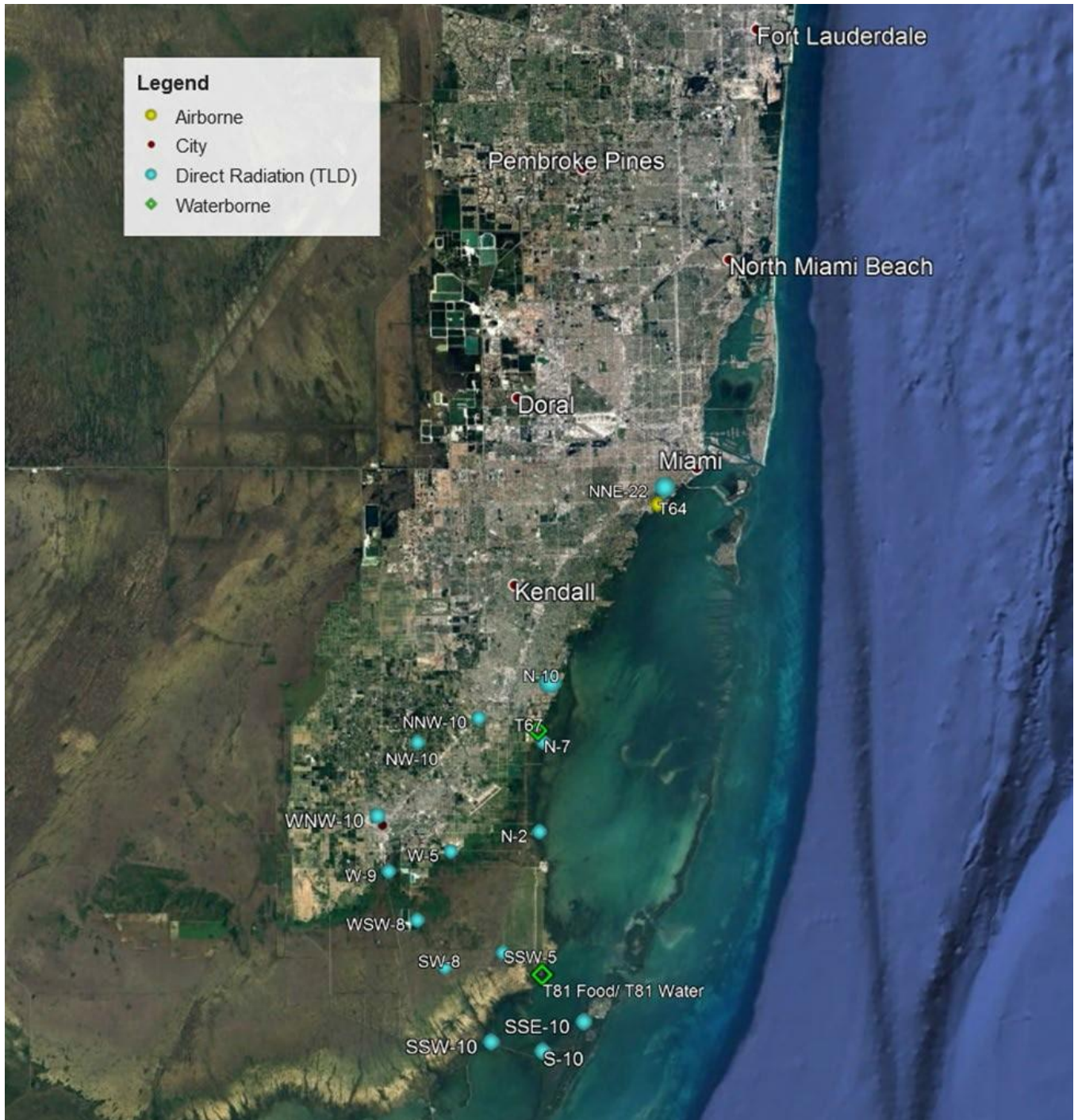
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Figure 1: Sample Collection Sites – Near Station



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Figure 2: Sample Collection Sites – Distant from Station



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4.1 INTERPRETATION AND TRENDS OF RESULTS

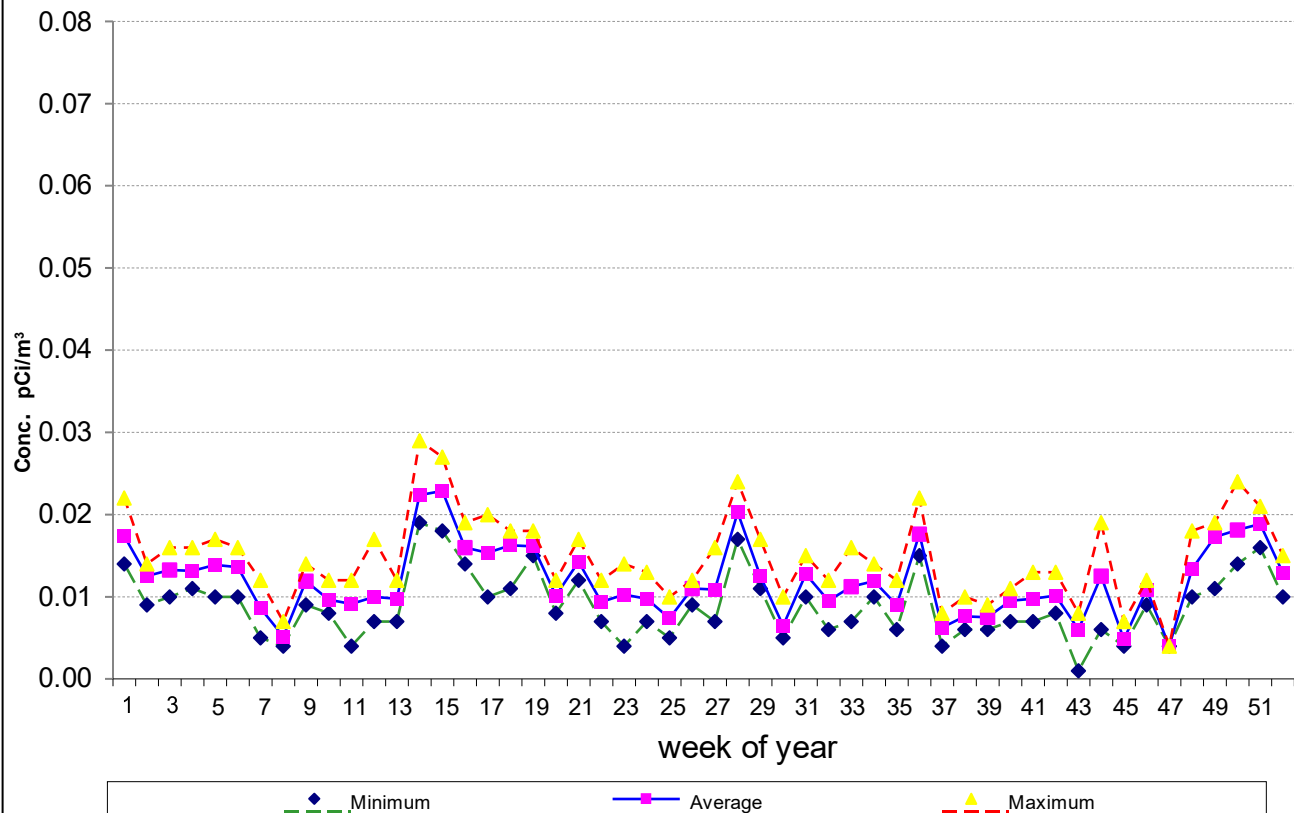
4.2 Air Particulate and Radioiodine Sample Results

In 2020 there were no samples above the LLD for I-131. Indicator gross beta air particulate results for 2020 were comparable to results obtained from 2017-2019 of the operational REMP. Results are reported in picocuries per cubic meter (pCi/m³).

<u>Monitoring Period</u>	<u>Result</u>
2017 – 2019 (Minimum Value)	0.002
2020 Average Value	0.012
2017 – 2019 (Maximum Value)	0.032

Gross beta activity is attributed to naturally occurring radionuclides. Table 6, which include gross beta concentrations and provide a comparison of the indicator and control means and ranges emphasizes the consistent trends seen in this pathway to support the presence of naturally occurring activity. Figure 3 is a comparison of the weekly Gross Beta results for 2020. Therefore, it can be concluded that the airborne pathway continues to be unaffected by Turkey Point Nuclear operations.

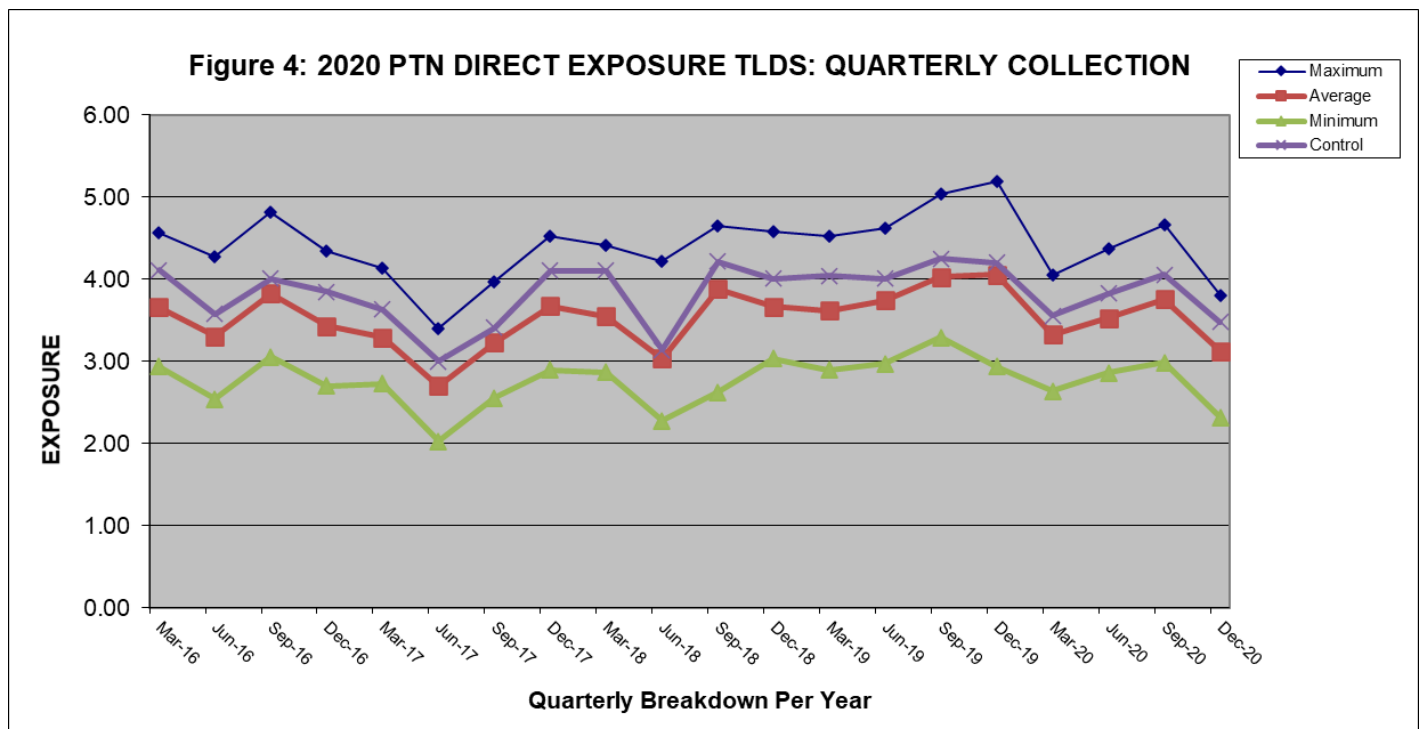
**Figure 3: Turkey Point 2020 REMP
Gross Beta in Air, pCi/m³**



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4.3 Thermoluminescent Dosimetry (TLD) Sample Results

Turkey Point Nuclear reports relies on comparison of the indicator locations to the control as a measure of plant impact. Turkey Point Nuclear's comparison of the indicator to the control, as seen in Table 6, identified no noticeable trend that would indicate that the ambient radiation levels are being affected by plant operations. In addition, the quarterly indicator averages shown in the TLD radiation dose comparison graph below shows the 2020 indicator results are comparable to control location results. Overall, Turkey Point Nuclear concluded that the ambient radiation levels are not being affected by plant operations.



4.4 Waterborne Sample Results

Analytical results for 2020 surface water samples were similar to those reported in previous years. Gamma radionuclides and tritium analytical results for 2020 waterborne samples were below the ODCM-required LLD similar to those reported in previous years. These results are further explained below.

4.4.1 Surface Water Results

Samples were collected from two indicator and one control location and analyzed for gamma radionuclides and tritium. Tritium was detected in 2 out of 24 indicator location samples with an average concentration of 93 pCi/L which is consistent with results seen in previous operational years. There were no plant related gamma radionuclides detected in any of the control or indicator location samples. Therefore, the operation of Turkey Point Nuclear had no definable impact on this waterborne pathway during 2020.

Annual Radiological Environmental Operating Report**4.4.2 Shoreline Sediment Sample Results**

Sediment samples were collected from two indicators and one control location in 2020 and analyzed for gamma radionuclides. Plant related gamma radionuclides were below the LLD limits at both indicator and control locations. Turkey Point Nuclear operations had no significant impact on the environment or public by this waterborne pathway.

4.5 Ingestion Sample Results**4.5.1 Crustacea and Fish Sample Results**

Crustacea and Fish samples were collected from one indicator and one control location and analyzed for gamma radionuclides. In 2020, gamma radionuclides were below detectable limits which are consistent with the results seen in previously operational years. Therefore, based on these measurements, Turkey Point Nuclear operations had no significant radiological impact upon the environment or public by this ingestion pathway.

4.5.2 Broad Leaf Vegetation Sample Results

The REMP has detected radionuclides prior to 1990 that are attributable to other sources. These include the radioactive plume release due to reactor core degradation at Chernobyl Nuclear Power Plant in 1986 and atmospheric weapons testing.

In 2020, Broad Leaf Vegetation samples were collected from two indicator and one control locations and analyzed for gamma radionuclides. The 2020 Cs-137 was detected in samples collected from the indicator and control locations. This activity identified could be from weapons fallout testing 30-40 years ago and reactor accidents at Chernobyl and are contributors. Therefore, based on these measurements, Turkey Point Nuclear operations had no significant radiological impact upon the environment or public by this ingestion pathway.

4.6 Land Use Census Results

The latest land use census (performed in 2020) did not identify any new locations that yielded a calculated dose or dose commitment greater than those currently calculated (see Table 5).

The land use census identified no changes in the new resident census.

There were no changes in the milk cows/goats or garden census in 2020.

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Table 5: Land Use Census –2020 Nearest Residence, Garden, and Milk Animal Within Five Miles

SECTOR	NEAREST RESIDENCE/BUSINESS	NEAREST GARDEN (A)	NEAREST MILK ANIMAL
N	1.9 mi @ 349° 1.98 mi @ 349° 2.0 mi @ 354°	*	*
NNE	*	*	*
NE	*	*	*
ENE	*	*	*
E	*	*	*
ESE	*	*	*
SE	*	*	*
SSE	*	*	*
S	*	*	*
SSW	*	*	*
SW	*	*	*
WSW	*	*	*
W	*	*	*
WNW	1.7 mi @ 302° 3.7 mi @ 302°	4.5 mi @ 303° 6.0 mi @ 295°	*
NW	3.6 mi @ 304° 3.7 mi @ 311° 3.8 mi @ 316° 3.9 mi @ 314°	*	*
NNW	4.4 mi @ 333° 4.7 mi @ 328°	4.4 mi @ 332° 4.7 mi @ 328°	*

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

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

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TURKEY POINT RESIDENCE SURVEY RESULTS

August 2020

Sector	Range Bearing	Nearest Residence/Business Location
N (A)	<u>1.9 miles</u> 349°	This is the Homestead Bayfront Park complex. Contact is Jim Wyath. Office hours are 8:30 to 4:30, 7 days a week. Some occasional overnight recreational occupancy (up to 4 nights) on boats at the marina. Approximately 25 workers, 7 days a week, hours and number of varies. Summer weekends can see 1000+ visitors. There is always someone here 24 hours with more workers in the summer than the rest of the year (February thru September have the highest peak of workers). LaPlaya restaurant is open at the park with 8 to 10 employees weekdays from 11am to 8:30pm. Weekends open till 10:00 and may have up to 12 employees. N25° 27.683' W80° 20.200'.
N (B)	<u>1.98 miles</u> 349°	South Glade Outfitters. Located on opposite side of building from office of Homestead Bayfront Park. Manager is Robert and have 2 employees. Hours are M – Th 7 am to 5 pm. Fri – Sun 7 am – 6 pm. Hours may vary depending on the weather. N25° 27.767' W80° 20.206'.
N (C)	<u>2.0 miles</u> 354°	Biscayne National Park at Convoy Point. No admin staff onsite due to Covid-19. Calls have not been returned. Contact includes J. Ernest Jutte, Chief Administration, 305-242-7721 (office) 202-438-6636 (mobile) and Cindy Holl (administrator) 239-695-1114. 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.	

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TURKEY POINT RESIDENCE SURVEY RESULTS

August 2020 (cont.)

Sector	Range Bearing	Nearest Residence/Business Location
WNW (A)	<u>1.7 miles</u> 302°	FP&L daycare center and shooting range near the entrance to the Turkey Point Plant. Contact is Yudisvel "Judy" Diaz, Director. There are 11 employees with 60 children currently enrolled, ages 6 months to 5 yrs. Occasionally, they will have school aged children. The center is open from 6am to 6pm Monday thru Friday. The number of people and times at the shooting range varies. N25° 26.817' W80° 21.217'.
WNW (B)	<u>3.7 miles</u> 302°	Two elderly people live at 11790 Canal Drive on the south side of Canal Drive (SW 328 th St) west of SW 117 th Ave (no gardens). Their son lives onsite on weekends, 2-3 nights/week. Residents plan on selling soon. Next door, to the east, is a makeshift produce stand which sells coconuts, limes, mandarin oranges, flowers, garlic, mangoes, papaya, avocado, honey, melons, sugar cane, ginger, plantains and pumpkins. Is not associated with the house next door. One employee may be working there during normal hours. N25° 27.767' W80° 22.867'.
NW (A)	<u>3.6 miles</u> 304°	The Waste Management Homestead Landfill is located north of Canal Drive (SW 328 th St) and east of SW 117 th Ave. There are 9 full time employees onsite Monday thru Friday usually from 7 am to 3:30 pm. N25° 27.833' W80° 22.767'.
NW (B)	<u>3.7 miles</u> 311°	11000 SW 320 th St. Per property records, this house is on land zoned agriculture and the owners live in Texas. Unable to verify if anyone lives there because the gate is locked and the residence is too far from the road to see anything. N25° 28.217' W80° 22.567'.
NW (C)	<u>3.8 miles</u> 316°	High Hope Nursery at 11400 SW 316 th St. Contact is George Sprinkle, Owner and General Manager. This nursery has approximately 35 employees. Hours of operations are 7am to 5pm Monday thru Friday, with some work on Saturdays until noon. A couple lives here that also provide security. N25° 28.441' W80° 22.430'.
NW (D)	<u>3.9 miles</u> 314°	Snapper Creek Nursery at 11600 SW 316 th Street. 14 workers that work Monday thru Friday 7 am to 5 pm. Contact is Elmer. Security is provided by another person who lives onsite. N25° 28.444' W80° 22.560'.

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TURKEY POINT RESIDENCE SURVEY RESULTS

August 2020 (cont.)

Sector	<u>Range</u> Bearing	Nearest Residence/Business Location
NNW (A)	4.4 miles 333°	29800 SW 107th Ave. Per property records, this is a small one bedroom residence on land zoned as mixed use agricultural. Appears lived in, but gate locked and no people onsite. N25° 29.450' W80° 21.817'.
NNW (B)	4.7 miles 328°	SFM Tree Farm. Entrance at SW 107th Ave & SW 296th St. Four people work on the property Mon-Fri 6:30-5:30. Contact is Mario. Owner lives off property in Miami. N25° 29.564' W80° 22.264'.

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TURKEY POINT GARDEN SURVEY RESULTS

August 2020

Sector	<u>Range</u> 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.

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TURKEY POINT GARDEN SURVEY RESULTS

August 2020 (cont.)

Sector	Range Bearing	Nearest Garden Location (with estimated total area of 500 square feet, or more, and producing green leafy vegetables).
WNW (A)	<u>4.5 miles</u> 303°	Thai Farms. South of Mowry Drive (SW 320th St) and about 0.6 miles west of Allapattah Rd (SW 117th Ave). Growing guava dragon fruit, papaya, palm, bamboo, and more. No one present. Phone number on farm sign reached the previous owner who sold 3 years ago and does not know how to contact new owners. N25° 28.217' W80° 23.467'.
WNW (B)	<u>6.0 miles</u> 295°	Farm Share, Inc at 14125 SW 320 th St, where farmers donate locally grown produce to be given to charitable organizations. Produce donations usually start in November and run through April. About 20 workers present from 8 am to 4:30 pm Monday thru Friday. The produce donated is usually tomatoes, bananas, squash, green beans, okra, corn, potatoes, watermelon and zucchini. The contact is now Nick Sanchez. N25° 28.255' W80° 25.111'.
NW		No suitable gardens were located within a five-mile range.
NNW (A)	<u>4.4 miles</u> 332°	Under the vine. 11100 SW 296th St. Entrance at SW 107th Ave & SW 296th St just east of SFM Tree Farm. Growing only dragon fruit. Open Mon-Sat 8:00-5:00. 3 employees plus the owner work here. No onsite residents. N25° 29.464' W80° 21.828'.
NNW (B)	<u>4.7 miles</u> 328°	SFM Tree Farm. Entrance at SW 107 th Ave & SW 296 th St. Noticed bananas, dragon fruit, plantain tress, coconuts and mangoes growing in various areas on the farm. Owner lives off property in Miami. Gate locked, waited 15 minutes, and did not see an employee. N25° 29.564' W80° 22.264'.

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

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TURKEY POINT MILK ANIMAL SURVEY RESULTS

August 2020

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

Annual Radiological Environmental Operating Report**4.7 Interlaboratory Comparison Results**

Attachment 3 contains result summary for Interlaboratory Comparison program for the Department of Energy Mixed Analyte Performance Evaluation Program (MAPEP). These satisfied the requirement of Control 5.3 of the ODCM for the Interlaboratory Comparison Program.

5.1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

1. Table 6, Radiological Environmental Monitoring Program Summary, summarizes data for the 2020 REMP program.

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Table 6: Radiological Environmental Monitoring Program Summary

Sample Type (Units)	Type / Number of Analyses ⁽¹⁾	LLD ⁽²⁾	Indicator Locations Mean (F) ⁽³⁾ [Range]	Indicator ⁽⁴⁾ Location [Highest Annual Mean]	Mean (F) ⁽³⁾ [Range]	Control Locations Mean (F) ⁽³⁾ [Range]	Number of Non-Routine Results ⁽⁵⁾
Air Particulate (pCi/m ³)	GB / 312	0.01	0.0123 (250 / 260) [0.0040 - 0.0290]	T58 (1 mi. NW)	0.0129 (49 / 52) [0.0060 - 0.0290]	0.0120 (51 / 52) [0.0010 - 0.0230]	0
	GS / 24 Be-7	--	0.1242 (20 / 20) [0.0738 - 0.1750]	T72 (<1 mi. WSW)	0.1375 (4 / 4) [0.1190 - 0.1720]	0.1242 (4 / 4) [0.0926 - 0.1670]	0
	K-40	--	< LLD	N/A	N/A	< LLD	0
	Cs-134	0.05	< LLD	N/A	N/A	< LLD	0
	Cs-137	0.06	< LLD	N/A	N/A	< LLD	0
	Pb-210	--		0.0093 (8 / 20) [0.0058 - 0.0133]	T58 (1.3 mi. NW)	0.0105 (1 / 4) [<LLD - 0.0105]	0.0103 (2 / 4) [0.0082 - 0.0123]
Airborne Iodine (pCi/m ³)	I-131 / 312	0.07	< LLD	N/A	N/A	< LLD	0
Direct Radiation Indicator TLD (μR/hour)	Gamma / 87	⁽⁶⁾	3.4 (87 / 87) [2.4 - 4.7]	NW-10 (10 mi. NW)	4.1 (4 / 4) [3.8 - 4.4]	N/A	0
Direct Radiation Control TLD (μR/hour)	Gamma / 4	⁽⁶⁾	N/A	N/A	N/A	3.7 (4 / 4) [3.5 - 4.1]	0

LEGEND:

⁽¹⁾ - GB = Gross beta; I-131 = Iodine-131; H-3 = Tritium; GS = Gamma scan.

⁽²⁾ - LLD = Required lower limit of detection based on Turkey Point ODCM.

⁽³⁾ - Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis (F).

⁽⁴⁾ - Locations are specified (1) by name and (2) direction relative to reactor site.

⁽⁵⁾ - Non-routine results are those which exceed ten times the control station value. If no control station value is available, the result is considered non-routine if it exceeds ten times the preoperational value for the location.

⁽⁶⁾ - LLD is not defined in Turkey Point ODCM.

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Table 6: Radiological Environmental Monitoring Program Summary

Sample Type (Units)	Type / Number of Analyses ⁽¹⁾	LLD ⁽²⁾	Indicator Locations Mean (F) ⁽³⁾ [Range]	Indicator ⁽⁴⁾ Location [Highest Annual Mean]	Mean (F) ⁽³⁾ [Range]	Control Locations Mean (F) ⁽³⁾ [Range]	Number of Non-Routine Results ⁽⁵⁾
Surface Water (pCi/L)	H-3 / 36	3,000	93 (2 / 24) [$<$ LLD - 93]	T42, T81 ($<$ 1 mi. ENE) (6 mi. S)	93 (1 / 12) [93]	$<$ LLD	0
	GS / 36 K-40	--	315 (24 / 24) [146 - 475]	T81 (6 mi. S)	335 (12 / 12) [264 - 433]	255 (12 / 12) [161 - 334]	0
Sediment (pCi/kg dry)	GS / 6	--	$<$ LLD	N/A	N/A	$<$ LLD	0
	Be-7	--	182 (3 / 4) [92 - 308]	T67 (13 - 18 mi. N, NNE)	465 (2 / 2) [104 - 826]	465 (2 / 2) [104 - 826]	0
	K-40	--	$<$ LLD	N/A	N/A	$<$ LLD	0
	Cs-137	180	430 (2 / 4) [393 - 466]	T67 (13 - 18 mi. N, NNE)	939 (1 / 2) [939]	939 (1 / 2) [$<$ LLD - 939]	0
	Pb-210	--	546 (4 / 4) [466 - 681]	T67 (13 - 18 mi. N, NNE)	1370 (1 / 2) [1370]	1370 (1 / 2) [$<$ LLD - 1370]	0
	Ra-226	--	$<$ LLD	T67 (13 - 18 mi. N, NNE)	245 (1 / 2) [245]	245 (1 / 2) [$<$ LLD - 245]	0
	Th-232	--	52 (4 / 4) [29 - 74]	T67 (13 - 18 mi. N, NNE)	182 (1 / 2) [182]	182 (1 / 2) [$<$ LLD - 182]	0
	U-235	--	319 (4 / 4) [247 - 467]	T67 (13 - 18 mi. N, NNE)	820 (1 / 2) [820]	820 (1 / 2) [$<$ LLD - 820]	0
U-238	--						

LEGEND:

⁽¹⁾ - GB = Gross beta; I-131 = Iodine-131; H-3 = Tritium; GS = Gamma scan.

⁽²⁾ - LLD = Required lower limit of detection based on Turkey Point ODCM.

⁽³⁾ - Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis (F).

⁽⁴⁾ - Locations are specified (1) by name and (2) direction relative to reactor site.

⁽⁵⁾ - Non-routine results are those which exceed ten times the control station value. If no control station value is available, the result is considered non-routine if it exceeds ten times the preoperational value for the location.

⁽⁶⁾ - LLD is not defined in Turkey Point ODCM.

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Table 6: Radiological Environmental Monitoring Program Summary

Sample Type (Units)	Type / Number of Analyses ⁽¹⁾	LLD ⁽²⁾	Indicator Locations Mean (F) ⁽³⁾ [Range]	Indicator ⁽⁴⁾ Location [Highest Annual Mean]	Mean (F) ⁽³⁾ [Range]	Control Locations Mean (F) ⁽³⁾ [Range]	Number of Non-Routine Results ⁽⁵⁾
Crustacea (pCi/kg wet)	GS / 4 K-40	--	1525 (2 / 2) [1400 - 1650]	T81 (6 mi. S)	1525 (2 / 2) [1400 - 1650]	1415 (2 / 2) [1350 - 1480]	0
	Ra-226	--	706 (1 / 2) [<LLD - 706]	T81 (6 mi. S)	706 (1 / 2) [<LLD - 706]	370 (1 / 2) [<LLD - 370]	0
	Ra-228	--	<LLD	N/A	N/A	<LLD	0
Fish (pCi/kg wet)	GS / 4 K-40	--	3120 (2 / 2) [2900 - 3340]	T81 (6 mi. S)	3120 (2 / 2) [2900 - 3340]	2190 (2 / 2) [2020 - 2360]	0
	Ra-226	--	< LLD	N/A	N/A	< LLD	0
	Ra-228	--	< LLD	N/A	N/A	< LLD	0
Broad Leaf (pCi/kg wet)	GS / 36 Be-7	--	1890 (24 / 24) [998 - 3650]	T40 (3 mi. W / WNW)	2135 (12 / 12) [998 - 3650]	1514 (12 / 24) [723 - 2290]	0
	K-40	--	4254 (24 / 24) [2280 - 5530]	T41 (1.6 mi. WNW)	4358 (12 / 12) [2890 - 5530]	4068 (12 / 12) [1860 - 5720]	0
	Cs-137	80	125 (11 / 24) [6 - 981]	T41 (1.6 mi. WNW)	289 (4 / 12) [6 - 981]	16 (3 / 12) [10 - 27]	0
	Pb-210	--	634 (6 / 24) [209 - 1239]	T41 (1.6 mi. WNW)	724 (2 / 12) [209 - 1239]	296 (5 / 12) [182 - 370]	0
	Pb-212	--	16 (1 / 24) [16]	T67 13 - 18 mi. N, NNE)	23 (1 / 12) [<LLD - 23]	23 (1 / 12) [<LLD - 23]	0
	Ra-226	--	193 (2 / 24) [129 - 256]	T40 (3 mi. W / WNW)	256 (1 / 12) [<LLD - 256]	32 (1 / 12) [<LLD - 32]	0

LEGEND:

⁽¹⁾ - GB = Gross beta; I-131 = Iodine-131; H-3 = Tritium; GS = Gamma scan.

⁽²⁾ - LLD = Required lower limit of detection based on Turkey Point ODCM.

⁽³⁾ - Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis (F).

⁽⁴⁾ - Locations are specified (1) by name and (2) direction relative to reactor site.

⁽⁵⁾ - Non-routine results are those which exceed ten times the control station value. If no control station value is available, the result is considered non-routine if it exceeds ten times the preoperational value for the location.

⁽⁶⁾ - LLD is not defined in Turkey Point ODCM.

Sample Deviations

Table 7: Sample Deviations Table

Comment No.	Sample Media Affected	Sample Location	Date	Problem	Evaluation / Actions
1	Air Sample	T-41	06/24/20	Faulty Equipment	Low pump flow & unable to adjust flowrate. Unable to adjust flowrate due to valve being at maximum stroke. Replaced pump and flow meter. Flow adjusted and continuous sampling restored. Condition Report (AR) # 02389161
2	Air Sample	T-41	07/07/20	Faulty Equipment	Found in-line flow meter obstructed. Identified and replaced the obstructed in-line flow meter. AR# 02389161
3	Air Sample	T-56	11/04/20	Data record Error	Collection time not recorded on 11/4/20. An estimated time based on reading of 539,100 at 12:05 on 11/09/20 was recorded. AR# 02389161
4	Milk	T-99	11/30/20	Sample Unavailable	Goat milk sample was unavailable this year. The farm has not had any milking goats. AR# 02389161
5	Direct Radiation	SSW-10	12/10/20	Sample Missing	TLD & cricket cage missing. Replaced cage & deployed new TLD. AR# 02389161
6	Air Sample	T-52	12/16/20	Pump Failure	Pump ran for 2 hrs. on 12/16/20, then removed to replace failed pump at T58. Pump replaced on 12/17/20 & time interval adjusted to include runtime from 12/16/20. AR# 02389161
7	Air Sample	T-58	12/16/20	Pump Failure	Pump failed, estimated run time 101 out of 165 hours. T-58 pump failed and replaced with T-52 pump on 12/16/20. AR# 02389161
8	Air Sample	T-64	12/16/20	Pump Failure	Pump failed, estimated run time 78 out of 187 hours. Pump failed and replace with pump from T-56 on 12/16/20. AR# 02389161
9	Air Sample	T-56	12/16/20	Power Outage	T-56 had no vacuum pump for approximately one day. The pump was removed from service to replace the failing pump at T-64. A new pump was installed at this location on 12/17/20. AR# 02389161

ATTACHMENT 2

Monitoring Results Tables

RADIOLOGICAL SURVEILLANCE OF FLORIDA POWER AND LIGHT COMPANY'S

TURKEY POINT SITE 2020

**First Quarter, 2020
Second Quarter, 2020
Third Quarter, 2020
Fourth Quarter, 2020**

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Monitoring Results Tables
Table 8: Air Particulate - Gross Beta

Analysis: Gross Beta				Units: pCi/m ³		
End Date	T41 (Indicator)	T51 (Indicator)	T57 (Indicator)	T58 ⁽¹⁾ (Indicator)	T64 (Control)	T72 (Indicator)
LLD →	0.01	0.01	0.01	0.01	0.01	0.01
01/07/2020	0.014	0.015	0.017	0.021	0.022	0.017
01/15/2020	0.014	0.009	0.013	0.012	0.014	0.011
01/21/2020	0.013	0.013	0.014	0.013	0.014	0.016
01/28/2020	0.013	0.013	0.011	0.012	0.016	0.013
02/05/2020	0.010	0.011	0.017	0.016	0.013	0.017
02/12/2020	0.014	0.016	0.014	0.013	0.015	0.011
02/19/2020	0.007	0.009	0.009	0.012	0.010	0.009
02/25/2020	0.005	0.005	0.004	0.006	0.004	<0.009
03/03/2020	0.010	0.014	0.013	0.014	0.013	0.009
03/10/2020	0.009	0.009	0.009	0.010	0.008	0.012
03/18/2020	0.010	0.012	0.008	0.010	0.008	0.012
03/25/2020	0.009	0.012	0.008	0.017	0.012	0.008
04/01/2020	0.007	0.011	0.010	0.008	0.010	0.009
04/08/2020	0.022	0.019	0.024	0.029	0.023	0.019
04/13/2020	0.018	0.025	0.025	0.026	0.021	0.019
04/22/2020	0.014	0.015	0.019	0.016	0.017	0.015
04/29/2020	0.010	0.020	0.016	0.017	0.014	0.015
05/06/2020	0.018	0.018	0.018	0.016	0.018	0.017
05/13/2020	0.016	0.016	0.015	0.016	0.018	0.015
05/18/2020	0.012	0.011	0.009	0.012	0.012	0.008
05/27/2020	0.013	0.012	0.013	0.015	0.014	0.017
06/03/2020	0.008	0.009	0.011	0.008	0.007	0.012
06/10/2020	0.010	0.009	0.011	0.014	0.011	0.010
06/17/2020	0.013	0.012	0.008	0.007	0.009	0.009
06/24/2020	0.010	0.008	0.006	0.009	0.006	0.005
06/30/2020	0.009	0.012	0.011	0.011	0.012	0.012
07/07/2020	0.008	0.012	0.007	0.011	0.016	0.011
07/13/2020	0.020	0.024	0.017	0.020	0.018	0.020
07/21/2020	0.011	0.011	0.012	0.011	0.013	0.013
07/27/2020	0.005	0.010	0.007	0.006	0.005	0.008
08/04/2020	0.013	0.013	0.011	0.015	0.013	0.014
08/11/2020	0.009	0.010	0.012	0.010	0.006	0.010
08/17/2020	0.012	0.012	0.014	0.007	0.011	0.016
08/26/2020	0.014	0.010	0.013	0.012	0.012	0.011
09/01/2020	0.011	0.010	0.007	0.006	0.008	0.012
09/08/2020	0.018	0.022	0.018	0.017	0.016	0.015
09/14/2020	<0.009	0.006	<0.009	<0.009	0.008	0.004
09/22/2020	0.007	0.007	0.009	0.006	0.006	0.010
09/29/2020	0.006	0.007	0.006	0.008	0.007	0.009
10/06/2020	0.010	0.011	0.010	0.007	0.010	0.010
10/12/2020	0.013	0.008	0.009	0.010	0.007	0.012
10/19/2020	0.009	0.010	0.009	0.011	0.008	0.009
10/26/2020	0.008	0.005	0.008	0.007	0.001	0.005
11/04/2020	0.013	0.011	0.014	0.006	0.015	0.012
11/10/2020	0.007	0.005	<0.011	<0.009	0.004	0.004
11/19/2020	0.012	0.012	0.010	0.012	0.009	0.011
11/25/2020	0.004	<0.008	<0.008	<0.007	<0.008	<0.007
12/02/2020	0.010	0.013	0.012	0.016	0.013	0.010
12/09/2020	0.019	0.019	0.011	0.016	0.018	0.019
12/16/2020	0.014	0.019	0.016	0.024	0.022	0.017
12/23/2020	0.017	0.021	0.019	0.020	0.016	0.020
12/29/2020	0.015	0.014	0.013	0.013	0.010	0.013

⁽¹⁾ Station with highest annual mean.

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Monitoring Results Tables
Table 9: Air Particulate Composite - Gamma

Analysis: Gamma Isotopic			Units: pCi/m ³			
Location	Collection Date	Be-7	K-40	Cs-134	Cs-137	Pb-210
	REQUIRED LLD →	--	--	0.05	0.06	--
T41 (Indicator)	03/25/2020	0.1260	<0.0129	<0.0012	<0.0008	<0.0141
T51 (Indicator)	03/25/2020	0.1280	<0.0201	<0.0011	<0.0009	<0.0282
T57 (Indicator)	03/25/2020	0.1180	<0.0134	<0.0012	<0.0009	<0.0147
T58 (Indicator)	03/25/2020	0.1050	<0.0209	<0.0011	<0.0009	<0.0344
T64 (Control)	03/25/2020	0.1060	<0.0156	<0.0010	<0.0010	<0.0148
T72 (Indicator)	03/25/2020	0.1190	<0.0157	<0.0011	<0.0009	<0.0253
T41 (Indicator)	06/30/2020	0.1300	<0.0189	<0.0009	<0.0008	0.0133
T51 (Indicator)	06/30/2020	0.1220	<0.0142	<0.0012	<0.0010	0.0107
T57 (Indicator)	06/30/2020	0.1370	<0.0128	<0.0012	<0.0011	<0.0154
T58 (Indicator)	06/30/2020	0.1240	<0.0183	<0.0011	<0.0012	<0.0303
T64 (Control)	06/30/2020	0.1310	<0.0196	<0.0009	<0.0006	0.0123
T72 (Indicator)	06/30/2020	0.1390	<0.0127	<0.0012	<0.0009	<0.0154
T41 (Indicator)	09/29/2020	0.0738	<0.0134	<0.0011	<0.0008	0.0058
T51 (Indicator)	09/29/2020	0.0939	<0.0218	<0.0008	<0.0007	0.0086
T57 (Indicator)	09/29/2020	0.0949	<0.0223	<0.0013	<0.0010	0.0058
T58 (Indicator)	09/29/2020	0.0845	<0.0131	<0.0014	<0.0011	<0.0155
T64 (Control)	09/29/2020	0.0926	<0.0197	<0.0010	<0.0006	0.0082
T72 (Indicator)	09/29/2020	0.1200	<0.0208	<0.0011	<0.0009	<0.0088
T41 (Indicator)	12/29/2020	0.1440	<0.0172	<0.0010	<0.0009	0.0079
T51 (Indicator)	12/29/2020	0.1750	<0.0134	<0.0016	<0.0012	<0.0155
T57 (Indicator)	12/29/2020	0.1440	<0.0179	<0.0008	<0.0008	0.0115
T58 (Indicator)	12/29/2020	0.1340	<0.0142	<0.0015	<0.0011	0.0105
T64 (Control)	12/29/2020	0.1670	<0.0211	<0.0010	<0.0009	<0.0105
T72 (Indicator)	12/29/2020	0.1720	<0.0158	<0.0013	<0.0010	<0.0155

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Monitoring Results Tables

Table 11: Direct Radiation– Indicators

Analysis: Gamma Dose			Units: mrem/hr		
Station	1 st Qtr 2020	2 nd Qtr 2020	3 rd Qtr 2020	4 th Qtr 2020	Annual Mean 2020
N-2	3.9	4.0	4.7	3.6	4.0
N-7	3.1	3.3	3.8	2.9	3.3
N-10	3.5	3.6	4.3	3.5	3.7
NNW-2	3.4	3.7	3.7	3.3	3.5
NNW-10	3.3	3.8	4.0	3.3	3.6
NW-1	3.7	3.9	4.4	3.5	3.8
NW-5	2.9	3.3	3.7	3.0	3.2
NW-10⁽¹⁾	4.0	4.4	4.4	3.8	4.1
WNW-2	3.0	3.5	3.7	3.2	3.4
WNW-10	4.1	4.3	4.4	3.5	4.0
W-1	4.0	3.9	4.1	3.6	3.9
W-5	3.2	3.7	4.1	3.2	3.5
W-9	2.6	3.2	3.6	2.8	3.1
WSW-8	3.3	3.4	3.4	3.0	3.3
SW-1	3.9	3.7	3.7	3.1	3.6
SW-8	2.9	2.9	3.1	2.5	2.8
SSW-5	2.7	3.0	3.2	2.7	2.9
SSW-10	3.4	3.3	3.6	⁽²⁾	3.4
S-5	2.9	3.0	3.1	2.6	2.9
S-10	3.7	3.5	3.8	3.1	3.5
SSE-1	2.9	2.9	3.0	2.4	2.8
SSE-10	3.0	3.1	3.0	2.8	3.0

⁽¹⁾ Indicator station with highest annual mean.⁽²⁾ See Sample Deviations Table

Table 12: Direct Radiation – Control

Analysis: Gamma Dose			Units: mrem/Hr		
Station	1 st Qtr 2020	2 nd Qtr 2020	3 rd Qtr 2020	4 th Qtr 2020	Annual Mean 2020
NNE-22	3.6	3.8	4.1	3.5	3.7

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Monitoring Results Tables

Table 14: Shoreline Sediment - Gamma

Analysis: Gamma Isotopic					Units: pCi/kg (dry)				
Location	Collection Date	Be-7	K-40	Cs-137	Pb-210	Ra-226	Th-232	U-235	U-238
	REQUIRED LLD →	--	--	180	--	--	--	--	--
T42 (Indicator)	01/07/2020	<120	92	<11	<1100	556	<49	73	287
T67 (Control)	01/06/2020	<143	826	<13	939	1370	245	182	820
T81 (Indicator)	01/07/2020	<128	308	<11	<1120	681	<52	74	467
T42 (Indicator)	07/10/2020	<110	147	<9	393	466	<39	29	276
T67 (Control)	07/13/2020	<63	104	<5	<292	<183	<26	<12	<86
T81 (Indicator)	07/10/2020	<110	<148	<8	466	481	<38	30	247

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Table 15: Crustacea - Gamma

Analysis: Gamma Isotopic			Units: pCi/kg (wet)		
Location	Collection Date	Sample Type	K-40	Ra-226	Ra-228
REQUIRED LLD →			--	--	--
T67 (Control)	03/11/2020	Blue Crab	1480	<64	<102
T81 (Indicator)	05/18/2020	Blue Crab	1650	<346	<82
T67 (Control)	10/22/2020	Blue Crab	1350	370	<110
T81 (Indicator)	10/21/2020	Blue Crab	1400	706	<83

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Table 16: Fish - Gamma

Analysis: Gamma Isotopic			Units: pCi/kg (wet)		
Location	Collection Date	Sample Type	K-40	Ra-226	Ra-228
REQUIRED LLD →			--	--	--
T67 (Control)	03/10/2020	Mixed Species	2020	<44	<73
T81 (Indicator)	03/11/2020	Mixed Species	2900	<51	<96
T67 (Control)	10/21/2020	Mixed Species	2360	<308	<55
T81 (Indicator)	10/15/2020	Mixed Species	3340	<419	<89

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Table 17: Broad Leaf Vegetation - Gamma

Analysis: Gamma Isotopic				Units: pCi/kg (wet)				
Location	Collection Date	Sample Type	Be-7	K-40	Cs-137	Pb-210	Pb-212	Ra-226
REQUIRED LLD →			--	--	80	--	--	--
T40 (Indicator)	01/07/2020	Brazilian Pepper	2300	3690	9	423	<19	<22
T40 (Indicator)	02/05/2020	Brazilian Pepper	3650	4330	<21	<1380	<28	<33
T40 (Indicator)	03/10/2020	Brazilian Pepper	1680	3310	62	877	<24	<33
T40 (Indicator)	04/10/2020	Brazilian Pepper	998	3218	<20	<1034	<28	256
T40 (Indicator)	05/15/2020	Brazilian Pepper	1070	2280	<16	<729	16	<277
T40 (Indicator)	06/17/2020	Brazilian Pepper	2260	5290	<16	764	<24	<298
T40 (Indicator)	07/13/2020	Brazilian Pepper	2320	4950	18	<294	<21	<259
T40 (Indicator)	08/17/2020	Brazilian Pepper	2070	4120	25	<603	<18	<229
T40 (Indicator)	09/14/2020	Brazilian Pepper	1930	4860	78	<301	<23	<263
T40 (Indicator)	10/12/2020	Brazilian Pepper	1660	5190	11	<283	<22	<251
T40 (Indicator)	11/24/2020	Brazilian Pepper	2200	3470	17	289	<18	<202
T40 (Indicator)	12/09/2020	Brazilian Pepper	3480	5090	<17	<942	<26	<301
T41(Indicator)	01/07/2020	Brazilian Pepper	1210	5030	<17	<906	<26	<33
T41(Indicator)	02/05/2020	Brazilian Pepper	1860	5010	<20	<1380	<29	<30
T41(Indicator)	03/10/2020	Brazilian Pepper	1870	4580	<13	<853	<22	<29
T41(Indicator)	04/10/2020	Brazilian Pepper	1260	4620	<17	1239	<29	<349
T41(Indicator)	05/15/2020	Brazilian Pepper	1140	3800	17	<867	<20	<309
T41(Indicator)	06/17/2020	Brazilian Pepper	1430	3940	6	209	<19	<231
T41(Indicator)	07/13/2020	Brazilian Pepper	1010	4870	981	<959	<28	<429
T41(Indicator)	08/17/2020	Brazilian Pepper	1980	5530	<11	<290	<21	129
T41(Indicator)	09/14/2020	Brazilian Pepper	1950	2890	150	<708	<20	<247
T41(Indicator)	10/12/2020	Brazilian Pepper	2150	4330	<10	<625	<18	<227
T41(Indicator)	11/24/2020	Brazilian Pepper	2370	4230	<12	<678	<18	<241
T41(Indicator)	12/10/2020	Brazilian Pepper	1520	3470	<11	<246	<18	<238
T67 (Control)	01/07/2020	Brazilian Pepper	1780	4820	<18	<1130	<27	<33
T67 (Control)	03/04/2020	Brazilian Pepper	1340	5200	<11	<1020	<22	32
T67 (Control)	03/10/2020	Brazilian Pepper	1190	4990	<18	<1050	<27	<32
T67 (Control)	04/10/2020	Brazilian Pepper	1060	4160	<17	<1060	<24	<359
T67 (Control)	05/19/2020	Brazilian Pepper	723	1860	<12	<766	23	<222
T67 (Control)	06/17/2020	Brazilian Pepper	1600	4460	<11	316	<20	<221
T67 (Control)	07/13/2020	Brazilian Pepper	2290	3850	<12	370	<20	<230
T67 (Control)	08/17/2020	Brazilian Pepper	1850	3700	12	356	<18	<208
T67 (Control)	09/14/2020	Brazilian Pepper	1650	2950	27	182	<20	<233
T67 (Control)	10/12/2020	Brazilian Pepper	2000	5720	10	255	<23	<264
T67 (Control)	11/25/2020	Brazilian Pepper	1650	2630	<12	<561	<16	<201
T67 (Control)	12/08/2020	Brazilian Pepper	1040	4470	<13	<684	<21	<231

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Table 18: Supplemental Direct Radiation– Indicators

Analysis: Gamma Dose			Units: mrem/hr		
Station	1 st Qtr 2020	2 nd Qtr 2020	3 rd Qtr 2020	4 th Qtr 2020	Annual Mean 2020
NNW-6	3.2	3.5	3.7	3.2	3.4
NW-7⁽¹⁾	3.9	4.0	4.1	3.6	3.9
NW-8	3.5	4.1	4.1	3.4	3.8
WNW-3	3.1	3.5	3.6	3.2	3.4
WNW-6	3.2	3.4	3.5	3.0	3.3
W-8	3.5	3.8	4.1	3.4	3.7
ENE-1	3.0	2.9	3.1	2.3	2.8
T72	3.3	3.5	3.8	3.2	3.5
PTN-1	3.2	3.5	3.4	3.2	3.3

⁽¹⁾ Indicator station with highest annual mean.

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Table 19: Supplemental Air Particulate - Gross Beta

Analysis: Gross Beta		Units: pCi/m ³
End Date	T52 (Indicator)	T56 ⁽¹⁾ (Indicator)
<u>LLD</u> →	<u>0.01</u>	<u>0.01</u>
01/07/2020	0.018	0.015
01/15/2020	0.014	0.013
01/21/2020	0.010	0.013
01/28/2020	0.012	0.015
02/05/2020	0.014	0.013
02/12/2020	0.016	0.010
02/19/2020	0.005	0.008
02/25/2020	<0.009	0.007
03/03/2020	0.010	0.012
03/10/2020	0.009	0.011
03/18/2020	0.004	0.009
03/25/2020	0.007	0.007
04/01/2020	0.011	0.012
04/08/2020	0.023	0.020
04/13/2020	0.027	0.022
04/22/2020	0.015	0.017
04/29/2020	0.015	0.016
05/06/2020	0.014	0.011
05/13/2020	0.017	0.016
05/18/2020	0.009	0.008
05/27/2020	0.015	0.015
06/03/2020	0.010	0.010
06/10/2020	0.004	0.013
06/17/2020	0.011	0.009
06/24/2020	0.008	0.007
06/30/2020	0.009	0.012
07/07/2020	0.012	0.010
07/13/2020	0.021	0.022
07/21/2020	0.012	0.017
07/27/2020	0.005	0.006
08/04/2020	0.010	0.013
08/11/2020	0.010	0.009
08/17/2020	0.009	0.009
08/26/2020	0.012	0.011
09/01/2020	0.007	0.011
09/08/2020	0.019	0.016
09/14/2020	<0.010	0.007
09/22/2020	0.009	0.007
09/29/2020	0.008	0.009
10/06/2020	0.011	0.007
10/12/2020	0.008	0.011
10/19/2020	0.013	0.012
10/26/2020	0.007	0.007
11/04/2020	0.010	0.019
11/10/2020	<0.009	0.004
11/19/2020	0.012	0.009
11/25/2020	<0.007	<0.008
12/02/2020	0.015	0.018
12/09/2020	0.017	0.019
12/16/2020	0.017	0.016
12/23/2020	0.018	0.020
12/29/2020	0.012	0.013

⁽¹⁾ Station with highest annual mean.

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Table 20: Supplemental Air Particulate Composite - Gamma

Analysis: Gamma Isotopic		Units: pCi/m ³				
Location	Collection Date	Be-7	K-40	Cs-134	Cs-137	Pb-210
	REQUIRED LLD →	--	--	0.05	0.06	--
T52 (Indicator)	03/25/2020	0.1090	<0.0132	<0.0013	<0.0008	0.014
T56 (Indicator)	03/25/2020	0.1320	<0.0213	<0.0012	<0.0009	<0.0343
T52 (Indicator)	06/30/2020	0.1390	<0.0215	<0.0010	<0.0010	<0.0317
T56 (Indicator)	06/30/2020	0.1090	<0.0170	<0.0009	<0.0006	<0.0097
T52 (Indicator)	09/29/2020	0.1070	<0.0228	<0.0014	<0.0010	<0.0096
T56 (Indicator)	09/29/2020	0.0937	<0.0173	<0.0008	<0.0007	<0.0094
T52 (Indicator)	12/29/2020	0.1550	<0.0155	<0.0010	<0.0008	<0.0100
T56 (Indicator)	12/29/2020	0.1920	<0.0157	<0.0012	<0.0010	0.0131

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Table 21: Supplemental Air Cartridges - Iodine-131

Analysis: Gross Beta		Units: pCi/m ³
End Date	T52 (Indicator)	T56 ⁽¹⁾ (Indicator)
LLD →	0.07	0.07
01/07/2020	<0.02	<0.02
01/15/2020	<0.02	<0.02
01/21/2020	<0.02	<0.03
01/28/2020	<0.02	<0.02
02/05/2020	<0.02	<0.02
02/12/2020	<0.02	<0.01
02/19/2020	<0.01	<0.02
02/25/2020	<0.03	<0.03
03/03/2020	<0.02	<0.02
03/10/2020	<0.02	<0.02
03/18/2020	<0.01	<0.01
03/25/2020	<0.02	<0.02
04/01/2020	<0.01	<0.01
04/08/2020	<0.04	<0.03
04/13/2020	<0.03	<0.03
04/22/2020	<0.03	<0.03
04/29/2020	<0.02	<0.01
05/06/2020	<0.03	<0.03
05/13/2020	<0.03	<0.03
05/18/2020	<0.03	<0.03
05/27/2020	<0.02	<0.01
06/03/2020	<0.01	<0.03
06/10/2020	<0.03	<0.03
06/17/2020	<0.03	<0.01
06/24/2020	<0.01	<0.01
06/30/2020	<0.02	<0.02
07/07/2020	<0.01	<0.02
07/13/2020	<0.02	<0.02
07/21/2020	<0.02	<0.02
07/27/2020	<0.02	<0.02
08/04/2020	<0.01	<0.01
08/11/2020	<0.02	<0.02
08/17/2020	<0.02	<0.02
08/26/2020	<0.01	<0.01
09/01/2020	<0.02	<0.02
09/08/2020	<0.02	<0.02
09/14/2020	<0.03	<0.03
09/22/2020	<0.01	<0.01
09/29/2020	<0.03	<0.03
10/06/2020	<0.02	<0.02
10/12/2020	<0.03	<0.03
10/19/2020	<0.02	<0.03
10/26/2020	<0.02	<0.02
11/04/2020	<0.01	<0.01
11/10/2020	<0.03	<0.03
11/19/2020	<0.02	<0.02
11/25/2020	<0.03	<0.03
12/02/2020	<0.02	<0.02
12/09/2020	<0.02	<0.02
12/16/2020	<0.02	<0.02
12/23/2020	<0.02	<0.02
12/29/2020	<0.04	<0.04

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Table 22: Supplemental Surface Water – Tritium and Gamma

Analysis: Gamma Isotopic				Units: pCi/L											
Location	End Date	H-3	K-40	Location	End Date	H-3	K-40	Location	End Date	H-3	K-40	Location	End Date	H-3	K-40
REQUIRED LLD →		3.000	--	REQUIRED LLD →		3.000	--	REQUIRED LLD →		3.000	--	REQUIRED LLD →		3.000	--
T08 (Indicator)	01/07/2020	13455	585	T75 (Indicator)	01/07/2020	<140	<41	T84 (Indicator)	01/07/2020	12468	586	T97 (Indicator)	01/07/2020	12537	584
T08 (Indicator)	02/05/2020	10571	569	T75 (Indicator)	02/05/2020	<146	<38	T84 (Indicator)	02/05/2020	11034	573	T97 (Indicator)	02/05/2020	10727	654
T08 (Indicator)	03/11/2020	12904	619	T75 (Indicator)	03/09/2020	<141	<86	T84 (Indicator)	03/10/2020	14945	682	T97 (Indicator)	03/11/2020	13820	671
T08 (Indicator)	04/10/2020	27529	686	T75 (Indicator)	04/10/2020	<136	<45	T84 (Indicator)	04/10/2020	27099	646	T97 (Indicator)	04/10/2020	25519	738
T08 (Indicator)	05/15/2020	13349	650	T75 (Indicator)	05/15/2020	<144	<88	T84 (Indicator)	05/15/2020	12953	598	T97 (Indicator)	05/15/2020	12759	619
T08 (Indicator)	06/16/2020	5456	499	T75 (Indicator)	06/17/2020	<137	<42	T84 (Indicator)	06/17/2020	5584	560	T97 (Indicator)	06/16/2020	5959	437
T08 (Indicator)	07/10/2020	3809	456	T75 (Indicator)	07/13/2020	<139	<78	T84 (Indicator)	07/10/2020	3525	454	T97 (Indicator)	07/10/2020	3438	454
T08 (Indicator)	08/14/2020	3020	439	T75 (Indicator)	08/14/2020	<139	<58	T84 (Indicator)	08/14/2020	3535	413	T97 (Indicator)	08/14/2020	3496	413
T08 (Indicator)	09/11/2020	3553	487	T75 (Indicator)	09/14/2020	<139	<32	T84 (Indicator)	09/11/2020	3926	421	T97 (Indicator)	09/11/2020	4017	421
T08 (Indicator)	10/09/2020	7343	359	T75 (Indicator)	10/09/2020	<134	<71	T84 (Indicator)	10/09/2020	8129	334	T97 (Indicator)	10/09/2020	8114	372
T08 (Indicator)	11/24/2020	5318	349	T75 (Indicator)	11/24/2020	<139	<69	T84 (Indicator)	11/25/2020	5296	286	T97 (Indicator)	11/24/2020	5230	310
T08 (Indicator)	12/10/2020	5112	385	T75 (Indicator)	12/10/2020	<139	<61	T84 (Indicator)	12/10/2020	5051	290	T97 (Indicator)	12/10/2020	4826	315

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Table 23: Supplemental Shoreline Sediment - Gamma

Analysis: Gamma Isotopic					Units: pCi/kg (dry)				
Location	Collection Date	Be-7	K-40	Cs-137	Pb-210	Ra-226	Th-232	U-235	U-238
	REQUIRED LLD →	--	--	180	--	--	--	--	--
T01 (Indicator)	01/07/2020	<145	494	<12	805	797	<57	86	193
T02 (Indicator)	01/07/2020	<154	814	12	<1380	851	<80	111	339
T03 (Indicator)	01/07/2020	<257	2940	110	4660	2620	215	266	974
T04 (Indicator)	01/07/2020	619	681	11	1100	769	<59	81	492
T07 (Indicator)	01/07/2020	<129	578	24	673	846	<60	64	278
T08 (Indicator)	01/07/2020	<133	912	15	1100	788	61	96	319
T10 (Indicator)	01/07/2020	<199	871	<20	<1660	760	<90	<29	<325
T84* (Indicator)	01/07/2020	71	599	<15	2140	1510	61	146	503
T85* (Indicator)	01/07/2020	<133	690	<11	863	996	65	113	696
T84* (Indicator)	07/10/2020	<148	531	<13	2420	1370	<67	86	173
T85* (Indicator)	07/10/2020	<126	560	9	633	837	<87	53	245

* Note that site T48 is the same location as site T05, and site T85 is the same location as site T06.

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Table 24: Supplemental Broad Leaf Vegetation - Gamma

Analysis: Gamma Isotopic				Units: pCi/kg (wet)		
Location	Collection Date	Sample Type	Be-7	K-40	Cs-137	Ra-226
REQUIRED LLD →			--	--	80	--
T43 (Indicator)	01/07/2020	Corn	<68	3130	<8	<14
T44 (Indicator)	02/11/2020	Corn	<55	2230	<7	<14
T45 (Indicator)	04/08/2020	Green String Beans	<136	2348	<18	<337

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Interlaboratory Comparison Program Results

1.0 Summary

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 State laboratory participated in MAPEP 42 and 43. These satisfied the requirement of Control 5.3 of the ODCM for the Interlaboratory Comparison Program.

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Interlaboratory Comparison Program Results

Table 25: DOE's Mixed Analyte Performance Evaluation Program (MAPEP) 42 RESULTS

Program status	Radionuclide	Result	Ref. Value	Flag (Evaluation)	Acceptance Range
Matrix: RdF Air Filter Bq/filter					
Required	MN54	0.001		A	False Positive Test
Required	CO57	1.523	1.50	A	1.05-1.95
Required	CO60	1.270	1.23	A	0.86-1.60
	ZN65	1.380	1.18	A	0.83-1.53
Required	CS134	0.585	0.600	A	0.420-0.780
Required	CS137	0.766	0.735	A	0.515-0.956
Matrix: GrF Air Filter Bq/filter					
Required	Gross Beta	2.13	2.00	A	1.00-3.00
Required	Gross Alpha	1.71	1.24	A	0.37-2.11
Matrix: MaS Soil Bq/kg					
Required	K40	652.00	625	A	438-813
	MN54	980.20	945	A	662-1229
	CO57	994.20	1071	A	750-1392
	CO60	0.87		A	False Positive Test
	ZN65	804.80	751	A	526-976
	CS134	1166.54	1114	A	780-1448
Required	CS137	1054.0	1020	A	714-1326
Matrix: MaW Water Bq/L					
Required	H3	211.43	196	A	137-255
	MN54	19.95	19.6	A	13.7-25.5
	CO57	19.08	19.7	A	13.8-25.6
Required	CO60	10.45	10.6	A	7.4-13.8
	ZN65	22.120	22.2	A	15.5-28.9
Required	CS134	17.547	18.5	A	13.0-24.1
Required	CS137	11.68	11.3	A	7.9-14.7
	SR90	-0.028		A	False Positive Test
Matrix: RdV Vegetation, Bq/sample					
	MN54	4.867	4.58	A	3.21-5.95
	CO57	-0.011		A	False Positive Test
Required	CO60	2.733	2.79	A	1.95-3.63
	ZN65	3.983	3.79	A	2.65-4.93
	CS134	3.664	3.82	A	2.67-4.97
Required	CS137	2.867	2.77	A	1.94-3.60

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

A false positive test with an "A" designation flag identifies the result as less than the detectable activity, since MAPEP does not report zero values. Sensitivity Evaluation has no acceptance range but an identified value at low activity.

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Interlaboratory Comparison Program Results

Table 26: DOE's Mixed Analyte Performance Evaluation Program (MAPEP) 43 RESULTS

Program status	Radionuclide	Result	Ref. Value	Flag (Evaluation)	Acceptance Range
Matrix: RdF Air Filter Bq/filter					
Required	MN54	1.433	1.40	A	0.98 – 1.82
Required	CO57	0.005		A	False Positive Test
Required	CO60	1.632	1.73	A	1.21 – 2.25
	ZN65	2.117	2.00	A	1.40 – 2.60
Required	CS134	1.561	1.83	A	1.28 – 2.38
Required	CS137	0.944	0.996	A	0.697 – 1.295
Matrix: GrF Air Filter Bq/filter					
Required	Gross Beta	1.022	0.915	A	0.458 – 1.373
Required	Gross Alpha	0.549	0.528	A	0.158 – 0.898
Matrix: MaS Soil Bq/kg					
Required	K40	573.94	622	A	435 - 809
	MN54	579.44	610	A	427 - 793
	CO57	936.42	1100	A	770 - 1430
	CO60	925.00	1000	A	700 - 1300
	ZN65	448.06	470	A	329 - 611
	CS134	682.26	710	A	497 - 923
Required	CS137	0.80		A	False Positive Test
Matrix: MaW Water Bq/L					
Required	H3	381.57	360	A	252 - 468
	MN54	0.010		A	False Positive Test
	CO57	-0.015		A	False Positive Test
Required	CO60	11.612	12.2	A	8.5 – 15.9
	ZN65	17.212	16.9	A	11.8 – 22.0
Required	CS134	13.549	15.2	A	10.6 – 19.8
Required	CS137	14.268	14.3	A	10.0 – 18.6
	SR90	11.468	11.6	A	8.1 – 15.1
Matrix: RdV Vegetation, Bq/sample:					
	MN54	6.261	5.84	A	4.09 – 7.59
	CO57	7.992	6.67	A	4.67 – 8.67
Required	CO60	4.425	4.13	A	2.89 – 5.37
	ZN65	7.075	6.38	A	4.47 – 8.29
	CS134	4.911	4.94	A	3.46 – 6.42
Required	CS137	0.028		A	False Positive Test

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

A false positive test with an "A" designation flag identifies the result as less than the detectable activity, since MAPEP does not report zero values. Sensitivity Evaluation has no acceptance range but an identified value at low activity.

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1.0 Description of Program

Turkey Point Nuclear maintains a sampling and analysis program to meet procedural requirements. 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 GEL lab.

2.0 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 9317 pCi/L in 2020 with a max concentration of 27,529 pCi/L. This supports the expectation to see tritium in subsurface water collected either on-site or off-site close to the (within the Owner Controlled Area) cooling canal system. Twenty-eight (28) wells were involved in the 2020 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).

3.0 Results

The tritium results for the groundwater wells were from <MDA to 9380 pCi/L. All results were less than the limits of the Offsite Dose Calculation Manual, Table 5.1-2, Reporting Levels for Radioactivity Concentrations in Environmental Samples. Storm drain outfalls occasionally are below the tidal mark of the canal and will have ingress of canal water into the storm drain. The higher levels of tritium in the storm drain section are due to the canal water ingress into the storm drain.

Tabular results follow:

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Monitoring Results Tables
Table 27: Ground Water – Tritium

Analysis: Tritium		Units: pCi/L			
Location	First Quarter 2020 H-3	Second Quarter 2020 H-3	Third Quarter 2020 H-3	Fourth Quarter 2020 H-3	
REQUIRED LLD →	3.000	3.000	3.000	3.000	
PTPED-1	237	270	101	101	
CD-1	327	399	50	50	
P-94-2	---	577	529	---	
P-94-4	554	395	529	529	
STP-1	---	52	84	---	
PTN-MW-1s	---	4	244	---	
PTN-MW-1i	---	232	197	---	
PTN-MW-1d	---	1670	1410	---	
PTN-MW-2s	---	143	25	---	
PTN-MW-3s	---	37	66	---	
PTN-MW-4s	80	88	45	45	
PTN-MW-4i	-95	35	1610	-17	
PTN-MW-4d	-6	1	45	6	
PTN-MW-5s	---	209	951	951	
PTN-MW-5i	208	334	136	89	
PTN-MW-5d	1810	1590	1500	1500	
PTN-MW-6s	---	-83	-90	---	
PTN-MW-6i	---	---	---	---	
PTN-MW-6d	---	1180	1340	---	
PTN-MW-7s	563	613	564	434	
PTN-MW-7i	528	762	35.2	-57	
PTN-MW-7d	27	125	151	120	
PTN-MW-8s	4200	1760	2100	1300	
PTN-MW-9s	633	1760	2100	843	
PTN-MW-10s	---	-2	-43	---	
PTN-MW-10i	---	643	923	---	
PTN-MW-10d	---	16	44	---	
PTN-MW-11s	58	106	94	94	
PTN-MW-12s	726	470	582	582	
NE StrmDrain	534	8240	612	1630	
SE StrmDrain	9380	113	dry	5050	
W StrmDrain	346	343	1570	4970	
CRF StrmDrain	dry	dry	dry	dry	

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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.

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Figure 5: Onsite Tritium Monitoring Wells

