



December 14, 2021

L-2021-225  
10 CFR 50.36a

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

Re: St. Lucie Units 1 and 2  
Docket Nos. 50-335 and 50-389  
Correction to the 2020 Annual Radioactive Effluent Release Report

Reference:

1. FPL letter L-2021-049 dated March 1, 2021: 2020 Annual Radioactive Effluent Release Report

By letter dated March 1, 2021 (Reference 1, L-2021-049), Florida Power & Light submitted the 2020 Annual Radioactive Effluent Release Report for St. Lucie Units 1 and 2 pursuant to 10 CFR 50.36a(a)(2) and Technical Specification (TS) 6.9.1.7. The 2020 report provided information for the 12-month period beginning January 1, 2020 and ending December 31, 2020.

The 2020 Annual Radioactive Effluent Release Report (L-2021-049) was found to contain an error related to the amount of tritium reported in the liquid releases for the third and fourth quarters. Further investigation revealed and corrected two additional errors with gaseous release permits being closed on the wrong date, making it appear that the releases were 24 hours longer (i.e., greater) than actual. L-2021-049, Enclosure 1, Table 3.1, Gaseous Effluents and Liquid Effluents, and Table 3.3, Dose Assessments, are corrected in the enclosure.

Please contact Richard Sciscente at 772-467-7156 with any questions regarding this submittal.

Sincerely,

A handwritten signature in black ink, appearing to read 'Wyatt Godes', is written over a light blue horizontal line.

Wyatt Godes  
Licensing Manager  
St. Lucie Plant

WG/rcs

Enclosure: Combined Annual Radioactive Effluent Release Report

Florida Power & Light Company

**ENCLOSURE 1**

**COMBINED ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT  
(10 PAGES)**

This portion of the 2020 Annual Radioactive Effluent Release Report was originally submitted with L-2021-049 on March 1, 2021. It is included unchanged with this correction letter for context and completeness.

**FLORIDA POWER & LIGHT COMPANY**  
**ST. LUCIE UNITS 1 AND 2**  
**ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT**  
**JANUARY 1, 2020 THROUGH DECEMBER 31, 2020**

**1.0 PROGRAM DESCRIPTION**

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## **1.0 PROGRAM DESCRIPTION**

### **Regulatory Limits**

The Offsite Dose Calculation Manual (ODCM) Radiological Effluent Control limits applicable to the release of radioactive material in liquid and gaseous effluents are described in the following sections.

### **Fission and Activation Gases (Noble Gases)**

The dose rate due to radioactive materials released in gaseous effluents from the site to areas at and beyond the site boundary shall be limited to less than or equal to 500 mrem/yr to the whole body and less than or equal to 3000 mrem/yr to the skin.

The air dose due to noble gases released in gaseous effluents, from each unit, to areas at and beyond the site boundary shall be limited to the following:

- a. During any calendar quarter: Less than or equal to 5 mrad for gamma radiation and less than or equal to 10 mrad for beta radiation, and
- b. During any calendar year: Less than or equal to 10 mrad for gamma radiation and less than or equal to 20 mrad for beta radiation.

### **Iodine-131, Iodine-133, Tritium, Carbon-14, and Radioactive Material in Particulate Form**

The dose rate due to iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half lives greater than 8 days, released in gaseous effluents from the site to areas at and beyond the site boundary, shall be limited to less than or equal to 1500 mrem/yr to any organ.

The dose to a MEMBER OF THE PUBLIC from iodine-131, iodine-133, tritium, carbon-14, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released, from each unit, to areas at and beyond the site boundary, shall be limited to the following:

- a. During any calendar quarter: Less than or equal to 7.5 mrem to any organ, and
- b. During any calendar year: Less than or equal to 15 mrem to any organ.

### **Liquid Effluents**

The concentration of radioactive material released in liquid effluents to unrestricted areas shall be limited to 10 times the concentrations specified in 10 CFR Part 20, Appendix B, Table 2, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2.0E-4  $\mu\text{Ci/ml}$  total activity. The dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released, from each unit, to unrestricted areas shall be limited:

- a. During any calendar quarter to less than or equal to 1.5 mRem to the whole body and to less than or equal to 5 mrem to any organ, and
- b. During any calendar year to less than or equal to 3 mRem to the whole body and to less than or equal to 10 mrem to any organ.

**Total Dose**

The annual (calendar year) dose or dose commitment to any MEMBER OF THE PUBLIC due to releases of radioactivity and to radiation from uranium fuel cycle sources shall be limited to less than or equal to 25 mrem to the whole body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrem.

**Effluent Concentration Limits**

**Gaseous Effluents**

For gaseous effluents, effluent concentration limits (ECL) values are not directly used in release rate calculations since the applicable limits are expressed in terms of dose rate at the site boundary.

**Liquid Effluents**

The values specified in 10 CFR Part 20, Appendix B, Table 2, Column 2 are used as the ECL for liquid radioactive effluents released to unrestricted areas. A value of 2.0E-04  $\mu\text{Ci/ml}$  is used as the ECL for dissolved and entrained noble gases in liquid effluents.

**Measurements and Approximations of Total Radioactivity**

Measurements of total radioactivity in liquid and gaseous radioactive effluents were accomplished in accordance with the sampling and analysis requirements of Tables 4.11-1 and 4.11-2, respectively, of the St. Lucie ODCM. Estimates of errors are in accordance with Methodology Section 4.0.4, of the ODCM.

The estimate of errors associated with values reported are as follows:

<u>Error Topic</u>	<u>LIQUID</u>		<u>GASEOUS</u>	
	<u>Avg %</u>	<u>Max %</u>	<u>Avg %</u>	<u>Max %</u>
Release Point Mixing	2	5	NA	NA
Sampling	1	5	2	5
Sample Preparation	1	5	1	5
Sample Analysis	3	10	3	10
Release Volume	<u>2</u>	<u>5</u>	<u>4</u>	<u>15</u>
Total %	9	30	10	35

(above values are examples only)

The predictability of error for radioactive releases can only be applied to nuclides that are predominant in sample spectrums. Nuclides that are near background relative to the predominant nuclides in a given sample could easily have errors greater than the above listed maximums.

**Liquid Radioactive Effluents**

Each batch release was sampled and analyzed for gamma emitting radionuclides using gamma spectroscopy, prior to release. Composite samples were analyzed monthly for tritium and gross alpha radioactivity in the onsite laboratory using liquid scintillation and air ion chamber counting techniques, respectively. Composite samples were analyzed quarterly for Sr-89, Sr-90, Fe-55, Ni-63 and C-14 by a contract laboratory. The results of the composite analyses from the previous month or quarter were used to estimate the quantities of these radionuclides in liquid effluents during the current month or quarter.

The total radioactivity in liquid effluent releases was determined from the measured and estimated concentrations of each radionuclide present and the total volume of the effluent released during periods of discharge.

**Gaseous Radioactive Effluents**

Each gaseous batch was sampled and analyzed for radioactivity prior to release. For releases from gas decay tanks, noble gas grab samples were analyzed for gamma emitting radionuclides using gamma spectroscopy. For releases from the reactor containment buildings, samples were taken of noble gas and tritium grab samples and analyzed for gamma emitting radionuclides prior to each release. The results of the analyses and the total volume of effluent released were used to determine the total amount of radioactivity released in the batch mode.

For continuous effluent release pathways, noble gas and tritium grab samples were collected and analyzed weekly for gamma emitting radionuclides by gamma spectroscopy and liquid scintillation counting techniques, respectively. Continuous release pathways were continuously sampled using radioiodine absorbers and particulate filters. The radioiodine absorbers and particulate filters were analyzed weekly for gamma emitting radionuclides using gamma spectroscopy. Results of the noble gas and tritium grab samples, radioiodine absorber and particulate filter analyses from the current week and the average effluent flow rate for the previous week were used to determine the total amount of radioactivity released in the continuous mode. The particulate filters were analyzed weekly for gross alpha activity in the onsite laboratory using the air ion chamber counting technique. Quarterly composites of particulate filters were analyzed for Sr-89 and Sr-90 by a contract laboratory.

**Meteorological Monitoring Program**

In accordance with ODCM Administrative Control 3.11.2.6.b., a summary of hourly meteorological data, collected during 2020, is retained onsite. This data is available for review by the NRC upon request. During 2020, the goal of 90% joint data recovery was met. Actual meteorological data collected during the year was used for the offsite dose calculations in this report.

**Carbon-14 Dose Estimation**

The estimate of Carbon-14 (C-14) released from the St. Lucie Nuclear Plant was derived from the EPRI document, “Estimation of Carbon-14 in Nuclear Power Plant Gaseous Effluents”, Report 1021106, issued December 2010.

The site specific source term values used in the St. Lucie calculations were taken from the PWR Section, Page 4-28 of the report, and employed the proxy generation rate values for a Combustion Engineering reactor. The actual 2020 operating data for the units was employed for the calculations to derive the total curies released for each unit.

The total amount of C-14 released in 2020 from Unit 1 was 11.54 Ci, and the total amount of C-14 released in 2020 from Unit 2 was 10.53 Ci.

The highest calculated dose exposure pathway from C-14 is “Bone Dose” to a “Child” from consumption of garden produce. A “Child” consuming vegetables and produce from the garden located at 2.0 miles in the West-South-West direction from the plant would have received a total combined “Bone Dose”, from C-14, of 1.67E-01 mrem/yr.

Assessment of radiation dose from radioactive effluents to members of the public due to their activities inside the site boundary assumes the visitor to be a Lifeguard at Walton Rocks Beach Recreation Area located 1 mile southeast of the site. Dose to the visitor on site for calendar year 2020 is found to be 2.76E-04 mrem/yr Total Body dose. See Section 3.4, Dose Assessments, for more detail.

This is a fraction of the 1 mrem annual whole body dose received by the average US citizen from natural occurring Carbon-14, primarily generated through cosmogenesis in the terrestrial biosphere. (Reference National Council of Radiation Protection Report 45, Natural Background Radiation in the United States.)

All C-14 dose calculations are based on Regulatory Guide 1.109 values.

## **2.0 SUPPLEMENTAL INFORMATION**

### **2.1 Abnormal Releases or Abnormal Discharges**

No abnormal (unplanned) releases or discharges occurred during the report period.

### **2.2 Non-Routine Planned Discharges**

No non-routine planned discharges occurred during the report period.

### **2.3 Radioactive Waste Treatment System Changes**

No changes were made to the Radioactive Waste Treatment System during the report period.

### **2.4 Annual Land Use Census Changes**

No changes were made to the Annual Land Use Census during the report period.

### **2.5 Effluent Monitoring System Inoperability**

No effluent monitors were out of service for greater than 30 days during the report period.

### **2.6 Offsite Dose Calculation Manual Changes**

No changes were made to the Offsite Dose Calculation Manual during the report period.

### **2.7 Process Control Program Changes**

No changes were made to the Process Control Program during the report period.

### **2.8 Corrections to Previous Reports**

The 2018 ARERR, Table 3.1, Gaseous Effluents and Liquid Effluents, included a data entry error that was subsequently carried forward into additional tabulated totals. The 2018 third quarter summation of releases was conservatively reported higher than actual for Iodines and Halogens and for Particulates. This error was corrected in April of 2020 and subsequently reported to the NRC per Enclosure 1 of letter L-2020-047, dated April 20, 2020.



## 2.9 Other

### **AR 2375532 – Incorrect Calculation of Total Suspended Solids in Discharge Permit**

The Total Suspended Solids (TSS) calculated to support approval of the October 20, 2020 South Pond Discharge Permit was performed incorrectly. The TSS calculated on CY-SL-102-0006 Attachment 2, Worksheet for Environmental Samples, showed 1.00 ppm. The correct value should have been 2.6 ppm. The correct value of 2.6 ppm was well below the TSS monthly average limit of 30 ppm, so there was no immediate consequence of the error. The corrective action program human performance learning opportunity review determined that leadership did not recognize the impact this may have on the permit and failed to validate the TSS calculation during supervisory review because of the simplistic nature of the calculation. Corrective actions include procedure change revision (PCR) 2379458 to correct CY-SL-102-0006, Determination of Suspended Solids in Water, and CY-SL-102-0104, Processing Aerated Liquid Wastes. An independent verification was added to the attachment for the TSS calculation and check-off steps were added to the permit generation for the supervisor to ensure that independent verifications were performed.

### **AR 2347756 – Groundwater: Elevated Results for January 2020**

On January 28, 2020, Chemistry collected the January monthly required groundwater samples and sent the samples to GEL Lab for analysis. The result for Monitoring Well MW-6, located on the south side of the access road in the radiation control area (RCA), in front of the Unit 1 component cooling water (CCW) heat exchangers, was 18,200 pCi/L for tritium. Although this well consistently has results greater than minimum detectable activity (MDA), this result was significantly higher than previous months, with December's result being 6,560 pCi/L. A significant increase in concentration of tritium in a groundwater well is required to be documented in a CR. This concentration was not reportable. The reportable limit is 30,000 pCi/L per EPA 40CFR141.

**South Pond Settling Basin Release Summary**

Fourteen batch releases occurred during the report period from the South Settling Basin to the Intake Canal to lower the water level due to periods of higher than normal rainfall. All releases were analyzed according to the ODCM and site procedural requirements and were found to have no detectable gamma, tritium, alpha, or hard-to-detect isotopes. The releases are summarized below:

<b>Release Start Date</b>	<b>Volume (Gallons)</b>
2/7/2020	2,644,164
5/15/2020	851,516
5/25/2020	13,739,987
6/3/2020	7,512,519
6/11/2020	68,724
6/18/2020	1,154,827
7/23/2020	5,082,000
7/30/2020	6,913,985
8/21/2020	4,677,901
10/1/2020	5,140,599
10/8/2020	5,033,682
10/21/2020	4,157,393
11/5/2020	5,162,509
11/11/2020	5,076,956



**3.0 TABLES**

**3.1 Gaseous Effluents and Liquid Effluents**

**3.2 Solid Waste Storage and Shipments**

**3.3 Dose Assessments**

**3.4 Visitor Dose**

**TABLE 3.1**

**GASEOUS EFFLUENTS AND LIQUID EFFLUENTS  
(25 PAGES)**

This portion of the 2020 Annual Radioactive Effluent Release Report was originally submitted with L-2021-049 on March 1, 2021. The attached table has been corrected and replaced in its entirety.

Reg. Guide 1.21, Table 5A and 5B - Liquid and Gas Batch Release Summary

Unit: Site

Starting: 1-Jan-2020 Ending: 31-Dec-2020

A. Liquid Batch Release Totals	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Year Totals
1. Number of Batch Releases		21	8	10	11	50
2. Total duration of batch releases	min	2.11E+04	4.54E+04	2.77E+04	4.86E+04	1.43E+05
3. Maximum batch release duration	min	5.76E+03	1.00E+04	9.96E+03	1.00E+04	1.00E+04
4. Average batch release duration	min	1.01E+03	5.68E+03	2.77E+03	4.42E+03	2.86E+03
5. Minimum batch release duration	min	4.68E+02	6.51E+02	5.65E+02	5.81E+02	4.68E+02
B. Gas Batch Release Totals	Units	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Year Totals
1. Number of Batch Releases		65	58	58	51	232
2. Total duration of batch releases	min	6.47E+04	1.98E+04	1.93E+04	1.75E+04	1.21E+05
3. Maximum batch release duration	min	2.16E+04	6.00E+02	6.00E+02	6.00E+02	2.16E+04
4. Average batch release duration	min	9.96E+02	3.41E+02	3.33E+02	3.43E+02	5.23E+02
5. Minimum batch release duration	min	1.50E+01	2.90E+01	2.90E+01	5.00E+00	5.00E+00

Reg. Guide 1.21, Table 6A and 6B - Liquid and Gas Abnormal Release Summary

Unit: Site

Starting: 1-Jan-2020 Ending: 31-Dec-2020

<u>A. Liquid Abnormal Release Totals</u>	<u>Units</u>	<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>	<u>Year Totals</u>
1. Number of Abnormal Releases		0	0	0	0	0
2. Total Activity of abnormal releases	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<u>B. Gas Abnormal Release Totals</u>	<u>Units</u>	<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>	<u>Year Totals</u>
1. Number of Abnormal Releases		0	0	0	0	0
2. Total Activity of abnormal releases	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Reg. Guide 1.21, Table 1A, Gaseous Effluents - Summation of All Releases

Unit: Site

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Total Release	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual	Uncertainty
<b>A. Fission and Activation Gases</b>							
1. Total Release	Ci	7.59E+00	2.97E-01	2.97E-01	2.83E-01	8.46E+00	
2. Average Release Rate for Period	uCi/s	9.65E-01	3.78E-02	3.74E-02	3.56E-02	2.68E-01	
3. Percent of Limit	%						
<b>B. Iodines and Halogens</b>							
1. Total Release	Ci	6.69E-05	4.43E-07	0.00E+00	0.00E+00	6.74E-05	
2. Average Release Rate for Period	uCi/s	8.51E-06	5.64E-08	0.00E+00	0.00E+00	2.13E-06	
3. Percent of Limit	%						
<b>C. Particulates</b>							
1. Total Release	Ci	8.43E-05	8.58E-04	0.00E+00	0.00E+00	9.43E-04	
2. Average Release Rate for Period	uCi/s	1.07E-05	1.09E-04	0.00E+00	0.00E+00	2.98E-05	
3. Percent of Limit	%						
<b>D. Tritium</b>							
1. Total Release	Ci	4.31E+01	4.21E-01	9.02E-01	7.24E-01	4.52E+01	
2. Average Release Rate for Period	uCi/s	5.48E+00	5.36E-02	1.13E-01	9.11E-02	1.43E+00	
3. Percent of Limit	%						
<b>E. Gross Alpha</b>							
1. Total Release	Ci	1.82E-08	1.83E-08	7.02E-09	3.24E-08	7.60E-08	
<b>F. Carbon-14</b>							
1. Total Release	Ci	4.74E+00	5.75E+00	5.80E+00	5.82E+00	2.21E+01	
2. Average Release Rate for Period	uCi/s	6.03E-01	7.32E-01	7.30E-01	7.32E-01	6.99E-01	
3. Percent of Limit	%						



Reg. Guide 1.21, Table 1A, Gaseous Effluents - Summation of All Releases

Unit: PSL1

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Total Release	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual	Uncertainty
<b>A. Fission and Activation Gases</b>							
1. Total Release	Ci	1.78E-01	7.80E-02	7.63E-02	1.13E-01	4.45E-01	
2. Average Release Rate for Period	uCi/s	2.26E-02	9.92E-03	9.60E-03	1.43E-02	1.41E-02	
3. Percent of Limit	%						
<b>B. Iodines and Halogens</b>							
1. Total Release	Ci	0.00E+00	4.43E-07	0.00E+00	0.00E+00	4.43E-07	
2. Average Release Rate for Period	uCi/s	0.00E+00	5.64E-08	0.00E+00	0.00E+00	1.40E-08	
3. Percent of Limit	%						
<b>C. Particulates</b>							
1. Total Release	Ci	7.62E-05	8.58E-04	0.00E+00	0.00E+00	9.34E-04	
2. Average Release Rate for Period	uCi/s	9.69E-06	1.09E-04	0.00E+00	0.00E+00	2.95E-05	
3. Percent of Limit	%						
<b>D. Tritium</b>							
1. Total Release	Ci	1.70E-01	3.30E-01	5.44E-01	4.19E-01	1.46E+00	
2. Average Release Rate for Period	uCi/s	2.16E-02	4.19E-02	6.85E-02	5.27E-02	4.63E-02	
3. Percent of Limit	%						
<b>E. Gross Alpha</b>							
1. Total Release	Ci	1.82E-08	0.00E+00	0.00E+00	3.24E-08	5.06E-08	
<b>F. Carbon-14</b>							
1. Total Release	Ci	2.89E+00	2.88E+00	2.90E+00	2.92E+00	1.16E+01	
2. Average Release Rate for Period	uCi/s	3.67E-01	3.66E-01	3.64E-01	3.67E-01	3.66E-01	
3. Percent of Limit	%						

Reg. Guide 1.21, Table 1A, Gaseous Effluents - Summation of All Releases

Unit: PSL2

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Total Release	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual	Uncertainty
<b>A. Fission and Activation Gases</b>							
1. Total Release	Ci	7.41E+00	2.19E-01	2.21E-01	1.70E-01	8.02E+00	
2. Average Release Rate for Period	uCi/s	9.42E-01	2.78E-02	2.78E-02	2.13E-02	2.54E-01	
3. Percent of Limit	%						
<b>B. Iodines and Halogens</b>							
1. Total Release	Ci	6.69E-05	0.00E+00	0.00E+00	0.00E+00	6.69E-05	
2. Average Release Rate for Period	uCi/s	8.51E-06	0.00E+00	0.00E+00	0.00E+00	2.12E-06	
3. Percent of Limit	%						
<b>C. Particulates</b>							
1. Total Release	Ci	8.09E-06	0.00E+00	0.00E+00	0.00E+00	8.09E-06	
2. Average Release Rate for Period	uCi/s	1.03E-06	0.00E+00	0.00E+00	0.00E+00	2.56E-07	
3. Percent of Limit	%						
<b>D. Tritium</b>							
1. Total Release	Ci	4.29E+01	9.15E-02	3.57E-01	3.05E-01	4.37E+01	
2. Average Release Rate for Period	uCi/s	5.46E+00	1.16E-02	4.50E-02	3.84E-02	1.38E+00	
3. Percent of Limit	%						
<b>E. Gross Alpha</b>							
1. Total Release	Ci	0.00E+00	1.83E-08	7.02E-09	0.00E+00	2.54E-08	
<b>F. Carbon-14</b>							
1. Total Release	Ci	1.85E+00	2.87E+00	2.91E+00	2.90E+00	1.05E+01	
2. Average Release Rate for Period	uCi/s	2.35E-01	3.66E-01	3.66E-01	3.65E-01	3.33E-01	
3. Percent of Limit	%						

**Reg. Guide 1.21, Table 1B, Gaseous Effluents - Ground Level Release - Continuous Mode**

**Unit: Site**

**Starting: 1-Jan-2020 Ending: 31-Dec-2020**

<b>Nuclides Released</b>	<b>Units</b>	<b>Continuous Mode</b>				
		<b>1ST Quarter</b>	<b>2ND Quarter</b>	<b>3RD Quarter</b>	<b>4TH Quarter</b>	<b>Annual</b>
<b>A. Fission and Activation Gases</b>						
Ar-41	Ci	3.06E+00	0.00E+00	0.00E+00	0.00E+00	3.06E+00
Xe-133	Ci	6.64E-02	0.00E+00	0.00E+00	0.00E+00	6.64E-02
<b>Total For Period</b>	<b>Ci</b>	<b>3.12E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>3.12E+00</b>
<b>B. Iodines and Halogens</b>						
I-131	Ci	4.83E-06	4.43E-07	0.00E+00	0.00E+00	5.27E-06
I-133	Ci	6.21E-05	0.00E+00	0.00E+00	0.00E+00	6.21E-05
<b>Total For Period</b>	<b>Ci</b>	<b>6.69E-05</b>	<b>4.43E-07</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>6.74E-05</b>
<b>C. Particulates</b>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>D. Tritium</b>						
H-3	Ci	4.01E+01	0.00E+00	0.00E+00	0.00E+00	4.01E+01
<b>E. Gross Alpha</b>						
G-Alpha	Ci	1.82E-08	1.83E-08	7.02E-09	3.24E-08	7.60E-08
<b>F. Carbon-14</b>						
C-14	Ci	4.74E+00	5.75E+00	5.80E+00	5.82E+00	2.21E+01

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

**Reg. Guide 1.21, Table 1B, Gaseous Effluents - Ground Level Release - Batch Mode**

**Unit: Site**

**Starting: 1-Jan-2020 Ending: 31-Dec-2020**

<b>Nuclides Released</b>	<b>Units</b>	<b>Batch Mode</b>				
		<b>1ST Quarter</b>	<b>2ND Quarter</b>	<b>3RD Quarter</b>	<b>4TH Quarter</b>	<b>Annual</b>
<b>A. Fission and Activation Gases</b>						
Ar-41	Ci	3.87E+00	2.65E-01	2.63E-01	2.63E-01	4.66E+00
Kr-85m	Ci	3.81E-05	2.04E-05	3.31E-05	0.00E+00	9.16E-05
Kr-87	Ci	5.00E-05	0.00E+00	0.00E+00	0.00E+00	5.00E-05
Kr-88	Ci	0.00E+00	1.78E-04	0.00E+00	0.00E+00	1.78E-04
Kr-89	Ci	0.00E+00	6.85E-03	0.00E+00	0.00E+00	6.85E-03
Xe-127	Ci	0.00E+00	0.00E+00	3.44E-05	0.00E+00	3.44E-05
Xe-133m	Ci	2.81E-04	0.00E+00	6.90E-05	0.00E+00	3.51E-04
Xe-135	Ci	1.37E-03	4.97E-04	2.52E-04	7.80E-04	2.90E-03
Xe-133	Ci	5.95E-01	2.23E-02	3.38E-02	2.46E-02	6.76E-01
Xe-137	Ci	0.00E+00	1.68E-03	0.00E+00	0.00E+00	1.68E-03
<b>Total For Period</b>	<b>Ci</b>	<b>4.47E+00</b>	<b>2.97E-01</b>	<b>2.97E-01</b>	<b>2.88E-01</b>	<b>5.35E+00</b>
<b>B. Iodines and Halogens</b>						
I-131	Ci	3.81E-08	0.00E+00	0.00E+00	0.00E+00	3.81E-08
<b>C. Particulates</b>						
Co-58	Ci	6.87E-08	0.00E+00	0.00E+00	0.00E+00	6.87E-08
Co-60	Ci	7.63E-05	8.58E-04	0.00E+00	0.00E+00	9.35E-04
Cs-137	Ci	7.91E-06	0.00E+00	0.00E+00	0.00E+00	7.91E-06
<b>Total For Period</b>	<b>Ci</b>	<b>8.43E-05</b>	<b>8.58E-04</b>	<b>0.00E+00</b>	<b>0.00E+00</b>	<b>9.43E-04</b>
<b>D. Tritium</b>						
H-3	Ci	3.03E+00	4.21E-01	9.02E-01	7.68E-01	5.12E+00

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

**Reg. Guide 1.21, Table 1B, Gaseous Effluents - Ground Level Release - Batch Mode**

**Unit: Site**

**Starting: 1-Jan-2020 Ending: 31-Dec-2020**

<b>Nuclides Released</b>	<b>Units</b>	<b>Batch Mode</b>				<b>Annual</b>
		<b>1ST Quarter</b>	<b>2ND Quarter</b>	<b>3RD Quarter</b>	<b>4TH Quarter</b>	
<b>E. Gross Alpha</b>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>F. Carbon-14</b>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

Reg. Guide 1.21, Table 1B, Gaseous Effluents - Ground Level Release - Continuous Mode

Unit: PSL1

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Nuclides Released	Units	Continuous Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
<u>A. Fission and Activation Gases</u>						
Xe-133	Ci	6.64E-02	0.00E+00	0.00E+00	0.00E+00	6.64E-02
<u>B. Iodines and Halogens</u>						
I-131	Ci	0.00E+00	4.43E-07	0.00E+00	0.00E+00	4.43E-07
<u>C. Particulates</u>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<u>D. Tritium</u>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<u>E. Gross Alpha</u>						
G-Alpha	Ci	1.82E-08	0.00E+00	0.00E+00	3.24E-08	5.06E-08
<u>F. Carbon-14</u>						
C-14	Ci	2.89E+00	2.88E+00	2.90E+00	2.92E+00	1.16E+01

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

Reg. Guide 1.21, Table 1B, Gaseous Effluents - Ground Level Release - Batch Mode

Unit: PSL1

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
<b>A. Fission and Activation Gases</b>						
Ar-41	Ci	1.04E-01	6.41E-02	7.01E-02	1.11E-01	3.49E-01
Kr-85m	Ci	2.34E-05	2.04E-05	3.31E-05	0.00E+00	7.69E-05
Kr-87	Ci	5.00E-05	0.00E+00	0.00E+00	0.00E+00	5.00E-05
Kr-89	Ci	0.00E+00	6.85E-03	0.00E+00	0.00E+00	6.85E-03
Xe-135	Ci	1.15E-04	6.73E-05	0.00E+00	9.38E-05	2.76E-04
Xe-137	Ci	0.00E+00	1.68E-03	0.00E+00	0.00E+00	1.68E-03
Xe-133	Ci	7.23E-03	5.25E-03	6.17E-03	7.36E-03	2.60E-02
Total For Period	Ci	1.11E-01	7.80E-02	7.63E-02	1.19E-01	3.84E-01
<b>B. Iodines and Halogens</b>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>C. Particulates</b>						
Co-60	Ci	7.62E-05	8.58E-04	0.00E+00	0.00E+00	9.34E-04
<b>D. Tritium</b>						
H-3	Ci	1.70E-01	3.30E-01	5.44E-01	4.62E-01	1.51E+00
<b>E. Gross Alpha</b>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>F. Carbon-14</b>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

Reg. Guide 1.21, Table 1B, Gaseous Effluents - Ground Level Release - Continuous Mode

Unit: PSL2

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Nuclides Released	Units	Continuous Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
<u>A. Fission and Activation Gases</u>						
Ar-41	Ci	3.06E+00	0.00E+00	0.00E+00	0.00E+00	3.06E+00
<u>B. Iodines and Halogens</u>						
I-131	Ci	4.83E-06	0.00E+00	0.00E+00	0.00E+00	4.83E-06
I-133	Ci	6.21E-05	0.00E+00	0.00E+00	0.00E+00	6.21E-05
Total For Period	Ci	6.69E-05	0.00E+00	0.00E+00	0.00E+00	6.69E-05
<u>C. Particulates</u>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<u>D. Tritium</u>						
H-3	Ci	4.01E+01	0.00E+00	0.00E+00	0.00E+00	4.01E+01
<u>E. Gross Alpha</u>						
G-Alpha	Ci	0.00E+00	1.83E-08	7.02E-09	0.00E+00	2.54E-08
<u>F. Carbon-14</u>						
C-14	Ci	1.85E+00	2.87E+00	2.91E+00	2.90E+00	1.05E+01

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.



Reg. Guide 1.21, Table 1B, Gaseous Effluents - Ground Level Release - Batch Mode

Unit: PSL2

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
<b>A. Fission and Activation Gases</b>						
Ar-41	Ci	3.77E+00	2.01E-01	1.93E-01	1.52E-01	4.31E+00
Kr-85m	Ci	1.47E-05	0.00E+00	0.00E+00	0.00E+00	1.47E-05
Kr-88	Ci	0.00E+00	1.78E-04	0.00E+00	0.00E+00	1.78E-04
Xe-127	Ci	0.00E+00	0.00E+00	3.44E-05	0.00E+00	3.44E-05
Xe-133m	Ci	2.81E-04	0.00E+00	6.90E-05	0.00E+00	3.51E-04
Xe-135	Ci	1.25E-03	4.30E-04	2.52E-04	6.86E-04	2.62E-03
Xe-133	Ci	5.88E-01	1.71E-02	2.76E-02	1.72E-02	6.50E-01
Total For Period	Ci	4.35E+00	2.19E-01	2.21E-01	1.70E-01	4.96E+00
<b>B. Iodines and Halogens</b>						
I-131	Ci	3.81E-08	0.00E+00	0.00E+00	0.00E+00	3.81E-08
<b>C. Particulates</b>						
Co-58	Ci	6.87E-08	0.00E+00	0.00E+00	0.00E+00	6.87E-08
Co-60	Ci	1.14E-07	0.00E+00	0.00E+00	0.00E+00	1.14E-07
Cs-137	Ci	7.91E-06	0.00E+00	0.00E+00	0.00E+00	7.91E-06
Total For Period	Ci	8.09E-06	0.00E+00	0.00E+00	0.00E+00	8.09E-06
<b>D. Tritium</b>						
H-3	Ci	2.86E+00	9.15E-02	3.57E-01	3.05E-01	3.61E+00
<b>E. Gross Alpha</b>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

Reg. Guide 1.21, Table 1B, Gaseous Effluents - Ground Level Release - Batch Mode

Unit: PSL2

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
F. Carbon-14						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

Reg. Guide 1.21, Table 2A, Liquid Effluents - Summation of All Releases

Unit: Site

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Total Release	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual	Uncertainty
<b>A. Fission and Activation Products</b>							
1. Total Release	Ci	3.03E-02	3.69E-03	1.20E-03	3.33E-03	3.85E-02	
2. Average Concentration	uCi/mL	4.50E-10	2.09E-11	1.12E-11	1.78E-11	7.14E-11	
3. Percent of Limit	%						
<b>B. Tritium</b>							
1. Total Release	Ci	2.71E+02	2.45E+01	3.77E+01	2.51E+01	3.58E+02	
2. Average Concentration	uCi/mL	4.03E-06	1.39E-07	3.50E-07	1.34E-07	6.65E-07	
3. Percent of Limit	%						
<b>C. Dissolved and Entrained Gases</b>							
1. Total Release	Ci	5.59E-03	0.00E+00	0.00E+00	0.00E+00	5.59E-03	
2. Average Concentration	uCi/mL	8.32E-11	0.00E+00	0.00E+00	0.00E+00	1.04E-11	
3. Percent of Limit	%						
<b>D. Gross Alpha Activity</b>							
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2. Average Concentration	uCi/mL	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
<b>E. Primary Liquid Release Volume</b>							
1. Total Release	Liters	1.21E+07	8.86E+07	6.38E+07	9.36E+07	2.58E+08	
<b>F. Dilution Volume</b>							
1. Total Release	Liters	6.72E+10	1.77E+11	1.08E+11	1.87E+11	5.39E+11	

Reg. Guide 1.21, Table 2A, Liquid Effluents - Summation of All Releases

Unit: PSL1

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Total Release	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual	Uncertainty
<b>A. Fission and Activation Products</b>							
1. Total Release	Ci	1.51E-02	1.85E-03	6.00E-04	1.66E-03	1.92E-02	
2. Average Concentration	uCi/mL	4.50E-10	2.09E-11	1.12E-11	1.78E-11	7.14E-11	
3. Percent of Limit	%						
<b>B. Tritium</b>							
1. Total Release	Ci	1.35E+02	1.22E+01	1.88E+01	1.25E+01	1.79E+02	
2. Average Concentration	uCi/mL	4.03E-06	1.39E-07	3.50E-07	1.34E-07	6.65E-07	
3. Percent of Limit	%						
<b>C. Dissolved and Entrained Gases</b>							
1. Total Release	Ci	2.79E-03	0.00E+00	0.00E+00	0.00E+00	2.79E-03	
2. Average Concentration	uCi/mL	8.32E-11	0.00E+00	0.00E+00	0.00E+00	1.04E-11	
3. Percent of Limit	%						
<b>D. Gross Alpha Activity</b>							
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2. Average Concentration	uCi/mL	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
<b>E. Primary Liquid Release Volume</b>							
1. Total Release	Liters	6.06E+06	4.43E+07	3.19E+07	4.68E+07	1.29E+08	
<b>F. Dilution Volume</b>							
1. Total Release	Liters	3.36E+10	8.83E+10	5.38E+10	9.37E+10	2.69E+11	

Reg. Guide 1.21, Table 2A, Liquid Effluents - Summation of All Releases

Unit: PSL2

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Total Release	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual	Uncertainty
<b>A. Fission and Activation Products</b>							
1. Total Release	Ci	1.51E-02	1.85E-03	6.00E-04	1.66E-03	1.92E-02	
2. Average Concentration	uCi/mL	4.50E-10	2.09E-11	1.12E-11	1.78E-11	7.14E-11	
3. Percent of Limit	%						
<b>B. Tritium</b>							
1. Total Release	Ci	1.35E+02	1.22E+01	1.88E+01	1.25E+01	1.79E+02	
2. Average Concentration	uCi/mL	4.03E-06	1.39E-07	3.50E-07	1.34E-07	6.65E-07	
3. Percent of Limit	%						
<b>C. Dissolved and Entrained Gases</b>							
1. Total Release	Ci	2.79E-03	0.00E+00	0.00E+00	0.00E+00	2.79E-03	
2. Average Concentration	uCi/mL	8.32E-11	0.00E+00	0.00E+00	0.00E+00	1.04E-11	
3. Percent of Limit	%						
<b>D. Gross Alpha Activity</b>							
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
2. Average Concentration	uCi/mL	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
<b>E. Primary Liquid Release Volume</b>							
1. Total Release	Liters	6.06E+06	4.43E+07	3.19E+07	4.68E+07	1.29E+08	
<b>F. Dilution Volume</b>							
1. Total Release	Liters	3.36E+10	8.83E+10	5.38E+10	9.37E+10	2.69E+11	

Reg. Guide 1.21, Table 2B, Liquid Effluents - Continuous Mode

Unit: Site

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Nuclides Released	Units	Continuous Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
<u>A. Fission and Activation Products</u>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<u>B. Tritium</u>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<u>C. Dissolved and Entrained Gases</u>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<u>D. Gross Alpha Activity</u>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

Reg. Guide 1.21, Table 2B, Liquid Effluents - Batch Mode

Unit: Site

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
<b>A. Fission and Activation Products</b>						
C-14	Ci	6.14E-03	3.75E-04	0.00E+00	1.07E-03	7.58E-03
Na-24	Ci	4.44E-05	1.84E-05	0.00E+00	0.00E+00	6.28E-05
Be-7	Ci	0.00E+00	4.86E-05	2.58E-05	3.05E-05	1.05E-04
Cr-51	Ci	1.09E-04	4.78E-05	0.00E+00	0.00E+00	1.57E-04
Mn-54	Ci	3.77E-04	1.92E-05	1.78E-05	4.12E-06	4.18E-04
Fe-59	Ci	3.77E-05	0.00E+00	0.00E+00	0.00E+00	3.77E-05
Co-58	Ci	1.23E-03	4.13E-04	1.75E-04	6.83E-05	1.89E-03
Co-60	Ci	1.19E-02	5.82E-04	4.25E-04	3.26E-04	1.33E-02
Ni-63	Ci	0.00E+00	2.34E-04	2.36E-04	2.58E-04	7.28E-04
Zn-65	Ci	7.21E-05	1.64E-05	1.05E-05	0.00E+00	9.90E-05
Zr-95	Ci	6.21E-05	1.97E-05	7.80E-06	3.32E-06	9.29E-05
Nb-95	Ci	1.75E-04	5.47E-05	2.93E-05	5.68E-06	2.64E-04
Nb-97	Ci	3.93E-04	4.13E-05	5.29E-05	6.13E-05	5.48E-04
Ag-110m	Ci	2.85E-04	3.59E-05	5.45E-05	4.15E-05	4.17E-04
Sn-117m	Ci	0.00E+00	1.90E-05	0.00E+00	0.00E+00	1.90E-05
Sb-124	Ci	2.32E-03	6.63E-04	1.94E-05	6.25E-05	3.06E-03
Sb-122	Ci	3.29E-04	0.00E+00	0.00E+00	0.00E+00	3.29E-04
Sb-125	Ci	4.37E-03	1.08E-03	1.35E-04	1.40E-03	6.98E-03
Te-123m	Ci	4.67E-04	1.51E-05	0.00E+00	0.00E+00	4.82E-04
Te-129m	Ci	9.85E-04	0.00E+00	0.00E+00	0.00E+00	9.85E-04
Te-129	Ci	1.22E-04	0.00E+00	0.00E+00	0.00E+00	1.22E-04
Te-132	Ci	1.65E-04	0.00E+00	2.08E-06	4.21E-06	1.71E-04
I-130	Ci	3.06E-06	0.00E+00	0.00E+00	0.00E+00	3.06E-06
I-131	Ci	8.95E-05	0.00E+00	1.54E-06	0.00E+00	9.10E-05
I-132	Ci	1.54E-04	0.00E+00	0.00E+00	0.00E+00	1.54E-04
I-133	Ci	0.00E+00	0.00E+00	3.16E-06	0.00E+00	3.16E-06

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

Reg. Guide 1.21, Table 2B, Liquid Effluents - Batch Mode

Unit: Site

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Cs-137	Ci	1.41E-04	5.82E-06	3.25E-06	0.00E+00	1.50E-04
La-140	Ci	2.55E-04	0.00E+00	0.00E+00	0.00E+00	2.55E-04
W-187	Ci	1.39E-05	0.00E+00	0.00E+00	0.00E+00	1.39E-05
Total For Period	Ci	3.03E-02	3.69E-03	1.20E-03	3.33E-03	3.85E-02
<b>B. Tritium</b>						
H-3	Ci	2.71E+02	2.45E+01	3.77E+01	2.51E+01	3.58E+02
<b>C. Dissolved and Entrained Gases</b>						
Xe-135	Ci	5.02E-05	0.00E+00	0.00E+00	0.00E+00	5.02E-05
Xe-133m	Ci	4.26E-05	0.00E+00	0.00E+00	0.00E+00	4.26E-05
Xe-133	Ci	5.50E-03	0.00E+00	0.00E+00	0.00E+00	5.50E-03
Total For Period	Ci	5.59E-03	0.00E+00	0.00E+00	0.00E+00	5.59E-03
<b>D. Gross Alpha Activity</b>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.



Reg. Guide 1.21, Table 2B, Liquid Effluents - Continuous Mode

Unit: PSL1

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Nuclides Released	Units	Continuous Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
<u>A. Fission and Activation Products</u>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<u>B. Tritium</u>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<u>C. Dissolved and Entrained Gases</u>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<u>D. Gross Alpha Activity</u>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

Reg. Guide 1.21, Table 2B, Liquid Effluents - Batch Mode

Unit: PSL1

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
<b>A. Fission and Activation Products</b>						
C-14	Ci	3.07E-03	1.87E-04	0.00E+00	5.34E-04	3.79E-03
Na-24	Ci	2.22E-05	9.20E-06	0.00E+00	0.00E+00	3.14E-05
Be-7	Ci	0.00E+00	2.43E-05	1.29E-05	1.53E-05	5.25E-05
Cr-51	Ci	5.47E-05	2.39E-05	0.00E+00	0.00E+00	7.86E-05
Mn-54	Ci	1.88E-04	9.62E-06	8.91E-06	2.06E-06	2.09E-04
Fe-59	Ci	1.88E-05	0.00E+00	0.00E+00	0.00E+00	1.88E-05
Co-58	Ci	6.15E-04	2.07E-04	8.74E-05	3.41E-05	9.43E-04
Co-60	Ci	5.97E-03	2.91E-04	2.13E-04	1.63E-04	6.64E-03
Ni-63	Ci	0.00E+00	1.17E-04	1.18E-04	1.29E-04	3.64E-04
Zn-65	Ci	3.60E-05	8.20E-06	5.25E-06	0.00E+00	4.95E-05
Zr-95	Ci	3.11E-05	9.83E-06	3.90E-06	1.66E-06	4.64E-05
Nb-95	Ci	8.73E-05	2.74E-05	1.47E-05	2.84E-06	1.32E-04
Nb-97	Ci	1.96E-04	2.07E-05	2.65E-05	3.06E-05	2.74E-04
Ag-110m	Ci	1.42E-04	1.79E-05	2.72E-05	2.07E-05	2.08E-04
Sn-117m	Ci	0.00E+00	9.52E-06	0.00E+00	0.00E+00	9.52E-06
Sb-124	Ci	1.16E-03	3.31E-04	9.69E-06	3.12E-05	1.53E-03
Sb-122	Ci	1.64E-04	0.00E+00	0.00E+00	0.00E+00	1.64E-04
Sb-125	Ci	2.18E-03	5.41E-04	6.76E-05	6.99E-04	3.49E-03
Te-123m	Ci	2.34E-04	7.57E-06	0.00E+00	0.00E+00	2.41E-04
Te-129m	Ci	4.92E-04	0.00E+00	0.00E+00	0.00E+00	4.92E-04
Te-129	Ci	6.08E-05	0.00E+00	0.00E+00	0.00E+00	6.08E-05
Te-132	Ci	8.25E-05	0.00E+00	1.04E-06	2.11E-06	8.57E-05
I-130	Ci	1.53E-06	0.00E+00	0.00E+00	0.00E+00	1.53E-06
I-131	Ci	4.47E-05	0.00E+00	7.72E-07	0.00E+00	4.55E-05
I-132	Ci	7.68E-05	0.00E+00	0.00E+00	0.00E+00	7.68E-05
I-133	Ci	0.00E+00	0.00E+00	1.58E-06	0.00E+00	1.58E-06

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

Reg. Guide 1.21, Table 2B, Liquid Effluents - Batch Mode

Unit: PSL1

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Cs-137	Ci	7.03E-05	2.91E-06	1.62E-06	0.00E+00	7.48E-05
La-140	Ci	1.28E-04	0.00E+00	0.00E+00	0.00E+00	1.28E-04
W-187	Ci	6.93E-06	0.00E+00	0.00E+00	0.00E+00	6.93E-06
Total For Period	Ci	1.51E-02	1.85E-03	6.00E-04	1.66E-03	1.92E-02
<b>B. Tritium</b>						
H-3	Ci	1.35E+02	1.22E+01	1.88E+01	1.25E+01	1.79E+02
<b>C. Dissolved and Entrained Gases</b>						
Xe-135	Ci	2.51E-05	0.00E+00	0.00E+00	0.00E+00	2.51E-05
Xe-133m	Ci	2.13E-05	0.00E+00	0.00E+00	0.00E+00	2.13E-05
Xe-133	Ci	2.75E-03	0.00E+00	0.00E+00	0.00E+00	2.75E-03
Total For Period	Ci	2.79E-03	0.00E+00	0.00E+00	0.00E+00	2.79E-03
<b>D. Gross Alpha Activity</b>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

Reg. Guide 1.21, Table 2B, Liquid Effluents - Continuous Mode

Unit: PSL2

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Nuclides Released	Units	Continuous Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
<u>A. Fission and Activation Products</u>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<u>B. Tritium</u>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<u>C. Dissolved and Entrained Gases</u>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<u>D. Gross Alpha Activity</u>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

Reg. Guide 1.21, Table 2B, Liquid Effluents - Batch Mode

Unit: PSL2

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
<b>A. Fission and Activation Products</b>						
C-14	Ci	3.07E-03	1.87E-04	0.00E+00	5.34E-04	3.79E-03
Na-24	Ci	2.22E-05	9.20E-06	0.00E+00	0.00E+00	3.14E-05
Be-7	Ci	0.00E+00	2.43E-05	1.29E-05	1.53E-05	5.25E-05
Cr-51	Ci	5.47E-05	2.39E-05	0.00E+00	0.00E+00	7.86E-05
Mn-54	Ci	1.88E-04	9.62E-06	8.91E-06	2.06E-06	2.09E-04
Fe-59	Ci	1.88E-05	0.00E+00	0.00E+00	0.00E+00	1.88E-05
Co-58	Ci	6.15E-04	2.07E-04	8.74E-05	3.41E-05	9.43E-04
Co-60	Ci	5.97E-03	2.91E-04	2.13E-04	1.63E-04	6.64E-03
Ni-63	Ci	0.00E+00	1.17E-04	1.18E-04	1.29E-04	3.64E-04
Zn-65	Ci	3.60E-05	8.20E-06	5.25E-06	0.00E+00	4.95E-05
Zr-95	Ci	3.11E-05	9.83E-06	3.90E-06	1.66E-06	4.64E-05
Nb-95	Ci	8.73E-05	2.74E-05	1.47E-05	2.84E-06	1.32E-04
Nb-97	Ci	1.96E-04	2.07E-05	2.65E-05	3.06E-05	2.74E-04
Ag-110m	Ci	1.42E-04	1.79E-05	2.72E-05	2.07E-05	2.08E-04
Sn-117m	Ci	0.00E+00	9.52E-06	0.00E+00	0.00E+00	9.52E-06
Sb-124	Ci	1.16E-03	3.31E-04	9.69E-06	3.12E-05	1.53E-03
Sb-122	Ci	1.64E-04	0.00E+00	0.00E+00	0.00E+00	1.64E-04
Sb-125	Ci	2.18E-03	5.41E-04	6.76E-05	6.99E-04	3.49E-03
Te-123m	Ci	2.34E-04	7.57E-06	0.00E+00	0.00E+00	2.41E-04
Te-129m	Ci	4.92E-04	0.00E+00	0.00E+00	0.00E+00	4.92E-04
Te-129	Ci	6.08E-05	0.00E+00	0.00E+00	0.00E+00	6.08E-05
Te-132	Ci	8.25E-05	0.00E+00	1.04E-06	2.11E-06	8.57E-05
I-130	Ci	1.53E-06	0.00E+00	0.00E+00	0.00E+00	1.53E-06
I-131	Ci	4.47E-05	0.00E+00	7.72E-07	0.00E+00	4.55E-05
I-132	Ci	7.68E-05	0.00E+00	0.00E+00	0.00E+00	7.68E-05
I-133	Ci	0.00E+00	0.00E+00	1.58E-06	0.00E+00	1.58E-06

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

Reg. Guide 1.21, Table 2B, Liquid Effluents - Batch Mode

Unit: PSL2

Starting: 1-Jan-2020 Ending: 31-Dec-2020

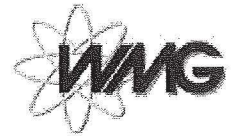
Nuclides Released	Units	Batch Mode				
		1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Cs-137	Ci	7.03E-05	2.91E-06	1.62E-06	0.00E+00	7.48E-05
La-140	Ci	1.28E-04	0.00E+00	0.00E+00	0.00E+00	1.28E-04
W-187	Ci	6.93E-06	0.00E+00	0.00E+00	0.00E+00	6.93E-06
Total For Period	Ci	1.51E-02	1.85E-03	6.00E-04	1.66E-03	1.92E-02
<b>B. Tritium</b>						
H-3	Ci	1.35E+02	1.22E+01	1.88E+01	1.25E+01	1.79E+02
<b>C. Dissolved and Entrained Gases</b>						
Xe-135	Ci	2.51E-05	0.00E+00	0.00E+00	0.00E+00	2.51E-05
Xe-133m	Ci	2.13E-05	0.00E+00	0.00E+00	0.00E+00	2.13E-05
Xe-133	Ci	2.75E-03	0.00E+00	0.00E+00	0.00E+00	2.75E-03
Total For Period	Ci	2.79E-03	0.00E+00	0.00E+00	0.00E+00	2.79E-03
<b>D. Gross Alpha Activity</b>						
No Nuclides Found	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

If Not Detected, Nuclide is Not Reported. Zeroes in this table indicates that no radioactivity was present at detectable levels.

**TABLE 3.2**

**SOLID WASTE STORAGE AND SHIPMENTS  
(7 PAGES)**

This portion of the 2020 Annual Radioactive Effluent Release Report was originally submitted with L-2021-049 on March 1, 2021. It is included unchanged with this correction letter for context and completeness.



## NRC Regulatory Guide 1.21 Activity Report

Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Shipment, Package, and Category

During Period From: 01/01/2020 to 12/31/2020

Percent Cutoff: 1.0%

### Dry Active Waste

#### Waste Class A

Nuclide Name	Abundance	Activity (Ci)
H-3	16.3%	2.47E-01
Cr-51	2.09%	3.16E-02
Fe-55	14.63%	2.21E-01
Co-58	2.02%	3.06E-02
Co-60	41.47%	6.28E-01
Ni-63	14.03%	2.12E-01
Zr-95	1.81%	2.74E-02
Nb-95	3.18%	4.82E-02
Sb-125	1.94%	2.93E-02

#### Total Combined

Nuclide Name	Abundance	Activity (Ci)
H-3	16.3%	2.47E-01
Cr-51	2.09%	3.16E-02
Fe-55	14.63%	2.21E-01
Co-58	2.02%	3.06E-02
Co-60	41.47%	6.28E-01
Ni-63	14.03%	2.12E-01
Zr-95	1.81%	2.74E-02
Nb-95	3.18%	4.82E-02
Sb-125	1.94%	2.93E-02





### NRC Regulatory Guide 1.21 Activity Report

Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Shipment, Package, and Category

During Period From: 01/01/2020 to 12/31/2020

Percent Cutoff: 1.0%

Other Waste		
Waste Class A		
Nuclide Name	Abundance	Activity (Ci)
Cr-51	3.05%	6.82E-03
Fe-55	35.2%	7.86E-02
Co-58	4.42%	9.86E-03
Co-60	39.19%	8.75E-02
Ni-63	5.73%	1.28E-02
Zr-95	2.52%	5.63E-03
Nb-95	4.71%	1.05E-02
Total Combined		
Nuclide Name	Abundance	Activity (Ci)
Cr-51	3.05%	6.82E-03
Fe-55	35.2%	7.86E-02
Co-58	4.42%	9.86E-03
Co-60	39.19%	8.75E-02
Ni-63	5.73%	1.28E-02
Zr-95	2.52%	5.63E-03
Nb-95	4.71%	1.05E-02



### NRC Regulatory Guide 1.21 Activity Report

Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Shipment, Package, and Category

During Period From: 01/01/2020 to 12/31/2020

Percent Cutoff: 1.0%

Resins, Filters, and Evap Bottoms		
Waste Class A		
Nuclide Name	Abundance	Activity (Ci)
H-3	5.33%	7.47E-01
C-14	1.12%	1.57E-01
Cr-51	1.31%	1.84E-01
Mn-54	1.37%	1.92E-01
Fe-55	2.95%	4.14E-01
Co-58	7.14%	1.00E+00
Co-60	37.65%	5.28E+00
Ni-63	23.4%	3.28E+00
Sb-124	1.57%	2.20E-01
Sb-125	6.21%	8.70E-01
Cs-137	9.46%	1.33E+00
Total Combined		
Nuclide Name	Abundance	Activity (Ci)
H-3	5.33%	7.47E-01
C-14	1.12%	1.57E-01
Cr-51	1.31%	1.84E-01
Mn-54	1.37%	1.92E-01
Fe-55	2.95%	4.14E-01
Co-58	7.14%	1.00E+00
Co-60	37.65%	5.28E+00
Ni-63	23.4%	3.28E+00
Sb-124	1.57%	2.20E-01
Sb-125	6.21%	8.70E-01
Cs-137	9.46%	1.33E+00



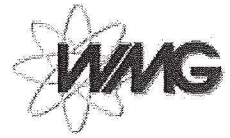
## NRC Regulatory Guide 1.21 Activity Report

Solid Waste Shipped Offsite for Disposal and Estimates of Major Nuclides by Shipment, Package, and Category

During Period From: 01/01/2020 to 12/31/2020

Percent Cutoff: 1.0%

Sum of All 4 Categories		
Waste Class A		
Nuclide Name	Abundance	Activity (Ci)
H-3	6.32%	9.95E-01
C-14	1.03%	1.62E-01
Cr-51	1.41%	2.22E-01
Mn-54	1.31%	2.07E-01
Fe-55	4.53%	7.14E-01
Co-58	6.61%	1.04E+00
Co-60	38.04%	5.99E+00
Ni-63	22.25%	3.51E+00
Sb-124	1.41%	2.22E-01
Sb-125	5.72%	9.01E-01
Cs-137	8.44%	1.33E+00
Total Combined		
Nuclide Name	Abundance	Activity (Ci)
H-3	6.32%	9.95E-01
C-14	1.03%	1.62E-01
Cr-51	1.41%	2.22E-01
Mn-54	1.31%	2.07E-01
Fe-55	4.53%	7.14E-01
Co-58	6.61%	1.04E+00
Co-60	38.04%	5.99E+00
Ni-63	22.25%	3.51E+00
Sb-124	1.41%	2.22E-01
Sb-125	5.72%	9.01E-01
Cs-137	8.44%	1.33E+00



**Total Shipments by Carrier**

Number of Shipments per each carrier

Number of Shipments	Mode of Transportation	Destination
1	Hittman Transport (TN)	Energy Solutions LLC (Bulk) Interstate 80, Exit 49
2	Hittman Transport (TN)	Energy Solutions, (DTK) Gallaher Road 628 Gallaher Road
14	Hittman Transport (TN)	EnergySolutions Bear Creek 1560 Bear Creek Road
1	Hittman Transport (TN)	Energy Solutions, (DTK) Gallaher Road 628 Gallaher Road
4	Hittman Transport (TN)	EnergySolutions Bear Creek 1560 Bear Creek Road

**NRC Regulatory Guide 1.21 Report  
Shipment and Package Summary**



Solid Waste Shipped Offsite for Disposal

During Period from: 1/1/2020 to 12/31/2020

Shipment Date	Manifest ID	Destination	Package Name	Category Name	NRC Class	DOT Type
2/12/2020	FPL/PSL 20-016	EnergySolutions Bear Creek	ESUU 300172	Dry Active Waste	A	A LSA-II
			ESUU 300504	Dry Active Waste	A	A LSA-II
2/12/2020	FPL/PSL 20-017	EnergySolutions Bear Creek	ESUU 300411	Dry Active Waste	A	A LSA-II
			ESUU 300548	Dry Active Waste	A	A LSA-II
2/19/2020	FPL/PSL 20-018	EnergySolutions Bear Creek	205668	Dry Active Waste	A	Exempt Quantity
2/21/2020	FPL/PSL 20-021	EnergySolutions Bear Creek	ESUU 300245	Dry Active Waste	A	Exempt Quantity
3/4/2020	FPL/PSL 20-025	EnergySolutions Bear Creek	GLDU 346029	Dry Active Waste	A	A LSA-II
			ESUU 300582	Dry Active Waste	A	A LSA-II
3/4/2020	FPL/PSL 20-027	EnergySolutions Bear Creek	ESUU 600081	Dry Active Waste	A	Exempt Quantity
3/6/2020	FPL/PSL 20-029	EnergySolutions Bear Creek	MGBU 207874	Dry Active Waste	A	Exempt Quantity
3/6/2020	FPL/PSL 20-030	EnergySolutions Bear Creek	Box 4	Dry Active Waste	A	Exempt Quantity
			Box 6	Dry Active Waste	A	Exempt Quantity
			Box 2	Dry Active Waste	A	Exempt Quantity
3/9/2020	FPL/PSL 20-031	Energy Solutions, (DTK) Gallaher Road	ESUU 300682	Dry Active Waste	A	Exempt Quantity
3/13/2020	FPL/PSL 20-034	EnergySolutions Bear Creek	ESUU 300362	Dry Active Waste	A	A LSA-II
6/15/2020	FPL/PSL20-054	EnergySolutions Bear Creek	ESUU300577	Dry Active Waste	A	Exempt Quantity
6/15/2020	FPL/PSL20-053	EnergySolutions Bear Creek	ESUU300512	Dry Active Waste	A	A LSA-II
			ESUU300601	Dry Active Waste	A	Exempt Quantity
6/17/2020	FPL/PSL20-057	EnergySolutions Bear Creek	ESUU300441	Dry Active Waste	A	A LSA-II
			ESUU300569	Dry Active Waste	A	A LSA-II
6/17/2020	FPL/PSL20-056	EnergySolutions Bear Creek	ESUU300603	Dry Active Waste	A	A LSA-II
			ESUU300565	Dry Active Waste	A	A LSA-II



## Solid Waste Shipped Offsite for Disposal

During Period from: 1/1/2020 to 12/31/2020

6/24/2020	FPL/PSL20-061	EnergySolutions Bear Creek	ESUU300349	Dry Active Waste	A	Exempt Quantity
7/6/2020	FPL/PSL20-059	EnergySolutions Bear Creek	ESUU600017	Other Waste	A	A LSA-II
7/8/2020	FPL/PSL20-065	Energy Solutions, (DTK) Gallaher Road	ESUU100419	Dry Active Waste	A	Exempt Quantity
7/8/2020	FPL/PSL20-064	Energy Solutions, (DTK) Gallaher Road	ESUU300409	Dry Active Waste	A	Exempt Quantity
7/15/2020	1061-01-0007	Energy Solutions LLC (Bulk)	RCP U1 1B1	Dry Active Waste	A	A LSA-II
7/29/2020	FPL/PSL20-074	EnergySolutions Bear Creek	PO693153-28	Resins, Filters, and Evap Bottoms	A	A LSA-II
7/29/2020	FPL/PSL20-073	EnergySolutions Bear Creek	PO685100-42	Resins, Filters, and Evap Bottoms	A	A LSA-II
9/9/2020	FPL/PSL 20-084	EnergySolutions Bear Creek	ESUU600054	Dry Active Waste	A	A LSA-II

**TABLE 3.3**  
**DOSE ASSESSMENTS**  
**(28 PAGES)**

This portion of the 2020 Annual Radioactive Effluent Release Report was originally submitted with L-2021-049 on March 1, 2021. The attached table has been corrected and replaced in its entirety.

Reg. Guide 1.21, App B, Sec Doses due to Radioiodines, Tritium, and Particulates in Gaseous Releases

Unit: Site

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Organ Dose	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Bone	mRem	1.62E-03	5.85E-03	1.49E-03	1.49E-03	1.05E-02
Limit	mRem					
Percent of Limit	%					
Liver	mRem	2.38E-03	5.64E-03	1.28E-03	1.28E-03	1.06E-02
Limit	mRem					
Percent of Limit	%					
Total Body	mRem	2.38E-03	5.64E-03	1.28E-03	1.28E-03	1.06E-02
Limit	mRem					
Percent of Limit	%					
Thyroid	mRem	2.40E-03	5.64E-03	1.28E-03	1.28E-03	1.06E-02
Limit	mRem					
Percent of Limit	%					
Kidney	mRem	9.64E-04	4.56E-03	1.85E-04	1.84E-04	5.89E-03
Limit	mRem					
Percent of Limit	%					
Lung	mRem	2.40E-03	5.84E-03	1.28E-03	1.28E-03	1.08E-02
Limit	mRem					
Percent of Limit	%					
GI-Lli	mRem	2.38E-03	5.64E-03	1.28E-03	1.28E-03	1.06E-02
Limit	mRem					
Percent of Limit	%					



Reg. Guide 1.21, App B, Sec Doses due to Radioiodines, Tritium, and Particulates in Gaseous Releases

Unit: PSL1

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Organ Dose	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Bone	mRem	1.13E-03	5.12E-03	7.42E-04	7.47E-04	7.73E-03
Limit	mRem					
Percent of Limit	%					
Liver	mRem	1.02E-03	5.01E-03	6.42E-04	6.45E-04	7.32E-03
Limit	mRem					
Percent of Limit	%					
Total Body	mRem	1.02E-03	5.01E-03	6.42E-04	6.45E-04	7.32E-03
Limit	mRem					
Percent of Limit	%					
Thyroid	mRem	1.02E-03	5.01E-03	6.42E-04	6.45E-04	7.32E-03
Limit	mRem					
Percent of Limit	%					
Kidney	mRem	4.78E-04	4.47E-03	9.32E-05	9.31E-05	5.13E-03
Limit	mRem					
Percent of Limit	%					
Lung	mRem	1.04E-03	5.21E-03	6.42E-04	6.45E-04	7.53E-03
Limit	mRem					
Percent of Limit	%					
GI-Lli	mRem	1.02E-03	5.01E-03	6.42E-04	6.45E-04	7.32E-03
Limit	mRem					
Percent of Limit	%					

Reg. Guide 1.21, App B, Sec Doses due to Radioiodines, Tritium, and Particulates in Gaseous Releases

Unit: PSL2

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Organ Dose	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Bone	mRem	4.94E-04	7.36E-04	7.45E-04	7.42E-04	2.72E-03
Limit	mRem					
Percent of Limit	%					
Liver	mRem	1.36E-03	6.27E-04	6.40E-04	6.37E-04	3.26E-03
Limit	mRem					
Percent of Limit	%					
Total Body	mRem	1.36E-03	6.27E-04	6.40E-04	6.37E-04	3.26E-03
Limit	mRem					
Percent of Limit	%					
Thyroid	mRem	1.37E-03	6.27E-04	6.40E-04	6.37E-04	3.28E-03
Limit	mRem					
Percent of Limit	%					
Kidney	mRem	4.86E-04	8.82E-05	9.18E-05	9.10E-05	7.57E-04
Limit	mRem					
Percent of Limit	%					
Lung	mRem	1.36E-03	6.27E-04	6.40E-04	6.37E-04	3.26E-03
Limit	mRem					
Percent of Limit	%					
GI-Lli	mRem	1.36E-03	6.27E-04	6.40E-04	6.37E-04	3.26E-03
Limit	mRem					
Percent of Limit	%					

Reg. Guide 1.21, App B, Sec Air Doses Due To Gaseous Releases

Unit: Site

Starting: 1-Jan-2020 Ending: 31-Dec-2020

NG Dose	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Gamma Air	mRad	3.28E-03	1.32E-04	1.25E-04	1.22E-04	3.66E-03
Limit	mRad					
Percent of Limit	%					
Beta Air	mRad	1.19E-03	5.02E-05	4.56E-05	4.43E-05	1.33E-03
Limit	mRad					
Percent of Limit	%					
NG Total Body	mRem	3.12E-03	1.25E-04	1.19E-04	1.16E-04	3.48E-03
Limit	mRem					
Percent of Limit	%					
NG Skin	mRem	4.56E-03	1.86E-04	1.74E-04	1.70E-04	5.09E-03
Limit	mRem					
Percent of Limit	%					

Reg. Guide 1.21, App B, Sec Air Doses Due To Gaseous Releases

Unit: PSL1

Starting: 1-Jan-2020 Ending: 31-Dec-2020

NG Dose	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Gamma Air	mRad	5.03E-05	3.65E-05	3.32E-05	5.03E-05	1.70E-04
Limit	mRad					
Percent of Limit	%					
Beta Air	mRad	2.12E-05	1.57E-05	1.20E-05	1.81E-05	6.71E-05
Limit	mRad					
Percent of Limit	%					
NG Total Body	mRem	4.77E-05	3.47E-05	3.15E-05	4.78E-05	1.62E-04
Limit	mRem					
Percent of Limit	%					
NG Skin	mRem	7.07E-05	5.35E-05	4.62E-05	7.00E-05	2.40E-04
Limit	mRem					
Percent of Limit	%					

Reg. Guide 1.21, App B, Sec Doses to a member of the public due to Liquid Releases

Unit: Site

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Organ Dose	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Bone	mRem	8.06E-04	1.92E-04	1.43E-04	3.17E-04	1.46E-03
Limit	mRem					
Percent of Limit	%					
Liver	mRem	3.43E-03	2.68E-04	1.47E-04	2.41E-04	4.09E-03
Limit	mRem					
Percent of Limit	%					
Total Body	mRem	3.57E-03	2.15E-04	1.46E-04	2.52E-04	4.18E-03
Limit	mRem					
Percent of Limit	%					
Thyroid	mRem	2.31E-03	9.38E-05	1.05E-04	2.10E-04	2.72E-03
Limit	mRem					
Percent of Limit	%					
Kidney	mRem	3.02E-03	2.06E-04	1.46E-04	2.28E-04	3.60E-03
Limit	mRem					
Percent of Limit	%					
Lung	mRem	4.37E-03	3.72E-04	1.44E-04	8.30E-04	5.72E-03
Limit	mRem					
Percent of Limit	%					
GI-Lli	mRem	1.77E-02	1.84E-03	1.17E-03	9.90E-04	2.17E-02
Limit	mRem					
Percent of Limit	%					

Reg. Guide 1.21, App B, Sec Doses to a member of the public due to Liquid Releases

Unit: PSL1

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Organ Dose	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Bone	mRem	4.03E-04	9.61E-05	7.13E-05	1.58E-04	7.29E-04
Limit	mRem					
Percent of Limit	%					
Liver	mRem	1.72E-03	1.34E-04	7.35E-05	1.21E-04	2.04E-03
Limit	mRem					
Percent of Limit	%					
Total Body	mRem	1.78E-03	1.08E-04	7.32E-05	1.26E-04	2.09E-03
Limit	mRem					
Percent of Limit	%					
Thyroid	mRem	1.15E-03	4.69E-05	5.27E-05	1.05E-04	1.36E-03
Limit	mRem					
Percent of Limit	%					
Kidney	mRem	1.51E-03	1.03E-04	7.31E-05	1.14E-04	1.80E-03
Limit	mRem					
Percent of Limit	%					
Lung	mRem	2.19E-03	1.86E-04	7.18E-05	4.15E-04	2.86E-03
Limit	mRem					
Percent of Limit	%					
GI-Lli	mRem	8.84E-03	9.18E-04	5.84E-04	4.95E-04	1.08E-02
Limit	mRem					
Percent of Limit	%					

Reg. Guide 1.21, App B, Sec Doses to a member of the public due to Liquid Releases

Unit: PSL2

Starting: 1-Jan-2020 Ending: 31-Dec-2020

Organ Dose	Units	1ST Quarter	2ND Quarter	3RD Quarter	4TH Quarter	Annual
Bone	mRem	4.03E-04	9.61E-05	7.13E-05	1.58E-04	7.29E-04
Limit	mRem					
Percent of Limit	%					
Liver	mRem	1.72E-03	1.34E-04	7.35E-05	1.21E-04	2.04E-03
Limit	mRem					
Percent of Limit	%					
Total Body	mRem	1.78E-03	1.08E-04	7.32E-05	1.26E-04	2.09E-03
Limit	mRem					
Percent of Limit	%					
Thyroid	mRem	1.15E-03	4.69E-05	5.27E-05	1.05E-04	1.36E-03
Limit	mRem					
Percent of Limit	%					
Kidney	mRem	1.51E-03	1.03E-04	7.31E-05	1.14E-04	1.80E-03
Limit	mRem					
Percent of Limit	%					
Lung	mRem	2.19E-03	1.86E-04	7.18E-05	4.15E-04	2.86E-03
Limit	mRem					
Percent of Limit	%					
GI-Lli	mRem	8.84E-03	9.18E-04	5.84E-04	4.95E-04	1.08E-02
Limit	mRem					
Percent of Limit	%					

Period: Ann, 2020

Site/Unit/Discharge Point:

Site

Permit Number	Status/Alloc	Release Source	Start Date	Release Duration (min)	Release Volume (gal)	Release Flowrate (gpm)	Dilution Flowrate (gpm)
L-20-002-B	Closed/100.00	B Waste Monitor Tank	01/16/2020 17:07	4.680E+02	2.040E+04	1.700E+02	5.130E+05
L-20-003-B	Closed/100.00	B Waste Monitor Tank	01/18/2020 13:55	8.250E+02	2.800E+04	1.700E+02	1.026E+06
L-20-004-B	Closed/100.00	B Waste Monitor Tank	01/23/2020 00:48	8.520E+02	2.840E+04	1.700E+02	5.130E+05
L-20-005-B	Closed/100.00	A Waste Monitor Tank	01/31/2020 14:35	7.930E+02	2.760E+04	1.700E+02	5.130E+05
L-20-006-B	Closed/100.00	B Waste Monitor Tank	02/01/2020 12:20	7.630E+02	2.720E+04	1.700E+02	1.026E+06
L-20-007-B	Closed/100.00	A Waste Monitor Tank	02/03/2020 20:50	6.650E+02	2.240E+04	1.700E+02	1.026E+06
L-20-008-B	Closed/100.00	B Waste Monitor Tank	02/05/2020 22:00	8.690E+02	2.520E+04	1.700E+02	1.026E+06
L-20-009-B	Closed/100.00	A Waste Monitor Tank	02/12/2020 02:38	7.400E+02	2.600E+04	1.700E+02	1.026E+06
L-20-010-B	Closed/100.00	B Waste Monitor Tank	02/13/2020 01:50	8.250E+02	2.720E+04	1.700E+02	1.026E+06
L-20-011-B	Closed/100.00	A Waste Monitor Tank	02/14/2020 08:55	7.610E+02	2.800E+04	1.700E+02	1.026E+06
L-20-012-B	Closed/100.00	B Waste Monitor Tank	02/16/2020 12:40	7.200E+02	2.720E+04	1.700E+02	1.026E+06
L-20-013-B	Closed/100.00	A Waste Monitor Tank	02/17/2020 16:55	7.350E+02	4.000E+04	1.700E+02	7.840E+05
L-20-014-B	Closed/100.00	B Waste Monitor Tank	02/19/2020 16:15	7.540E+02	2.760E+04	1.700E+02	5.275E+05
L-20-015-B	Closed/100.00	A Waste Monitor Tank	02/24/2020 10:40	8.500E+02	2.960E+04	1.700E+02	5.275E+05
L-20-016-B	Closed/100.00	B Waste Monitor Tank	02/25/2020 23:50	8.900E+02	2.920E+04	1.700E+02	5.275E+05
L-20-017-B	Closed/100.00	A Waste Monitor Tank	02/29/2020 05:19	7.580E+02	2.960E+04	1.700E+02	5.130E+05
L-20-018-B	Closed/100.00	B Waste Monitor Tank	03/07/2020 01:20	8.500E+02	2.880E+04	3.388E+01	5.275E+05
L-20-019-B	Closed/100.00	A Waste Monitor Tank	03/14/2020 15:15	7.050E+02	2.760E+04	3.915E+01	7.840E+05
L-20-021-B	Closed/100.00	B Waste Monitor Tank	03/18/2020 22:45	8.550E+02	3.000E+04	3.509E+01	5.130E+05
L-20-022-B	Closed/100.00	A Waste Monitor Tank	03/26/2020 14:50	6.900E+02	2.720E+04	3.942E+01	1.026E+06
L-20-023-B	Closed/100.00	B Waste Monitor Tank	04/02/2020 13:45	7.510E+02	2.960E+04	3.941E+01	1.026E+06
L-20-024-B	Closed/100.00	A Waste Monitor Tank	05/20/2020 13:33	7.620E+02	2.960E+04	1.700E+02	1.026E+06
L-20-025-B	Closed/100.00	B Waste Monitor Tank	05/28/2020 13:55	6.510E+02	2.200E+04	1.700E+02	1.026E+06
L-20-026-B	Closed/100.00	A Waste Monitor Tank	07/08/2020 20:31	7.910E+02	2.880E+04	3.641E+01	1.026E+06
L-20-027-B	Closed/100.00	B Waste Monitor Tank	07/24/2020 13:04	7.990E+02	2.640E+04	3.304E+01	1.026E+06
L-20-028-B	Closed/100.00	A Waste Monitor Tank	07/31/2020 04:35	5.650E+02	1.720E+04	3.044E+01	1.026E+06
L-20-029-B	Closed/100.00	B Waste Monitor Tank	08/21/2020 11:50	9.260E+02	2.720E+04	1.700E+02	1.026E+06
L-20-030-B	Closed/100.00	A Waste Monitor Tank	08/28/2020 13:48	7.170E+02	2.160E+04	1.700E+02	1.026E+06
L-20-031-B	Closed/100.00	B Waste Monitor Tank	09/24/2020 14:38	7.020E+02	2.400E+04	1.700E+02	1.026E+06



Period: Ann, 2020

Site/Unit/Discharge Point:

Site

Permit Number	Status/Alloc	Release Source	Start Date	Release Duration (min)	Release Volume (gal)	Release Flowrate (gpm)	Dilution Flowrate (gpm)
L-20-032-B	Closed/100.00	A Waste Monitor Tank	09/26/2020 10:07	7.130E+02	2.240E+04	1.700E+02	1.026E+06
L-20-034-B	Closed/100.00	B Waste Monitor Tank	10/01/2020 01:47	8.630E+02	2.400E+04	1.700E+02	1.026E+06
L-20-035-B	Closed/100.00	A Waste Monitor Tank	10/09/2020 12:17	8.470E+02	2.480E+04	1.700E+02	1.026E+06
L-20-036-B	Closed/100.00	South Pond	10/21/2020 06:45	7.275E+03	4.157E+06	5.715E+02	1.026E+06
L-20-037-B	Closed/100.00	South Pond	10/08/2020 13:00	8.340E+03	5.034E+06	6.036E+02	1.026E+06
L-20-038-B	Closed/100.00	South Pond	10/01/2020 15:36	9.924E+03	5.141E+06	5.180E+02	1.026E+06
L-20-039-B	Closed/100.00	South Pond	08/21/2020 15:00	7.215E+03	4.678E+06	6.484E+02	1.026E+06
L-20-040-B	Closed/100.00	South Pond	06/11/2020 08:00	6.120E+03	6.872E+04	1.123E+01	1.026E+06
L-20-041-B	Closed/100.00	South Pond	06/03/2020 15:39	8.121E+03	7.513E+06	9.251E+02	1.026E+06
L-20-042-B	Closed/100.00	South Pond	02/07/2020 07:30	5.760E+03	2.644E+06	4.591E+02	1.026E+06
L-20-043-B	Closed/100.00	South Pond	05/25/2020 15:30	9.750E+03	1.374E+07	1.409E+03	1.026E+06
L-20-044-B	Closed/100.00	South Pond	05/15/2020 06:30	9.270E+03	8.515E+05	9.186E+01	1.026E+06
L-20-046-B	Closed/100.00	South Pond	07/23/2020 16:00	5.280E+03	5.082E+06	9.625E+02	1.026E+06
L-20-047-B	Closed/100.00	South Pond	07/30/2020 16:00	9.960E+03	6.914E+06	6.942E+02	1.026E+06
L-20-048-B	Closed/100.00	South Pond	06/18/2020 08:30	1.002E+04	1.155E+06	1.153E+02	1.026E+06
L-20-049-B	Closed/100.00	South Pond	11/05/2020 07:45	8.565E+03	5.163E+06	6.027E+02	1.026E+06
L-20-050-B	Closed/100.00	South Pond	11/11/2020 09:30	1.002E+04	5.077E+06	5.067E+02	1.026E+06
L-20-051-B	Closed/100.00	B Waste Monitor Tank	12/17/2020 02:38	7.270E+02	2.960E+04	1.700E+02	5.130E+05
L-20-052-B	Closed/100.00	A Waste Monitor Tank	12/19/2020 12:29	5.810E+02	2.400E+04	1.700E+02	1.026E+06
L-20-053-B	Closed/100.00	B Waste Monitor Tank	12/23/2020 14:00	6.700E+02	2.600E+04	1.700E+02	1.026E+06
L-20-054-B	Closed/100.00	A Waste Monitor Tank	12/29/2020 22:36	7.740E+02	2.920E+04	1.700E+02	1.026E+06

Total Release Volume: 6.818E+07 gal

Total Dilution Volume: 1.422E+11 gal

Period: Ann, 2020

Site/Unit/Discharge Point:

Site

<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/mL)</u>	<u>Avg Conc/10xFL</u>	<u>Dil Conc (uCi/mL)</u>	<u>Dil Conc/10xFL</u>
Xe-135	N	5.015E+01	1.943E-10	9.716E-08	9.310E-14	4.655E-11
Xe-133	N	5.496E+03	2.129E-08	1.065E-05	1.020E-11	5.101E-09
Xe-133m	N	4.263E+01	1.652E-10	8.258E-08	7.913E-14	3.956E-11
Nuclide Type Total		5.588E+03	2.165E-08	1.083E-05	1.037E-11	5.187E-09

<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/mL)</u>	<u>Avg Conc/10xFL</u>	<u>Dil Conc (uCi/mL)</u>	<u>Dil Conc/10xFL</u>
H-3	O	3.582E+08	1.388E-03	1.388E-01	6.649E-07	6.649E-05
Ni-63	O	7.276E+02	2.819E-09	2.819E-06	1.351E-12	1.351E-09
C-14	O	7.581E+03	2.937E-08	9.791E-05	1.407E-11	4.691E-08
Nuclide Type Total		3.582E+08	1.388E-03	1.389E-01	6.650E-07	6.654E-05

<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/mL)</u>	<u>Avg Conc/10xFL</u>	<u>Dil Conc (uCi/mL)</u>	<u>Dil Conc/10xFL</u>
Sb-125	P	6.980E+03	2.704E-08	9.014E-05	1.296E-11	4.319E-08
Cr-51	P	1.573E+02	6.094E-10	1.219E-07	2.920E-13	5.839E-11
Co-58	P	1.886E+03	7.306E-09	3.653E-05	3.500E-12	1.750E-08
Sb-124	P	3.064E+03	1.187E-08	1.696E-04	5.687E-12	8.125E-08
Te-129	P	1.216E+02	4.711E-10	1.178E-07	2.257E-13	5.643E-11
Zr-95	P	9.289E+01	3.599E-10	1.800E-06	1.724E-13	8.622E-10
Co-60	P	1.327E+04	5.142E-08	1.714E-03	2.464E-11	8.212E-07
Fe-59	P	3.768E+01	1.460E-10	1.460E-06	6.994E-14	6.994E-10
Nb-95	P	2.643E+02	1.024E-09	3.413E-06	4.906E-13	1.635E-09
Cs-137	P	1.497E+02	5.798E-10	5.798E-05	2.778E-13	2.778E-08
Zn-65	P	9.898E+01	3.835E-10	7.670E-06	1.837E-13	3.675E-09
Sb-122	P	3.287E+02	1.274E-09	1.274E-05	6.101E-13	6.101E-09
Ag-110m	P	4.167E+02	1.614E-09	2.691E-05	7.735E-13	1.289E-08
W-187	P	1.387E+01	5.373E-11	1.791E-07	2.574E-14	8.581E-11
Te-132	P	1.713E+02	6.637E-10	7.375E-06	3.180E-13	3.533E-09
La-140	P	2.551E+02	9.883E-10	1.098E-05	4.735E-13	5.261E-09
Be-7	P	1.049E+02	4.066E-10	0.000E+00	1.948E-13	0.000E+00
Te-123m	P	4.823E+02	1.869E-09	0.000E+00	8.953E-13	0.000E+00

Period: Ann, 2020

Site/Unit/Discharge Point:

Site

<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/mL)</u>	<u>Avg Conc/10xECL</u>	<u>Dil Conc (uCi/mL)</u>	<u>Dil Conc/10xECL</u>
Mn-54	P	4.179E+02	1.619E-09	5.397E-06	7.757E-13	2.586E-09
Sn-117m	P	1.905E+01	7.380E-11	0.000E+00	3.536E-14	0.000E+00
Nb-97	P	5.481E+02	2.124E-09	7.079E-07	1.018E-12	3.392E-10
Te-129m	P	9.849E+02	3.816E-09	5.452E-05	1.828E-12	2.612E-08
Na-24	P	6.279E+01	2.433E-10	4.866E-07	1.166E-13	2.331E-10
Nuclide Type Total		2.993E+04	1.160E-07	2.202E-03	5.556E-11	1.055E-06

<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/mL)</u>	<u>Avg Conc/10xECL</u>	<u>Dil Conc (uCi/mL)</u>	<u>Dil Conc/10xECL</u>
I-132	R	1.536E+02	5.953E-10	5.953E-07	2.852E-13	2.852E-10
I-131	R	9.100E+01	3.526E-10	3.526E-05	1.689E-13	1.689E-08
I-130	R	3.059E+00	1.185E-11	5.925E-08	5.678E-15	2.839E-11
I-133	R	3.162E+00	1.225E-11	1.750E-07	5.869E-15	8.384E-11
Nuclide Type Total		2.509E+02	9.720E-10	3.609E-05	4.657E-13	1.729E-08

Total		3.582E+08	1.388E-03	1.411E-01	6.650E-07	6.762E-05
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Period: Ann, 2020

Site/Unit/Discharge Point:

Site

Liquid Dose Summary - Note: All Doses in mRem

<u>Receptor</u>	<u>Agegroup</u>	<u>Bone</u>	<u>Liver</u>	<u>Total Body</u>	<u>Thyroid</u>	<u>Kidney</u>	<u>Lung</u>	<u>GI-Li</u>	<u>Skin</u>
Liquid Receptor - Teenager	Teenager	1.457E-03	4.087E-03	4.180E-03	2.718E-03	3.598E-03	5.716E-03	2.167E-02	0.000E+00
Liquid Recptor - Child	Child	1.169E-03	3.284E-03	3.866E-03	2.549E-03	1.568E-03	3.739E-03	9.857E-03	0.000E+00
Maximum Dose by Organ:		1.457E-03	4.087E-03	4.180E-03	2.718E-03	3.598E-03	5.716E-03	2.167E-02	0.000E+00

Maximum Organ Dose (mRem): 2.167E-02

Maximum Total Body Dose (mRem): 4.180E-03

Period: Ann, 2020

Site/Unit/Discharge Point:

PSL1

<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/mL)</u>	<u>Avg Conc/10xFCL</u>	<u>Dil Conc (uCi/mL)</u>	<u>Dil Conc/10xFCL</u>
Xe-133	N	2.748E+03	2.129E-08	1.065E-05	1.020E-11	5.101E-09
Xe-135	N	2.508E+01	1.943E-10	9.716E-08	9.310E-14	4.655E-11
Xe-133m	N	2.131E+01	1.652E-10	8.258E-08	7.913E-14	3.956E-11
Nuclide Type Total		2.794E+03	2.165E-08	1.083E-05	1.037E-11	5.187E-09

<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/mL)</u>	<u>Avg Conc/10xFCL</u>	<u>Dil Conc (uCi/mL)</u>	<u>Dil Conc/10xFCL</u>
C-14	O	3.790E+03	2.937E-08	9.791E-05	1.407E-11	4.691E-08
H-3	O	1.791E+08	1.388E-03	1.388E-01	6.649E-07	6.649E-05
Ni-63	O	3.638E+02	2.819E-09	2.819E-06	1.351E-12	1.351E-09
Nuclide Type Total		1.791E+08	1.388E-03	1.389E-01	6.650E-07	6.654E-05

<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/mL)</u>	<u>Avg Conc/10xFCL</u>	<u>Dil Conc (uCi/mL)</u>	<u>Dil Conc/10xFCL</u>
Zr-95	P	4.645E+01	3.599E-10	1.800E-06	1.724E-13	8.622E-10
Nb-97	P	2.741E+02	2.124E-09	7.079E-07	1.018E-12	3.392E-10
Ag-110m	P	2.083E+02	1.614E-09	2.691E-05	7.735E-13	1.289E-08
Te-129m	P	4.925E+02	3.816E-09	5.452E-05	1.828E-12	2.612E-08
Te-123m	P	2.411E+02	1.869E-09	0.000E+00	8.953E-13	0.000E+00
Cs-137	P	7.483E+01	5.798E-10	5.798E-05	2.778E-13	2.778E-08
Te-132	P	8.565E+01	6.637E-10	7.375E-06	3.180E-13	3.533E-09
Sn-117m	P	9.524E+00	7.380E-11	0.000E+00	3.536E-14	0.000E+00
Fe-59	P	1.884E+01	1.460E-10	1.460E-06	6.994E-14	6.994E-10
Nb-95	P	1.321E+02	1.024E-09	3.413E-06	4.906E-13	1.635E-09
Sb-122	P	1.643E+02	1.274E-09	1.274E-05	6.101E-13	6.101E-09
Co-60	P	6.636E+03	5.142E-08	1.714E-03	2.464E-11	8.212E-07
Sb-124	P	1.532E+03	1.187E-08	1.696E-04	5.687E-12	8.125E-08
W-187	P	6.934E+00	5.373E-11	1.791E-07	2.574E-14	8.581E-11
Be-7	P	5.247E+01	4.066E-10	0.000E+00	1.948E-13	0.000E+00
Te-129	P	6.079E+01	4.711E-10	1.178E-07	2.257E-13	5.643E-11
Zn-65	P	4.949E+01	3.835E-10	7.670E-06	1.837E-13	3.675E-09
Na-24	P	3.140E+01	2.433E-10	4.866E-07	1.166E-13	2.331E-10

Period: Ann, 2020

Site/Unit/Discharge Point:

PSL1

<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/mL)</u>	<u>Avg Conc/10xECL</u>	<u>Dil Conc (uCi/mL)</u>	<u>Dil Conc/10xECL</u>
Cr-51	P	7.864E+01	6.094E-10	1.219E-07	2.920E-13	5.839E-11
Co-58	P	9.428E+02	7.306E-09	3.653E-05	3.500E-12	1.750E-08
La-140	P	1.275E+02	9.883E-10	1.098E-05	4.735E-13	5.261E-09
Sb-125	P	3.490E+03	2.704E-08	9.014E-05	1.296E-11	4.319E-08
Mn-54	P	2.089E+02	1.619E-09	5.397E-06	7.757E-13	2.586E-09
Nuclide Type Total		1.496E+04	1.160E-07	2.202E-03	5.556E-11	1.055E-06

<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/mL)</u>	<u>Avg Conc/10xECL</u>	<u>Dil Conc (uCi/mL)</u>	<u>Dil Conc/10xECL</u>
I-130	R	1.529E+00	1.185E-11	5.925E-08	5.678E-15	2.839E-11
I-131	R	4.550E+01	3.526E-10	3.526E-05	1.689E-13	1.689E-08
I-133	R	1.581E+00	1.225E-11	1.750E-07	5.869E-15	8.384E-11
I-132	R	7.682E+01	5.953E-10	5.953E-07	2.852E-13	2.852E-10
Nuclide Type Total		1.254E+02	9.720E-10	3.609E-05	4.657E-13	1.729E-08

Total		1.791E+08	1.388E-03	1.411E-01	6.650E-07	6.762E-05
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Period: Ann, 2020

Site/Unit/Discharge Point: PSL1

Liquid Dose Summary - Note: All Doses in mRem

<u>Receptor</u>	<u>Agegroup</u>	<u>Bone</u>	<u>Liver</u>	<u>Total Body</u>	<u>Thyroid</u>	<u>Kidney</u>	<u>Lung</u>	<u>GI-Li</u>	<u>Skin</u>
Liquid Receptor - Teenager	Teenager	7.287E-04	2.043E-03	2.090E-03	1.359E-03	1.799E-03	2.858E-03	1.084E-02	0.000E+00
Liquid Recptor - Child	Child	5.843E-04	1.642E-03	1.933E-03	1.275E-03	7.840E-04	1.869E-03	4.928E-03	0.000E+00
Maximum Dose by Organ:		7.287E-04	2.043E-03	2.090E-03	1.359E-03	1.799E-03	2.858E-03	1.084E-02	0.000E+00

Maximum Organ Dose (mRem): 1.084E-02

Maximum Total Body Dose (mRem): 2.090E-03

Period: Ann, 2020

Site/Unit/Discharge Point:

PSL2

<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/mL)</u>	<u>Avg Conc/10xFCL</u>	<u>Dil Conc (uCi/mL)</u>	<u>Dil Conc/10xFCL</u>
Xe-133m	N	2.131E+01	1.652E-10	8.258E-08	7.913E-14	3.956E-11
Xe-133	N	2.748E+03	2.129E-08	1.065E-05	1.020E-11	5.101E-09
Xe-135	N	2.508E+01	1.943E-10	9.716E-08	9.310E-14	4.655E-11
Nuclide Type Total		2.794E+03	2.165E-08	1.083E-05	1.037E-11	5.187E-09

<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/mL)</u>	<u>Avg Conc/10xFCL</u>	<u>Dil Conc (uCi/mL)</u>	<u>Dil Conc/10xFCL</u>
H-3	O	1.791E+08	1.388E-03	1.388E-01	6.649E-07	6.649E-05
C-14	O	3.790E+03	2.937E-08	9.791E-05	1.407E-11	4.691E-08
Ni-63	O	3.638E+02	2.819E-09	2.819E-06	1.351E-12	1.351E-09
Nuclide Type Total		1.791E+08	1.388E-03	1.389E-01	6.650E-07	6.654E-05

<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/mL)</u>	<u>Avg Conc/10xFCL</u>	<u>Dil Conc (uCi/mL)</u>	<u>Dil Conc/10xFCL</u>
Na-24	P	3.140E+01	2.433E-10	4.866E-07	1.166E-13	2.331E-10
Be-7	P	5.247E+01	4.066E-10	0.000E+00	1.948E-13	0.000E+00
Te-129	P	6.079E+01	4.711E-10	1.178E-07	2.257E-13	5.643E-11
Te-123m	P	2.411E+02	1.869E-09	0.000E+00	8.953E-13	0.000E+00
Zn-65	P	4.949E+01	3.835E-10	7.670E-06	1.837E-13	3.675E-09
Co-60	P	6.636E+03	5.142E-08	1.714E-03	2.464E-11	8.212E-07
La-140	P	1.275E+02	9.883E-10	1.098E-05	4.735E-13	5.261E-09
Zr-95	P	4.645E+01	3.599E-10	1.800E-06	1.724E-13	8.622E-10
Fe-59	P	1.884E+01	1.460E-10	1.460E-06	6.994E-14	6.994E-10
Nb-95	P	1.321E+02	1.024E-09	3.413E-06	4.906E-13	1.635E-09
Ag-110m	P	2.083E+02	1.614E-09	2.691E-05	7.735E-13	1.289E-08
Te-132	P	8.565E+01	6.637E-10	7.375E-06	3.180E-13	3.533E-09
Sb-124	P	1.532E+03	1.187E-08	1.696E-04	5.687E-12	8.125E-08
Sb-125	P	3.490E+03	2.704E-08	9.014E-05	1.296E-11	4.319E-08
Sn-117m	P	9.524E+00	7.380E-11	0.000E+00	3.536E-14	0.000E+00
Cr-51	P	7.864E+01	6.094E-10	1.219E-07	2.920E-13	5.839E-11
Co-58	P	9.428E+02	7.306E-09	3.653E-05	3.500E-12	1.750E-08
Sb-122	P	1.643E+02	1.274E-09	1.274E-05	6.101E-13	6.101E-09



Period: Ann, 2020

Site/Unit/Discharge Point:

PSL2

<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/mL)</u>	<u>Avg Conc/10xECL</u>	<u>Dil Conc (uCi/mL)</u>	<u>Dil Conc/10xECL</u>
Nb-97	P	2.741E+02	2.124E-09	7.079E-07	1.018E-12	3.392E-10
Te-129m	P	4.925E+02	3.816E-09	5.452E-05	1.828E-12	2.612E-08
Cs-137	P	7.483E+01	5.798E-10	5.798E-05	2.778E-13	2.778E-08
W-187	P	6.934E+00	5.373E-11	1.791E-07	2.574E-14	8.581E-11
Mn-54	P	2.089E+02	1.619E-09	5.397E-06	7.757E-13	2.586E-09
Nuclide Type Total		1.496E+04	1.160E-07	2.202E-03	5.556E-11	1.055E-06

<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/mL)</u>	<u>Avg Conc/10xECL</u>	<u>Dil Conc (uCi/mL)</u>	<u>Dil Conc/10xECL</u>
I-130	R	1.529E+00	1.185E-11	5.925E-08	5.678E-15	2.839E-11
I-131	R	4.550E+01	3.526E-10	3.526E-05	1.689E-13	1.689E-08
I-133	R	1.581E+00	1.225E-11	1.750E-07	5.869E-15	8.384E-11
I-132	R	7.682E+01	5.953E-10	5.953E-07	2.852E-13	2.852E-10
Nuclide Type Total		1.254E+02	9.720E-10	3.609E-05	4.657E-13	1.729E-08

Total		1.791E+08	1.388E-03	1.411E-01	6.650E-07	6.762E-05
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Period: Ann, 2020

Site/Unit/Discharge Point: PSL2

Liquid Dose Summary - Note: All Doses in mRem

<u>Receptor</u>	<u>Agegroup</u>	<u>Bone</u>	<u>Liver</u>	<u>Total Body</u>	<u>Thyroid</u>	<u>Kidney</u>	<u>Lung</u>	<u>GI-Li</u>	<u>Skin</u>
Liquid Receptor - Teenager	Teenager	7.287E-04	2.043E-03	2.090E-03	1.359E-03	1.799E-03	2.858E-03	1.084E-02	0.000E+00
Liquid Recptor - Child	Child	5.843E-04	1.642E-03	1.933E-03	1.275E-03	7.840E-04	1.869E-03	4.928E-03	0.000E+00
Maximum Dose by Organ:		7.287E-04	2.043E-03	2.090E-03	1.359E-03	1.799E-03	2.858E-03	1.084E-02	0.000E+00

Maximum Organ Dose (mRem): 1.084E-02

Maximum Total Body Dose (mRem): 2.090E-03

Period: Ann, 2020

Site/Unit/Discharge Point:

Site

<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/cc)</u>	<u>Avg Conc/10xFCL</u>	<u>Avg Rel Rate (uCi/sec)</u>
Kr-85m	N	9.156E+01	2.445E-14	2.445E-08	2.895E-06
Kr-89	N	6.854E+03	1.831E-12	1.831E-04	2.168E-04
Xe-137	N	1.682E+03	4.492E-13	4.492E-05	5.319E-05
Xe-133m	N	3.505E+02	9.361E-14	1.560E-08	1.108E-05
Ar-41	N	7.711E+06	2.059E-09	2.059E-02	2.438E-01
Kr-88	N	1.776E+02	4.744E-14	5.271E-07	5.617E-06
Xe-135	N	2.896E+03	7.735E-13	1.105E-06	9.159E-05
Xe-133	N	7.416E+05	1.981E-10	3.961E-05	2.345E-02
Xe-127	N	3.437E+01	9.180E-15	0.000E+00	1.087E-06
Kr-87	N	5.004E+01	1.336E-14	6.682E-08	1.582E-06

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Nuclide Type Total		8.465E+06	2.261E-09	2.086E-02	2.677E-01
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<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/cc)</u>	<u>Avg Conc/10xFCL</u>	<u>Avg Rel Rate (uCi/sec)</u>
H-3	O	4.516E+07	1.206E-08	1.206E-02	1.428E+00
C-14	O	2.211E+07	5.905E-09	1.968E-01	6.992E-01
G-Alpha	O	7.600E-02	2.030E-17	2.030E-03	2.403E-09

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Nuclide Type Total		6.727E+07	1.797E-08	2.109E-01	2.127E+00
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<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/cc)</u>	<u>Avg Conc/10xFCL</u>	<u>Avg Rel Rate (uCi/sec)</u>
Co-58	P	6.870E-02	1.835E-17	1.835E-09	2.172E-09
Co-60	P	9.345E+02	2.496E-13	4.992E-04	2.955E-05
Cs-137	P	7.905E+00	2.111E-15	1.056E-06	2.500E-07

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Nuclide Type Total		9.425E+02	2.517E-13	5.002E-04	2.981E-05
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<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/cc)</u>	<u>Avg Conc/10xFCL</u>	<u>Avg Rel Rate (uCi/sec)</u>
I-131	R	5.312E+00	1.419E-15	7.094E-07	1.680E-07
I-133	R	6.208E+01	1.658E-14	1.658E-06	1.963E-06

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Nuclide Type Total		6.739E+01	1.800E-14	2.367E-06	2.131E-06
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Total		7.573E+07	2.023E-08	2.323E-01	2.395E+00
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Period: Ann, 2020

Site/Unit/Discharge Point:

Site

Site Boundary NNG Doserate Summary - Note: All Doses in mRem/yr

Receptor	Agegroup	Bone	Liver	Total Body	Thyroid	Kidney	Lung	GI-LII	Skin
NW Site Boundary - In	Infant	1.042E-02	1.055E-02	1.055E-02	1.057E-02	5.875E-03	1.077E-02	1.056E-02	0.000E+00
WNW Site Boundary - I	Infant	1.069E-03	1.069E-03	1.069E-03	1.069E-03	1.069E-03	1.069E-03	1.069E-03	0.000E+00
Maximum Doserate by Organ:		1.042E-02	1.055E-02	1.055E-02	1.057E-02	5.875E-03	1.077E-02	1.056E-02	0.000E+00

Maximum Organ Doserate (mRem/yr): 1.077E-02

Maximum Total Body Doserate (mRem/yr): 1.055E-02

Site Boundary NG Doserate Summary

Gas Receptor Location	Gamma (mRad/yr)	Beta (mRad/yr)	Total Body (mRem/yr)	Skin (mRem/yr)
NW Site Boundary	3.648E-03	1.324E-03	3.466E-03	5.079E-03
WNW Site Boundary	3.143E-03	1.141E-03	2.986E-03	4.375E-03
Maximum NG Dose Rate:	3.648E-03	1.324E-03	3.466E-03	5.079E-03

Period: Ann, 2020

Site/Unit/Discharge Point: Site

## Maximum Individual NNG Dose Summary - Note: All Doses in mRem

Receptor	Agegroup	Bone	Liver	Total Body	Thyroid	Kidney	Lung	GI-Lli	Skin
NW - Near Milk - Adult	Adult	3.015E-04	3.022E-04	3.020E-04	3.139E-04	3.011E-04	3.256E-04	3.061E-04	0.000E+00
NW Near Milk - Child	Child	3.044E-04	3.049E-04	3.030E-04	3.397E-04	3.011E-04	3.298E-04	3.043E-04	0.000E+00
NW Near Milk - Infant	Infant	3.084E-04	3.106E-04	3.042E-04	3.924E-04	3.011E-04	3.248E-04	3.038E-04	0.000E+00
NW Near Milk - Teenager	Teenager	3.022E-04	3.031E-04	3.023E-04	3.205E-04	3.012E-04	3.365E-04	3.062E-04	0.000E+00
SE Nearest Res - Adult	Adult	1.759E-03	1.760E-03	1.760E-03	1.764E-03	1.759E-03	1.865E-03	1.764E-03	0.000E+00
SE Nearest Res - Child	Child	1.759E-03	1.759E-03	1.759E-03	1.767E-03	1.759E-03	1.881E-03	1.761E-03	0.000E+00
SE Nearest Res - Infant	Infant	1.759E-03	1.759E-03	1.759E-03	1.766E-03	1.759E-03	1.857E-03	1.760E-03	0.000E+00
SE Nearest Res - Teenager	Teenager	1.759E-03	1.759E-03	1.759E-03	1.765E-03	1.759E-03	1.910E-03	1.763E-03	0.000E+00
SE Visitor - Lifeguard 1.0 mi	Adult	8.171E-04	8.172E-04	8.172E-04	8.190E-04	8.171E-04	8.630E-04	8.192E-04	0.000E+00
W Near Garden - Adult	Adult	8.252E-04	8.253E-04	8.253E-04	8.270E-04	8.252E-04	8.686E-04	8.272E-04	0.000E+00
W Near Garden - Child	Child	8.252E-04	8.252E-04	8.251E-04	8.282E-04	8.251E-04	8.754E-04	8.258E-04	0.000E+00
W Near Garden - Teenager	Teenager	8.252E-04	8.252E-04	8.252E-04	8.275E-04	8.252E-04	8.874E-04	8.268E-04	0.000E+00
Maximum Dose by Organ:		1.759E-03	1.760E-03	1.760E-03	1.767E-03	1.759E-03	1.910E-03	1.764E-03	0.000E+00

Maximum Organ Dose (mRem): 1.910E-03

Maximum Total Body Dose (mRem): 1.760E-03

## Maximum Individual NG Dose Summary

Gas Receptor Location	Gamma (mRad)	Beta (mRad)	Total Body (mRem)	Skin (mRem)
NW Near Milk 4.25 mi	3.201E-04	1.162E-04	3.041E-04	4.456E-04
SE Nearest Res 1.52 mi 142 deg	1.628E-03	5.910E-04	1.547E-03	2.267E-03
SE Visitor @ 1 mi	7.050E-04	2.559E-04	6.698E-04	9.815E-04
W Near Gard 2.0 miles	5.602E-04	2.033E-04	5.322E-04	7.798E-04
Maximum NG Dose:	1.628E-03	5.910E-04	1.547E-03	2.267E-03

Period: Ann, 2020

Site/Unit/Discharge Point: PSL1

<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/cc)</u>	<u>Avg Conc/10xECL</u>	<u>Avg Rel Rate (uCi/sec)</u>
Kr-89	N	6.854E+03	4.063E-12	4.063E-04	2.168E-04
Ar-41	N	3.444E+05	2.041E-10	2.041E-03	1.089E-02
Xe-133	N	9.196E+04	5.451E-11	1.090E-05	2.908E-03
Kr-87	N	5.004E+01	2.966E-14	1.483E-07	1.582E-06
Xe-135	N	2.756E+02	1.634E-13	2.334E-07	8.715E-06
Xe-137	N	1.682E+03	9.969E-13	9.969E-05	5.319E-05
Kr-85m	N	7.689E+01	4.557E-14	4.557E-08	2.432E-06

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Nuclide Type Total		4.453E+05	2.639E-10	2.559E-03	1.408E-02
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<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/cc)</u>	<u>Avg Conc/10xECL</u>	<u>Avg Rel Rate (uCi/sec)</u>
H-3	O	1.463E+06	8.673E-10	8.673E-04	4.627E-02
G-Alpha	O	5.064E-02	3.002E-17	3.002E-03	1.601E-09
C-14	O	1.158E+07	6.864E-09	2.288E-01	3.662E-01

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Nuclide Type Total		1.304E+07	7.731E-09	2.327E-01	4.125E-01
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<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/cc)</u>	<u>Avg Conc/10xECL</u>	<u>Avg Rel Rate (uCi/sec)</u>
Co-60	P	9.344E+02	5.538E-13	1.108E-03	2.955E-05

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Nuclide Type Total		9.344E+02	5.538E-13	1.108E-03	2.955E-05
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<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/cc)</u>	<u>Avg Conc/10xECL</u>	<u>Avg Rel Rate (uCi/sec)</u>
I-131	R	4.433E-01	2.628E-16	1.314E-07	1.402E-08

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Nuclide Type Total		4.433E-01	2.628E-16	1.314E-07	1.402E-08
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Total		1.349E+07	7.995E-09	2.363E-01	4.266E-01
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Period: Ann, 2020

Site/Unit/Discharge Point: PSL1

Site Boundary NNG Doserate Summary - Note: All Doses in mRem/yr

Receptor	Agegroup	Bone	Liver	Total Body	Thyroid	Kidney	Lung	GI-LIi	Skin
NW Site Boundary - In	Infant	7.713E-03	7.299E-03	7.299E-03	7.299E-03	5.120E-03	7.513E-03	7.300E-03	0.000E+00
WNW Site Boundary - I	Infant	1.066E-03	1.066E-03	1.066E-03	1.066E-03	1.066E-03	1.066E-03	1.066E-03	0.000E+00
Maximum Doserate by Organ:		7.713E-03	7.299E-03	7.299E-03	7.299E-03	5.120E-03	7.513E-03	7.300E-03	0.000E+00

Maximum Organ Doserate (mRem/yr): 7.713E-03

Maximum Total Body Doserate (mRem/yr): 7.299E-03

Site Boundary NG Doserate Summary

Gas Receptor Location	Gamma (mRad/yr)	Beta (mRad/yr)	Total Body (mRem/yr)	Skin (mRem/yr)
NW Site Boundary	1.699E-04	6.687E-05	1.613E-04	2.398E-04
WNW Site Boundary	1.463E-04	5.760E-05	1.390E-04	2.065E-04
Maximum NG Dose Rate:	1.699E-04	6.687E-05	1.613E-04	2.398E-04

Period: Ann, 2020

Site/Unit/Discharge Point: PSL1

## Maximum Individual NNG Dose Summary - Note: All Doses in mRem

Receptor	Agegroup	Bone	Liver	Total Body	Thyroid	Kidney	Lung	GI-Lli	Skin
NW - Near Milk - Adult	Adult	2.994E-04	2.997E-04	3.000E-04	3.004E-04	2.994E-04	3.243E-04	3.049E-04	0.000E+00
NW Near Milk - Child	Child	2.994E-04	3.000E-04	3.012E-04	3.022E-04	2.994E-04	3.282E-04	3.031E-04	0.000E+00
NW Near Milk - Infant	Infant	2.994E-04	3.007E-04	3.023E-04	3.060E-04	2.994E-04	3.226E-04	3.026E-04	0.000E+00
NW Near Milk - Teenager	Teenager	2.994E-04	2.998E-04	3.003E-04	3.008E-04	2.994E-04	3.350E-04	3.049E-04	0.000E+00
SE Nearest Res - Adult	Adult	1.752E-03	1.752E-03	1.752E-03	1.752E-03	1.752E-03	1.858E-03	1.757E-03	0.000E+00
SE Nearest Res - Child	Child	1.752E-03	1.752E-03	1.752E-03	1.752E-03	1.752E-03	1.874E-03	1.754E-03	0.000E+00
SE Nearest Res - Infant	Infant	1.752E-03	1.752E-03	1.752E-03	1.752E-03	1.752E-03	1.850E-03	1.753E-03	0.000E+00
SE Nearest Res - Teenager	Teenager	1.752E-03	1.752E-03	1.752E-03	1.752E-03	1.752E-03	1.903E-03	1.756E-03	0.000E+00
SE Visitor - Lifeguard 1.0 mi	Adult	8.137E-04	8.138E-04	8.139E-04	8.138E-04	8.137E-04	8.597E-04	8.159E-04	0.000E+00
W Near Garden - Adult	Adult	8.218E-04	8.219E-04	8.219E-04	8.218E-04	8.218E-04	8.653E-04	8.239E-04	0.000E+00
W Near Garden - Child	Child	8.218E-04	8.218E-04	8.218E-04	8.219E-04	8.218E-04	8.721E-04	8.225E-04	0.000E+00
W Near Garden - Teenager	Teenager	8.218E-04	8.218E-04	8.218E-04	8.219E-04	8.218E-04	8.840E-04	8.235E-04	0.000E+00
Maximum Dose by Organ:		1.752E-03	1.752E-03	1.752E-03	1.752E-03	1.752E-03	1.903E-03	1.757E-03	0.000E+00

Maximum Organ Dose (mRem): 1.903E-03

Maximum Total Body Dose (mRem): 1.752E-03

## Maximum Individual NG Dose Summary

Gas Receptor Location	Gamma (mRad)	Beta (mRad)	Total Body (mRem)	Skin (mRem)
NW Near Milk 4.25 mi	1.491E-05	5.867E-06	1.416E-05	2.104E-05
SE Nearest Res 1.52 mi 142 deg	7.582E-05	2.984E-05	7.201E-05	1.070E-04
SE Visitor @ 1 mi	3.283E-05	1.292E-05	3.118E-05	4.633E-05
W Near Gard 2.0 miles	2.608E-05	1.027E-05	2.477E-05	3.681E-05
Maximum NG Dose:	7.582E-05	2.984E-05	7.201E-05	1.070E-04



Period: Ann, 2020

Site/Unit/Discharge Point:

PSL2

<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/cc)</u>	<u>Avg Conc/10xECL</u>	<u>Avg Rel Rate (uCi/sec)</u>
Ar-41	N	7.366E+06	3.581E-09	3.581E-02	2.330E-01
Xe-133	N	6.496E+05	3.158E-10	6.316E-05	2.054E-02
Kr-88	N	1.776E+02	8.635E-14	9.595E-07	5.617E-06
Kr-85m	N	1.467E+01	7.130E-15	7.130E-09	4.638E-07
Xe-133m	N	3.505E+02	1.704E-13	2.840E-08	1.108E-05
Xe-135	N	2.621E+03	1.274E-12	1.820E-06	8.287E-05
Xe-127	N	3.437E+01	1.671E-14	0.000E+00	1.087E-06

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Nuclide Type Total		8.019E+06	3.898E-09	3.588E-02	2.536E-01
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<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/cc)</u>	<u>Avg Conc/10xECL</u>	<u>Avg Rel Rate (uCi/sec)</u>
H-3	O	4.370E+07	2.124E-08	2.124E-02	1.382E+00
G-Alpha	O	2.536E-02	1.233E-17	1.233E-03	8.019E-10
C-14	O	1.053E+07	5.119E-09	1.706E-01	3.330E-01

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Nuclide Type Total		5.423E+07	2.636E-08	1.931E-01	1.715E+00
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<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/cc)</u>	<u>Avg Conc/10xECL</u>	<u>Avg Rel Rate (uCi/sec)</u>
Cs-137	P	7.905E+00	3.843E-15	1.921E-06	2.500E-07
Co-60	P	1.138E-01	5.530E-17	1.106E-07	3.598E-09
Co-58	P	6.870E-02	3.339E-17	3.339E-09	2.172E-09

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Nuclide Type Total		8.088E+00	3.932E-15	2.035E-06	2.558E-07
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<u>Nuclide</u>	<u>Type</u>	<u>Activity (uCi)</u>	<u>Avg Conc (uCi/cc)</u>	<u>Avg Conc/10xECL</u>	<u>Avg Rel Rate (uCi/sec)</u>
I-133	R	6.208E+01	3.018E-14	3.018E-06	1.963E-06
I-131	R	4.869E+00	2.367E-15	1.183E-06	1.540E-07

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Nuclide Type Total		6.695E+01	3.254E-14	4.201E-06	2.117E-06
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Total		6.225E+07	3.026E-08	2.290E-01	1.968E+00
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Period: Ann, 2020

Site/Unit/Discharge Point: PSL2

Site Boundary NNG Doserate Summary - Note: All Doses in mRem/yr

Receptor	Agegroup	Bone	Liver	Total Body	Thyroid	Kidney	Lung	GI-LIi	Skin
NW Site Boundary - In	Infant	2.709E-03	3.255E-03	3.255E-03	3.270E-03	7.546E-04	3.255E-03	3.255E-03	0.000E+00
WNW Site Boundary - I	Infant	2.427E-06	2.427E-06	2.427E-06	2.427E-06	2.427E-06	2.427E-06	2.427E-06	0.000E+00
Maximum Doserate by Organ:		2.709E-03	3.255E-03	3.255E-03	3.270E-03	7.546E-04	3.255E-03	3.255E-03	0.000E+00

Maximum Organ Doserate (mRem/yr): 3.270E-03

Maximum Total Body Doserate (mRem/yr): 3.255E-03

Site Boundary NG Doserate Summary

Gas Receptor Location	Gamma (mRad/yr)	Beta (mRad/yr)	Total Body (mRem/yr)	Skin (mRem/yr)
NW Site Boundary	3.478E-03	1.257E-03	3.305E-03	4.839E-03
WNW Site Boundary	2.996E-03	1.083E-03	2.847E-03	4.169E-03
Maximum NG Dose Rate:	3.478E-03	1.257E-03	3.305E-03	4.839E-03

Period: Ann, 2020

Site/Unit/Discharge Point: PSL2

## Maximum Individual NNG Dose Summary - Note: All Doses in mRem

Receptor	Agegroup	Bone	Liver	Total Body	Thyroid	Kidney	Lung	GI-Lli	Skin
NW - Near Milk - Adult	Adult	2.116E-06	2.452E-06	2.018E-06	1.351E-05	1.690E-06	1.344E-06	1.247E-06	0.000E+00
NW Near Milk - Child	Child	4.950E-06	4.838E-06	1.811E-06	3.749E-05	1.711E-06	1.619E-06	1.247E-06	0.000E+00
NW Near Milk - Infant	Infant	8.987E-06	9.942E-06	1.841E-06	8.639E-05	1.703E-06	2.227E-06	1.248E-06	0.000E+00
NW Near Milk - Teenager	Teenager	2.774E-06	3.318E-06	1.961E-06	1.970E-05	1.824E-06	1.478E-06	1.256E-06	0.000E+00
SE Nearest Res - Adult	Adult	7.151E-06	7.181E-06	7.139E-06	1.158E-05	7.137E-06	7.079E-06	7.080E-06	0.000E+00
SE Nearest Res - Child	Child	7.220E-06	7.214E-06	7.099E-06	1.435E-05	7.100E-06	7.083E-06	7.075E-06	0.000E+00
SE Nearest Res - Infant	Infant	7.188E-06	7.202E-06	7.084E-06	1.380E-05	7.080E-06	7.082E-06	7.071E-06	0.000E+00
SE Nearest Res - Teenager	Teenager	7.180E-06	7.218E-06	7.123E-06	1.281E-05	7.137E-06	7.085E-06	7.081E-06	0.000E+00
SE Visitor - Lifeguard 1.0 mi	Adult	3.319E-06	3.332E-06	3.313E-06	5.252E-06	3.312E-06	3.287E-06	3.288E-06	0.000E+00
W Near Garden - Adult	Adult	3.349E-06	3.361E-06	3.344E-06	5.177E-06	3.343E-06	3.320E-06	3.320E-06	0.000E+00
W Near Garden - Child	Child	3.378E-06	3.375E-06	3.328E-06	6.323E-06	3.328E-06	3.321E-06	3.318E-06	0.000E+00
W Near Garden - Teenager	Teenager	3.361E-06	3.377E-06	3.338E-06	5.687E-06	3.343E-06	3.322E-06	3.320E-06	0.000E+00
Maximum Dose by Organ:		8.987E-06	9.942E-06	7.139E-06	8.639E-05	7.137E-06	7.085E-06	7.081E-06	0.000E+00

Maximum Organ Dose (mRem): 8.639E-05

Maximum Total Body Dose (mRem): 7.139E-06

## Maximum Individual NG Dose Summary

Gas Receptor Location	Gamma (mRad)	Beta (mRad)	Total Body (mRem)	Skin (mRem)
NW Near Milk 4.25 mi	3.052E-04	1.103E-04	2.900E-04	4.246E-04
SE Nearest Res 1.52 mi 142 deg	1.552E-03	5.612E-04	1.475E-03	2.160E-03
SE Visitor @ 1 mi	6.722E-04	2.430E-04	6.387E-04	9.352E-04
W Near Gard 2.0 miles	5.341E-04	1.931E-04	5.074E-04	7.430E-04
Maximum NG Dose:	1.552E-03	5.612E-04	1.475E-03	2.160E-03

**TABLE 3.4**

**VISITOR DOSE  
(1 PAGE)**

This portion of the 2020 Annual Radioactive Effluent Release Report was originally submitted with L-2021-049 on March 1, 2021. It is included unchanged with this correction letter for context and completeness.

### 3.4 Visitor Dose

Dose to a Member of the Public from Activities Inside the Site Boundary:  
Assessment of radiation dose from radioactive effluents to MEMBERS OF THE PUBLIC due to their activities inside the SITE BOUNDARY assumes the VISITOR to be a Lifeguard at the Walton Rocks Beach recreation area. The visitor is assumed to be onsite for 6 hours per day for 312 days per year at a distance of 1 mile in the South East sector. The VISITOR received exposure from each of the two reactors on the site. Actual Met Data was used to calculate Visitor Dose for Calendar Year 2020.

Visitor Dose results for calendar year 2020 are below:

<b>Noble Gas Dose</b>	<b>mrad</b>
Gamma Air Dose	1.24E-03
Beta Air Dose	4.48E-04

<b>Gas, Particulate, Iodine, Carbon Dose</b>	<b>mrem</b>
Bone	2.76E-04
Liver	2.76E-04
Thyroid	2.77E-04
Kidney	2.76E-04
Lung	2.92E-04
GI-LLI	2.77E-04
Total Body	2.76E-04