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NRC Docket Nos. 50-03, 50-247, and 50-286

Subject: 2022 Annual Radioactive Effluent Release Report

Enclosed with this cover letter is the Indian Point Units 1, 2, and 3 Annual Radioactive Effluent Release Report for 2022. The report is submitted in accordance with Technical Specification 5.6.2 and Regulatory Guide 1.21 and includes dose from the Independent Spent Fuel Storage Facility. There were no changes to report for the Offsite Dose Calculation Manual (ODCM) in 2022.

This letter contains no new regulatory commitments.

If you have any questions or need further information, please contact Mr. Walter Wittich, IPEC Licensing at 914-254-7212.

Sincerely,

Jean A. Fleming
Vice President, Licensing, Regulatory Affairs and PSA
Holtec International

Enclosures: 2022 Annual Radioactive Effluent Release Report

cc: NRC Senior Project Manager, NRC NMSS
NRC Region I Regional Administrator
NRC Senior Regional Inspector, Indian Point Energy Center
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HDI-IPEC-23-020



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ENCLOSURE TO HDI-IPEC-23-020

2022 Annual Radioactive Effluent Release Report



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	YEAR: 2022
Indian Point Units 1, 2 and 3	
Docket Nos.: 50-3, 50-247, & 50-286	
Holtec Decommissioning International	
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Annual Radioactive Effluent Release Report**1.0 INTRODUCTION**

This information is provided in accordance with the requirements of Regulatory Guide 1.21. This report includes effluent information from Indian Point Units 1, 2, and 3. Units 1 and 2 share effluent processing equipment and Technical Specifications. In this site report, releases from Unit 1 are included with Unit 2, while Unit 3 releases are calculated and shown separately. Liquid and gaseous effluents are released in accordance with the Offsite Dose Calculation Manual (ODCM). This report is a summary of the effluent data in accordance with Unit 2 Permanently Defueled Technical Specification (PDTS) 5.6.3 and Unit 3 PDTS 5.6.3. Unit 2 permanently shut down on April 30th, 2020. Unit 3 permanently shut down on April 30th, 2021.

2.0 SUPPLEMENTAL INFORMATION**2.1 Regulatory Limits**

Indian Point Energy Center is subject to limits on radioactive waste releases that are set forth in the Offsite Dose Calculation Manual (ODCM), Parts I and II, as defined in the Permanently Defueled Technical Specifications. ODCM Part I, also known as the Radiological Effluent Controls (or RECS) contains the specific requirements and controls, while ODCM Part II (calculation methodologies) contains the details necessary to perform offsite dose calculations from the sampling and monitoring outlined in the RECS. The following are the limits required by the ODCM:

1. Fission and activation gases:
 - a. Noble gases dose rate due to radioactive materials released in gaseous effluents from the areas at and beyond the site boundary shall be limited to the following:
 - Less than or equal to 500 mrem/year to the total body
 - Less than or equal to 3000 mrem/year to the skin
 - b. Noble gas air dose due to noble gases released in gaseous effluents to areas at and beyond the site boundary shall be limited to the following:
 - Quarterly: Less than or equal to 5 mrad gamma
Less than or equal to 10 mrad beta
 - Yearly: Less than or equal to 10 mrad gamma
Less than or equal to 20 mrad beta
2. Iodine, tritium, and all radionuclides in particulate form (with half-lives > 8 days).
 - a. The dose rate for Iodine-131, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released to areas at and beyond the site boundary shall be limited to the following:
 - Less than or equal to 1500 mrem/yr to any organ
 - b. The dose to a MEMBER OF THE PUBLIC from Iodine-131, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released to areas at and beyond the site boundary shall be limited to the following:
 - Quarterly: Less than or equal to 7.5 mrem to any organ
 - Yearly: Less than or equal to 15 mrem to any organ

Annual Radioactive Effluent Release Report**3. Liquid Effluents Dose**

The dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released to unrestricted areas shall be limited to the following:

- Quarterly: Less than or equal to 1.5 mrem total body
Less than or equal to 5 mrem critical organ
- Yearly: Less than or equal to 3 mrem total body
Less than or equal to 10 mrem critical organ

4. Total Dose (40CFR190)

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 the following:

- Less than or equal to 25 mrem, Total Body or any Organ except Thyroid.
- Less than or equal to 75 mrem, Thyroid

2.2 Maximum Permissible Concentrations**1. Gaseous Effluents**

Maximum concentrations and compliance with 10CFR20 release rate limits are controlled by the application of Radiation Monitor setpoints, preliminary grab sampling, and conservative procedural guidance for batch and continuous releases. These measures, in conjunction with plant design, preclude approaching release rate limits, per the ODCM.

2. Liquid Effluents

Proximity to release rate and total release limits is controlled through the application of a calculated Allowed Diluted Concentration (ADC) and ALARA guidance regarding dilution flow and maximum tank concentration. The ADC is used to determine a Radiation Monitor setpoint associated with an estimated amount of non-gamma activity (H-3, Ni-63, Fe-55, Sr-89/90 etc.), as well as the measured gamma activity. ADC is defined in the station ODCM as a means of assuring compliance with the release rate limits of 10CFR20, as defined by the application of ten times the Effluent Concentrations of the 10CFR20.

Liquid effluents are further controlled by the application of proceduralized ALARA limits such as a MINIMUM dilution flow of 80,000 gpm required for batch discharges, a maximum gamma concentration of 5.0E-05 uCi/ml (without gas) for routine effluents, and procedural guidance for optimizing decay and treatment of liquid waste.

2.3 Average Energy

This information is no longer used. It is available onsite if required.

Annual Radioactive Effluent Release Report**2.4 Measurements & Approximations of Total Radioactivity**

The following provides the methods used to measure or approximate the total radioactivity in effluents and how radionuclide composition is determined.

1. Fission & activation gases

Analyses of effluent gases are performed in compliance with the requirements of the RECS (ODCM Part I). In the case of isolated tanks (batch releases), the total activity discharged is based on an isotopic analysis of each batch with the volume of gas in the batch corrected to standard temperature and pressure.

Vapor containment purge and pressure relief (vent) discharges are no longer performed at the site. Both units are permanently shut down and defueled with their respective vapor containments open for general access. Both vapor containment buildings are now part of their respective unit's auxiliary building ventilation system, which is continuously monitored for radioactivity.

2. Iodines and Particulates

Unit 3 airborne iodine and particulate releases are quantified by collecting a continuous sample of ventilation air on a Triethylenediamine (TEDA) impregnated, activated charcoal cartridge and a glass-fiber filter paper. These samples are changed weekly as required in the RECS. The concentration of isotopes found by analysis of these samples is combined with the volume of air discharged during the sampling period to calculate the quantity of activity discharged. Unit 2 performs particulate analysis only.

If I-131 is not identified in weekly vent samples, then "-" is entered in Table 3-1 and Table 3-4. A typical Minimum Detectable Activity (MDA) for weekly I-131 analyses is 1.0E-13 uCi/cc, which is 100 times lower than ODCM requirements.

If I-131 is identified in any routine weekly sample, then it is added to the table and other iodine isotopic concentrations (I-133, I-135) are then determined on a 24-hour sample at least once per month. The concentration of each isotope is analytically determined by ratioing the activities with weekly media for I-131. This activity is combined with the volume of air discharged during the sampling period to calculate the quantity of activity discharged. A compositing method of analyzing gross alpha, Sr-89, and Sr-90 is used per the station ODCM. Absence of any positive activity is identified as "-".

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3. Tritium

Airborne tritium is collected by passing a known volume of the sample stream through a silica gel column. The collected samples are distilled and analyzed by liquid scintillation. The tritium released was calculated for each release point from the measured tritium concentration, the volume of the sample, the tritium collection efficiency, and the respective ventilation exhaust flow rates. As a check on the silica gel sampling, Chemistry performs a comparison of total curies evaporated from the spent fuel pool (the major H-3 source term) and adjusts the silica gel measurements, as necessary.

4. Carbon-14

Unit 3 was permanently shut down in April 2021. Unit 2 was permanently shut down in April 2020. Both units were permanently defueled. Both units ceased producing airborne Carbon-14, and the subsequent dose to the public from airborne Carbon-14, for calendar year 2022, is zero.

5. Liquid Effluents

A sample of each batch discharge is taken, and an isotopic analysis is performed in compliance with requirements specified in the ODCM. Proportional composite samples of continuous discharges are taken and analyzed per the ODCM, as well. Isotopic concentration data are combined with the information on volume discharged to determine the amount of each isotope discharged.

A compositing method of analyzing for non-gamma emitters is used per the station ODCM (Gross Alpha, Sr-89, Sr-90, Fe-55, and Ni-63). When there has been no positive activity, “-” is entered.

Liquid Effluent volumes of waste released on Tables 4-1 and 4-4 (Section 4) are differentiated between processed fluids (routine liquid waste and Unit 1’s North Curtain Drain), and water discharged through monitored pathways identified in the ODCM, but NOT processed (SG Blowdown and Unit 1’s Sphere Foundation Drain Sump). The unprocessed water may still contain trace levels of contamination (generally only tritium) and as such, is identified as liquid waste. Curie and dose data from unprocessed fluid is included in the following tables, along with all other liquid effluent, continuous or batch, processed or not. Processed and unprocessed water is differentiated only to prevent confusion regarding measures undertaken to convert liquid to solid waste (resin cleanup). Therefore, volumes of processed and unprocessed liquid waste are reported separately on Tables 4-1 and 4-4.

6. Estimated Total Error Present

Estimates of measurement and analytical error for gaseous and liquid effluents are calculated as follows:

$$E_T = \sqrt{[(E_1)^2 + (E_2)^2 + \dots + (E_n)^2]}$$

Where: E_T = total percent error

$E_1 \dots E_n$ = percent error due to calibration standards,
Laboratory analysis, instruments, sample flow, etc.

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2.5 **Batch Releases:**1. Airborne

Table 2.5-1 - Airborne Batch Releases

Unit 1 and 2 Airborne Releases	Qtr 1	Qtr 2	Qtr 3	Qtr 4	2022
Number of Batch Releases	0	0	0	0	0
Total Time Period (min)	0	0	0	0	0
Maximum Time Period (min)	0	0	0	0	0
Average Time Period (min)	0	0	0	0	0
Minimum Time Period (min)	0	0	0	0	0

Unit 3 Airborne Releases	Qtr 1	Qtr 2	Qtr 3	Qtr 4	2022
Number of Batch Releases	0	0	0	0	0
Total Time Period (min)	0	0	0	0	0
Maximum Time Period (min)	0	0	0	0	0
Average Time Period (min)	0	0	0	0	0
Minimum Time Period (min)	0	0	0	0	0

2. Liquid

Table 2.5-2 – Liquid Batch Releases

Unit 1 and 2 Liquid Releases	Qtr 1	Qtr 2	Qtr 3	Qtr 4	2022
Number of Batch Releases	4	3	9	1	17
Total Time Period (min)	1920	272	960	170	3320
Maximum Time Period (min)	480	99	145	170	480
Average Time Period (min)	480	90.67	106.67	170	195
Minimum Time Period (min)	480	85	88	170	85

Unit 3 Liquid Releases	Qtr 1	Qtr 2	Qtr 3	Qtr 4	2022
Number of Batch Releases	4	0	0	0	4
Total Time Period (min)	1920	0	0	0	1920
Maximum Time Period (min)	480	0	0	0	480
Average Time Period (min)	480	0	0	0	480
Minimum Time Period (min)	480	0	0	0	480

Average Stream Flow:

Regulatory Guide 1.21 includes a section to report average stream flows. This data, for some plants, is used to determine dilution volume. However, at IPEC, the Hudson River stream flow is not applied to dilution calculations, in favor of the more conservative method of using only the dilution in the discharge canal, running north to south, parallel to the river, and servicing the plant.

This conservative dilution volume is determined quarterly, applied to liquid offsite dose calculations (and all other determinations of diluted effluent), and reported on Tables 4-1 and 4-4, in Section 4 of this report. Hudson River flow information remains available, however, from the Department of the Interior, United States Geological Survey (USGS), or from web sites such as:

<https://www.usgs.gov/centers/ny-water/data-tools>

Annual Radioactive Effluent Release Report**2.6 Abnormal Releases**1. Liquid

None

2. Gaseous

None

2.7 Non-routine, Planned Discharges

None

2.8 Radioactive Waste Treatment System Changes

To accommodate the Holtec Hi-Lift Device in the Unit 3 Fuel Storage Building (FSB), the existing Liquid Radwaste Processing System (LRPS) skid was removed from the FSB Truck Bay. An alternate means of liquid radwaste processing was established to support Unit 3 during decommissioning. The liquid radwaste stream normally sent to the Unit 3 LRPS was diverted to the Unit 3 Radioactive Machine Shop (RAMS). A truck filling station was installed that fills a tanker truck. The truck is driven to the Unit 1 Fuel Handling Building (FHB) where the trailer is connected to the Unit 1/2 Integrated Liquid Waste Processing (ILWS) System and its contents processed (EC IPC-2021-002).

2.9 Land Use Census Changes

No changes or modifications affecting receptors, receptor location or new (or changed) routes of exposure were identified because of the last Land Use Census.

2.10 Effluent Monitor Instrument Inoperability1. Effluent Monitoring Equipment Inoperable > 30 Days

During this reporting period, there were no instances of effluent monitoring equipment out of service for greater than 30 consecutive days.

2. Effluent Monitoring Equipment Sample Deviation

None

2.11 Offsite Dose Calculation Manual Changes

No changes were made to the ODCM during this reporting period.

2.12 Process Control Program (PCP) Changes

There were no PCP changes during 2022.

Annual Radioactive Effluent Release Report**2.13 Groundwater Monitoring and Program (NEI 07-07)**

The Groundwater Monitoring Program is a voluntary program set up to assure timely effective management of situations involving inadvertent releases of licensed material to ground water. A major part of the IPEC's program is a groundwater quantification model that involves verification/calibration such that the annual release to the environment remains a function of the annual precipitation and source term.

No abnormal releases occurred in 2022 and conservative assessments of legacy events have determined that the doses resulting from these events were negligible. The groundwater monitoring program provides additional confirmation of these assessments. The groundwater monitoring program also includes a storm water monitoring program. Together these programs provide data for offsite dose evaluation. The subsurface water flow directions and rates are used to estimate the transport of abnormal releases of liquid effluents in groundwater.

The offsite dose associated with the groundwater pathway remains extremely small. The 2022 effluent dose was slightly higher than in 2021. The total routine liquid effluent dose inclusive of the groundwater pathway contributes < 0.1 % of the annual limit. Groundwater and storm water effluent flow rates and source term data are further described in Attachment 2 of this report. A breakdown of the total dose from the groundwater and storm water pathways and detailed results from the samples obtained as part of this program are also provided in Attachment 2. Section 6 (Radiological Impact on Man) of this report provides a comparison of the groundwater and storm water doses to the other dose pathways.

2.14 Outside Tanks

During this period there were no curie limits exceeded in the outdoor tanks.

2.15 Errata/Corrections to Previous ARERs

None

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3.0 GASEOUS EFFLUENTS

Table 3-1 Gaseous Effluents – Summation of All Releases – Units 1 and 2

A. Fission & Activation Gase	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year	Est. Total % Error
1. Total Release	Ci	-	-	-	-	0.00E+00	± 25
2. Average release rate	uCi/sec	-	-	-	-	0.00E+00	

B. Iodines

1. Total Iodine-131	Ci	-	-	-	-	0.00E+00	± 25
2. Average release rate	uCi/sec	-	-	-	-	0.00E+00	

C. Particulates

1. Total Release, with half-life > 8 days	Ci	-	-	-	-	0.00E+00	± 25
2. Average release rate	uCi/sec	-	-	-	-	0.00E+00	
3. Gross Alpha	Ci	-	-	-	-	0.00E+00	± 25

D. Tritium

1. Total release	Ci	2.58E-01	2.33E-01	4.92E-01	2.62E-01	1.25E+00	
2. Average release rate	uCi/sec	3.32E-02	2.96E-02	6.19E-02	3.30E-02	3.95E-02	

E. Carbon-14

1. Total release	Ci	-	-	-	-	0.00E+00	
2. Average release rate	uCi/sec	-	-	-	-	0.00E+00	

- Indicates < MDA

% limit is located in Section 6, Tables 6-2 and 6-3

Annual Radioactive Effluent Release Report**Table 3-2 Gaseous Effluents -- Batch Mode -- Units 1 and 2**

Nuclides Released

1) Fission Gases

There were no Batch Releases of Gaseous Effluents for Unit 2

2) Iodines

Not Applicable for Batch Releases

3) Particulates

Not Applicable for Batch Releases

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Table 3-3 Gaseous Effluents -- Continuous Mode -- Units 1 and 2

Nuclides Released

1) Fission Gases

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year
Xe-133	Ci	-	-	-	-	0.00E+00
Total for Period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

2) Iodines

I-131	Ci	-	-	-	-	0.00E+00
I-133	Ci	-	-	-	-	0.00E+00
I-135	Ci	-	-	-	-	0.00E+00
Total for Period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

3) Particulates

Cs-137	Ci	-	-	-	-	0.00E+00
Total for Period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

- Indicates < MDA

4) Tritium

H-3	Ci	2.58E-01	2.33E-01	4.92E-01	2.62E-01	1.25E+00
Total for Period	Ci	2.58E-01	2.33E-01	4.92E-01	2.62E-01	1.25E+00

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Table 3-4 Gaseous Effluents – Summation of All Releases – Unit 3

A. Fission & Activation Gases

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year	Est. Total % Error
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1. Total Release	Ci	-	-	-	-	0.00E+00	± 25
2. Average release rate	uCi/sec	-	-	-	-	0.00E+00	

B. Iodines

1. Total Iodine-131	Ci	-	-	-	-	0.00E+00	± 25
2. Average release rate	uCi/sec	-	-	-	-	0.00E+00	

C. Particulates

1. Total Release, with half-life > 8 days	Ci	-	-	-	-	0.00E+00	± 25
2. Average release rate	uCi/sec	-	-	-	-	0.00E+00	
3. Gross Alpha	Ci	-	-	-	-	0.00E+00	± 25

D. Tritium

1. Total release	Ci	1.55E+00	2.14E+00	2.10E+00	4.43E+00	1.02E+01	
2. Average release rate	uCi/sec	1.99E-01	2.72E-01	2.64E-01	5.57E-01	3.24E-01	

E. Carbon-14

1. Total release	Ci	-	-	-	-	0.00E+00	
2. Average release rate	uCi/sec	-	-	-	-	0.00E+00	

- Indicates < MDA

% limit is located in Section 6, Tables 6-2 and 6-3

Annual Radioactive Effluent Release Report**Table 3-5 Gaseous Effluents – Batch Mode – Unit 3**

Nuclides Released

1) Fission Gases

There were no Batch Releases of Gaseous Effluents for Unit 3

2) Iodines

Not Applicable for Batch Releases

3) Particulates

Not Applicable for Batch Releases

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Table 3-6 Gaseous Effluents – Continuous Mode – Unit 3

Nuclides Released

1) Fission Gases

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year
Ar-41	Ci	-	-	-	-	0.00E+00
Xe-133	Ci	-	-	-	-	0.00E+00
Xe-135	Ci	-	-	-	-	0.00E+00
Total for Period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

2) Iodines

I-131	Ci	-	-	-	-	0.00E+00
I-133	Ci	-	-	-	-	0.00E+00
I-135	Ci	-	-	-	-	0.00E+00
Total for Period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

3) Particulates

Total for Period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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4) Tritium

H-3	Ci	1.55E+00	2.14E+00	2.10E+00	4.43E+00	1.02E+01
Total for Period	Ci	1.55E+00	2.14E+00	2.10E+00	4.43E+00	1.02E+01

- indicates < MDA

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4.0 LIQUID EFFLUENTS

Table 4-1 Liquid Effluents - Summation of All Releases – Units 1 and 2

A. Fission & Activation Products		Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year	Est. Total % Error
1. Total Release (not including Tritium, Gr Alpha, & Gases)	Ci	7.34E-03	1.36E-02	4.54E-02	7.56E-03	7.39E-02	± 25	
2. Average Diluted Conc	uCi/ml	1.49E-09	1.75E-09	2.85E-09	1.34E-09	5.34E-10		
B. Tritium								
1. Total Release	Ci	4.06E-03	3.21E+00	2.19E+01	2.85E+00	2.80E+01	± 25	
2. Average Diluted Conc	uCi/ml	8.23E-10	4.11E-07	1.38E-06	4.57E-07	2.02E-07		
C. Dissolved & Entrained Gases								
1. Total Release	Ci	-	-	-	-	-	± 25	
2. Average Diluted Conc	uCi/ml	-	-	-	-	-		
D. Gross Alpha								
1. Total Release	Ci	-	-	-	-	-	± 25	
2. Average Diluted Conc	uCi/ml	-	-	-	-	-		
E. Volume of Waste Released								
1. Processed Fluids	liters	9.59E+05	1.80E+06	1.48E+06	1.39E+06	5.63E+06	± 10	
2. Unprocessed Fluids	liters	1.24E+07	1.20E+07	4.41E+06	4.62E+06	3.34E+07	± 10	
F. Volume of Dilution Water								
	liters	1.97E+10	3.11E+10	6.50E+10	2.26E+10	1.38E+11	± 10	

- indicates < MDA

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Table 4-2 Liquid Effluents – Batch Mode - Units 1 and 2

Nuclides Released	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year
Ag-110m	Ci	-	-	-	-	0.00E+00
Co-58	Ci	-	-	-	-	0.00E+00
Co-60	Ci	-	4.42E-05	3.76E-04	4.37E-05	4.64E-04
Cr-51	Ci	-	-	-	-	0.00E+00
Cs-137	Ci	-	1.89E-05	7.88E-06	0.00E+00	2.68E-05
Fe-55	Ci	-	-	-	-	0.00E+00
Fe-59	Ci	-	-	-	-	0.00E+00
Mn-54	Ci	-	-	-	-	0.00E+00
Nb-95	Ci	-	-	-	-	0.00E+00
Ni-63	Ci	-	3.43E-03	3.40E-02	2.43E-03	3.99E-02
Sb-125	Ci	-	2.92E-03	1.98E-03	1.19E-03	6.09E-03
Te-123m	Ci	-	-	-	-	0.00E+00
Te-125m	Ci	-	-	-	-	0.00E+00
Gross Beta	Ci	-	1.18E-03	3.64E-03	4.65E-04	5.29E-03
Total for Period	Ci	0.00E+00	7.59E-03	4.00E-02	4.13E-03	5.17E-02

Tritium

H-3	Ci	0.00E+00	3.20E+00	2.18E+01	2.57E+00	2.76E+01
Total for Period	Ci	0.00E+00	3.20E+00	2.18E+01	2.57E+00	2.76E+01

Dissolved & Entrained Gas

Xe-133m	Ci	-	-	-	-	0.00E+00
Xe-133	Ci	-	-	-	-	0.00E+00
Total for Period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

- Indicates < MDA

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Table 4-3 Liquid Effluents – Continuous Mode - Units 1 and 2

Nuclides Released	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year
Sr-90	Ci	2.59E-05	5.20E-05	4.64E-06	4.38E-05	1.26E-04
Cs-137	Ci	3.75E-03	3.29E-03	2.74E-03	1.73E-03	1.15E-02
Gross Beta	Ci	3.56E-03	2.68E-03	2.57E-03	1.66E-03	1.05E-02
Total for Period	Ci	7.34E-03	6.02E-03	5.31E-03	3.43E-03	2.21E-02

H-3 (only)	Ci	4.06E-03	8.16E-03	1.52E-01	6.58E-03	1.71E-01
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- Indicates < MDA

Annual Radioactive Effluent Release Report

Table 4-4 Liquid Effluents -Summation of All Releases – Unit 3

A. Fission & Activation Products							Est. Total
	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year	% Error
1. Total Release (not including Tritium, Gr Alpha, & Gases)	Ci	-	-	-	-	0.00E+00	± 25
2. Average Diluted Conc	uCi/ml	-	-	-	-	0.00E+00	
B. Tritium							
1. Total Release	Ci	-	-	-	-	0.00E+00	± 25
2. Average Diluted Conc	uCi/ml	-	-	-	-	0.00E+00	
C. Dissolved & Entrained Gases							
1. Total Release	Ci	-	-	-	-	0.00E+00	± 25
2. Average Diluted Conc	uCi/ml	-	-	-	-	0.00E+00	
D. Gross Alpha							
1. Total Release	Ci	-	-	-	-	0.00E+00	± 25
E. Volume of Waste Released							
1. Processed Fluids (Mon Tanks)	liters	-	-	-	-	0.00E+00	± 10
2. Unprocessed Fluids (SGs)	liters	1.28E+05	-	-	-	1.28E+05	± 10
F. Volume of Dilution Water							
	liters	9.58E+09	-	-	-	9.58E+09	± 10

- indicates < MDA

% limit is located in Section 6, Tables 6-2 and 6-3

Annual Radioactive Effluent Release Report

Table 4-5 Liquid Effluents - Batch and Continuous Modes – Unit 3

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Year
Te-123m	Ci	-	-	-	-	0.00E+00
Cr-51	Ci	-	-	-	-	0.00E+00
Mn-54	Ci	-	-	-	-	0.00E+00
Fe-55	Ci	-	-	-	-	0.00E+00
Co-58	Ci	-	-	-	-	0.00E+00
Co-60	Ci	-	-	-	-	0.00E+00
Ni-63	Ci	-	-	-	-	0.00E+00
Zr-95	Ci	-	-	-	-	0.00E+00
Nb-95	Ci	-	-	-	-	0.00E+00
Ru-103	Ci	-	-	-	-	0.00E+00
Ag-110m	Ci	-	-	-	-	0.00E+00
Sb-124	Ci	-	-	-	-	0.00E+00
Sb-125	Ci	-	-	-	-	0.00E+00
Te-125m	Ci	-	-	-	-	0.00E+00
Cs-137	Ci	-	-	-	-	0.00E+00
Ce-144	Ci	-	-	-	-	0.00E+00
Pr-144	Ci	-	-	-	-	0.00E+00
Total for Period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Dissolved and Entrained Gas (Batch)

Xe-133	Ci	-	-	-	-	0.00E+00
Xe-135	Ci	-	-	-	-	0.00E+00
Total for Period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Continuous Releases (SG Blowdown)

H-3 (only)	Ci	-	-	-	-	0.00E+00
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- indicates < mda

Annual Radioactive Effluent Release Report

5.0 SOLID WASTE SUMMARY

5.1 Units 1 & 2 and Unit 3 Types of Solid Waste – Summary

Waste Stream: Resins, Filters, and Evap Bottoms				
Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	3.95E+02	1.12E+01	1.10E+01	+/-25%
B	4.46E+02	1.26E+01	3.82E+02	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	8.41E+02	2.38E+01	3.93E+02	+/- 25%

Waste Stream : Dry Active Waste				
Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	1.15E+05	3.25E+03	7.07E+00	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	1.15E+05	3.25E+03	7.07E+00	+/-25%

Waste Stream : Irradiated Components				
Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	2.32E+02	6.57E+00	4.07E+00	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	2.32E+02	6.57E+00	4.07E+00	+/-25%

Waste Stream: Other Waste				
Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	5.64E+02	1.60E+01	8.87E-02	+/-25%
B	0.00E+00	0.00E+00	0.00E+00	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	5.64E+02	1.60E+01	8.87E-02	+/-25%

Waste Stream: Sum of All 4 Categories				
Waste Class	Volume		Curies Shipped	% Error (Ci)
	ft ³	m ³		
A	1.16E+05	3.28E+03	2.22E+01	+/-25%
B	4.46E+02	1.26E+01	3.82E+02	+/-25%
C	0.00E+00	0.00E+00	0.00E+00	+/-25%
All	1.16E+05	3.29E+03	4.04E+02	+/-25%

Annual Radioactive Effluent Release Report

5.2 Units 1 & 2 and Unit 3 Solid Waste - Destination by Carrier

Number of Shipments	Mode of Transportations	Destination
7	Interstate Ventures	Waste Control Specialist, LLC (CWF) Compact Waste Disposal Facility
3	Interstate Ventures	Waste Control Specialist, LLC (TSDF) TSD Facility
1	Landstar Ranger	Waste Control Specialist, LLC (CWF) Compact Waste Disposal Facility
7	Landstar Ranger	Waste Control Specialist, LLC (TSDF) TSD Facility
146	S & J Transportation Company, Inc.	Waste Control Specialist, LLC (TSDF) TSD Facility

Annual Radioactive Effluent Release Report

5.3 Units 1 & 2 and Unit 3 Solid Waste – Major Nuclides by Waste Class and StreamResins, Filters and Evaporator Bottoms
Waste Class A

Nuclide Name	Abundance	Activity (Ci)
H-3	2.08%	2.29E-01
C-14	1.49%	1.64E-01
Cr-51	0%	1.12E-08
Mn-54	0.77%	8.49E-02
Fe-55	20.47%	2.26E+00
Fe-59	0%	9.36E-07
Co-57	0.10%	1.15E-02
Co-58	0.27%	2.99E-02
Co-60	46.20%	5.09E+00
Ni-59	0.20%	2.24E-02
Ni-63	22.28%	2.46E+00
Zn-65	0.08%	8.71E-03
Sr-89	0%	7.41E-05
Sr-90	0.03%	3.74E-03
Nb-94	0.04%	4.27E-03
Nb-95	0%	1.36E-13
Tc-99	0.02%	2.22E-03
Ag-108m	0.14%	1.50E-02
Ag-110m	0.49%	5.37E-02
Sn-113	0.02%	2.37E-03
Sb-124	0%	7.77E-06
Sb-125	2.42%	2.67E-01
Te-123m	0%	1.68E-06
Cs-137	2.71%	2.99E-01
Ce-144	0.03%	3.33E-03
Pu-238	0.01%	6.90E-04
Pu-239	0%	1.50E-04
Pu-241	0.12%	1.29E-02
Am-241	0.01%	1.07E-03
Cm-242	0%	3.09E-05
Cm-243	0.01%	1.36E-03
Total	100.00%	1.10E+01

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report Curies shipped.

Annual Radioactive Effluent Release Report

Units 1 & 2 and Unit 3 Solid Waste – Major Nuclides by Waste Class and StreamResins, Filters and Evaporator Bottoms
Waste Class B

Nuclide Name	Abundance	Activity (Ci)
H-3	0%	1.16E-02
C-14	0.04%	1.48E-01
Cr-51	0.03%	1.05E-01
Mn-54	0.9%	3.42E+00
Fe-55	3.31%	1.27E+01
Co-57	0.14%	5.50E-01
Co-58	0.59%	2.24E+00
Co-60	9.88%	3.78E+01
Ni-59	0.54%	2.06E+00
Ni-63	76.26%	2.92E+2
Zn-65	0.16%	5.99E-01
Sr-90	0.05%	1.95E-01
Nb-94	0.01%	2.16E-02
Tc-99	0%	3.78E-03
Ag-110m	0.06%	2.45E-01
Sb-125	3.03%	1.16E+01
Cs-134	0.03%	1.05E-01
Cs-137	4.94%	1.89E+01
Ce-144	0%	2.93E-03
Pu-238	0%	1.26E-03
Pu-239	0%	2.37E-04
Pu-241	0.04%	1.45E-01
Am-241	0%	6.61E-04
Cm-242	0%	1.64E-05
Cm-243	0%	7.85E-04

Annual Radioactive Effluent Release Report

Units 1 & 2 and Unit 3 Solid Waste – Major Nuclides by Waste Class and StreamResins, Filters and Evaporator Bottoms
Total Combined

Nuclide Name	Percent Abundance	Curies
H-3	0.06%	2.41E-01
C-14	0.08%	3.13e-01
Cr-51	0.03%	1.05E-01
Mn-54	0.89%	3.51E+00
Fe-55	3.79%	1.49E+01
Fe-59	0%	9.36E-07
Co-57	0.14%	5.61E-01
Co-58	0.58%	2.27E+00
Co-60	10.9%	4.29E+01
Ni-59	0.53%	2.09E+00
Ni-63	74.75%	2.94E+02
Zn-65	0.15%	6.08E-01
Sr-89	0%	7.41E-05
Sr-90	0.05%	1.99E-01
Nb-94	0.01%	2.59E-02
Nb-95	0%	1.36E-13
Tc-99	0%	6.00E-03
Ag-108m	0%	1.50E-02
Ag-110m	0.08%	2.99E-01
Sn-113	0%	2.37E-03
Sb-124	0%	7.77E-06
Sb-125	3.01%	1.19E+01
Te-123m	0%	1.68E-06
Cs-134	0.03%	1.05E-01
Cs-137	4.88%	1.90E+01
Ce-144	0%	6.25E-03
Pu-238	0%	1.95E-03
Pu-239	0%	3.88E-04
Pu-241	0.04%	1.58E-01
Am-241	0%	1.74E-03
Cm-242	0%	4.72E-05
Cm-243	0%	2.14E-03

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report Curies shipped

Annual Radioactive Effluent Release Report

Units 1 & 2 and Unit 3 Solid Waste – Major Nuclides by Waste Class and Stream

Dry Active Waste
Waste Class A

Nuclide Name	Percent Abundance	Curies
H-3	0.51%	3.62E-02
C-14	1.19%	8.40E-02
Mn-54	0.54%	3.79E-02
Fe-55	14.28%	1.01E+00
Co-57	0.01%	7.37E-04
Co-58	0.25%	1.74E-02
Co-60	31.8%	2.25E+00
Ni-59	0%	1.60E-07
Ni-63	44.29%	3.13E+00
Zn-65	0%	2.26E-07
Sr-90	0.11%	7.69E-03
Zr-95	0.02%	1.59E-03
Nb-94	0.1%	7.32E-03
Nb-95	0.04%	2.52E-03
Tc-99	0.03%	2.13E-03
Ag-110m	0.03%	2.33E-03
Sn-113	0%	2.36E-07
Sb-125	1.66%	1.17E-01
Cs-134	0.14%	1.02E-02
Cs-137	4.99%	3.52E-01
Ce-144	0%	1.29E-04
U-235	0%	2.02E-05
U-238	0%	1.02E-06
Pu-238	0%	9.38E-06
Pu-239	0%	2.22E-06
Pu-241	0%	2.19E-04
Am-241	0%	1.68E-04
Cm-242	0%	2.53E-06
Cm-243	0%	3.49E-04

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report Curies shipped

Annual Radioactive Effluent Release Report

Units 1 & 2 and Unit 3 Solid Waste – Major Nuclides by Waste Class and Stream

Dry Active Waste
Total Combined

Nuclide Name	Percent Abundance	Curies
H-3	0.51%	3.62E-02
C-14	1.19%	8.40E-02
Mn-54	0.54%	3.79E-02
Fe-55	14.28%	1.01E+00
Co-57	0.01%	7.37E-04
Co-58	0.25%	1.74E-02
Co-60	31.8%	2.25E+00
Ni-59	0%	1.60E-07
Ni-63	44.29%	3.13E+00
Zn-65	0%	2.26E-07
Sr-90	0.11%	7.69E-03
Zr-95	0.02%	1.59E-03
Nb-94	0.1%	7.32E-03
Nb-95	0.04%	2.52E-03
Tc-99	0.03%	2.13E-03
Ag-110m	0.03%	2.33E-03
Sn-113	0%	2.36E-07
Sb-125	1.66%	1.17E-01
Cs-134	0.14%	1.02E-02
Cs-137	4.99%	3.52E-01
Ce-144	0%	1.29E-04
U-235	0%	2.02E-05
U-238	0%	1.02E-06
Pu-238	0%	9.38E-06
Pu-239	0%	2.22E-06
Pu-241	0%	2.19E-04
Am-241	0%	1.68E-04
Cm-242	0%	2.53E-06
Cm-243	0%	3.49E-04

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report Curies shipped

Annual Radioactive Effluent Release Report

Units 1 & 2 and Unit 3 Solid Waste – Major Nuclides by Waste Class and Stream

Irradiated Components
Waste Class A

Nuclide Name	Percent Abundance	Curies
H-3	0.05%	1.98E-03
C-14	0.01%	4.85E-04
Mn-54	1.19%	4.84E-02
Fe-55	36.18%	1.47E+00
Co-57	0.03%	1.34E-03
Co-58	0.45%	1.83E-02
Co-60	44.03%	1.79E+00
Ni-59	0.03%	1.26E-03
Ni-63	14.58%	5.93E-01
Zr-95	0.33%	1.35E-02
Nb-94	0.15%	6.21E-03
Nb-95	0.75%	3.06E-02
Tc-99	0.02%	6.59E-04
Sn-113	0.08%	3.18E-03
Sb-125	1.74%	7.10E-02
Cs-137	0.25%	9.99E-03
Ce-144	0.02%	9.38E-04
Pu-238	0%	7.93E-06
Pu-241	0.11%	4.38E-03
Am-241	0%	2.16E-05
Cm-243	0%	1.44E-05

Annual Radioactive Effluent Release Report

Units 1 & 2 and Unit 3 Solid Waste – Major Nuclides by Waste Class and Stream

Irradiated Components
Total Combined

Nuclide Name	Percent Abundance	Curies
H-3	0.05%	1.98E-03
C-14	0.01%	4.85E-04
Mn-54	1.19%	4.84E-02
Fe-55	36.18%	1.47E+00
Co-57	0.03%	1.34E-03
Co-58	0.45%	1.83E-02
Co-60	44.03%	1.79E+00
Ni-59	0.03%	1.26E-03
Ni-63	14.58%	5.93E-01
Zr-95	0.33%	1.35E-02
Nb-94	0.15%	6.21E-03
Nb-95	0.75%	3.06E-02
Tc-99	0.02%	6.59E-04
Sn-113	0.08%	3.18E-03
Sb-125	1.74%	7.10E-02
Cs-137	0.25%	9.99E-03
Ce-144	0.02%	9.38E-04
Pu-238	0%	7.93E-06
Pu-241	0.11%	4.38E-03
Am-241	0%	2.16E-05
Cm-243	0%	1.44E-05

Other Waste
Waste Class A

Nuclide Name	Percent Abundance	Curies
H-3	98.94%	8.78E-02
Co-60	0.57%	5.02E-04
Cs-137	0.5%	4.40E-04

Other Waste
Total Combined

Nuclide Name	Percent Abundance	Curies
H-3	98.94%	8.78E-02
Co-60	0.57%	5.02E-04
Cs-137	0.5%	4.40E-04

Annual Radioactive Effluent Release Report

Units 1 & 2 and Unit 3 Solid Waste – Major Nuclides by Waste Class and Stream

Sum All 4 Categories
Waste Class A

Nuclide Name	Percent Abundance	Curies
H-3	1.6%	3.55E-01
C-14	1.12%	2.49E-01
Cr-51	0%	1.12E-08
Mn-54	0.77%	1.71E-01
Fe-55	21.29%	4.74E+00
Fe-59	0%	9.36E-07
Co-57	0.06%	1.35E-02
Co-58	0.3%	6.56E-02
Co-60	41.05%	9.13E+00
Ni-59	0.11%	2.37E-02
Ni-63	27.78%	6.18E+00
Zn-65	0.04%	8.71E-03
Sr-89	0%	7.41E-05
Sr-90	0.05%	1.14E-02
Zr-95	0.07%	1.51E-02
Nb-94	0.08%	1.78E-02
Nb-95	0.15%	3.31E-02
Tc-99	0.02%	5.01E-03
Ag-108m	0.07%	1.50E-02
Ag-110m	0.25%	5.60E-02
Sn-113	0.02%	5.55E-03
Sb-124	0%	7.77E-06
Sb-125	2.05%	4.55E-01
Te-123m	0%	1.68E-06
Cs-134	0.05%	1.02E-02
Cs-137	2.98%	6.62E-01
Ce-144	0.02%	4.39E-03
U-235	0%	2.02E-05
U-238	0%	1.02E-06
Pu-238	0%	7.07E-04
Pu-239	0%	1.52E-06
Pu-241	0.08%	1.75E-02
Am-241	0.01%	1.26E-03
Cm-242	0%	3.34E-05
Cm-243	0.01%	1.72E-03

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report Curies shipped

Annual Radioactive Effluent Release Report

Units 1 & 2 and Unit 3 Solid Waste – Major Nuclides by Waste Class and Stream

Sum All 4 Categories
Waste Class B

Nuclide Name	Percent Abundance	Curies
H-3	0%	1.16E-02
C-14	0.04%	1.48E-01
Cr-51	0.03%	1.05E-01
Mn-54	0.9%	3.42E+00
Fe-55	3.31%	1.27E+01
Co-57	0.14%	5.50E-01
Co-58	0.59%	2.24E+00
Co-60	9.88%	3.78E+01
Ni-59	0.54%	2.06E+00
Ni-63	76.26%	2.92E+02
Zn-65	0.16%	5.99E-01
Sr-90	0.05%	1.95E-01
Nb-94	0.01%	2.16E-02
Tc-99	0%	3.78E-03
Ag-110m	0.06%	2.45E-01
Sb-125	3.03%	1.16E+01
Cs-134	0.03%	1.05E-01
Cs-137	4.94%	1.89E+01
Ce-144	0%	2.93E-03
Pu-238	0%	1.26E-03
Pu-239	0%	2.37E-04
Pu-241	0.04%	1.45E-01
Am-241	0%	6.61E-04
Cm-242	0%	1.64E-05
Cm-243	0%	7.85E-04

Annual Radioactive Effluent Release Report

Units 1 & 2 and Unit 3 Solid Waste – Major Nuclides by Waste Class and Stream

Sum All 4 Categories
Total Combined

Nuclide Name	Percent Abundance	Curies
H-3	0.09%	3.67E-01
C-14	0.1%	3.97E-01
Cr-51	0.03%	1.05E-01
Mn-54	0.89%	3.60E+00
Fe-55	4.3%	1.74E+01
Fe-59	0%	9.36E-07
Co-57	0.14%	5.63E-01
Co-58	0.57%	2.30E+00
Co-60	11.59%	4.69E+01
Ni-59	0.52%	2.09E+00
Ni-63	73.59%	2.98E+02
Zn-65	0.15%	6.08E-01
Sr-89	0%	7.41E-05
Sr-90	0.05%	2.06E-01
Zr-95	0%	1.51E-02
Nb-94	0.01%	3.94E-02
Nb-95	0.01%	3.31E-02
Tc-99	0%	8.78E-03
Ag-108m	0%	1.50E-02
Ag-110m	0.07%	3.01E-01
Sn-113	0%	5.55E-03
Sb-124	0%	7.77E-06
Sb-125	2.98%	1.21E+01
Te-123m	0%	1.68E-06
Cs-134	0.03%	1.15E-01
Cs-137	4.83%	1.96E-01
Ce-144	0%	7.32E-03
U-235	0%	2.02E-05
U-238	0%	1.02E-06
Pu-238	0%	1.97E-03
Pu-239	0%	3.90E-04
Pu-241	0.04%	1.62E-01
Am-241	0%	1.93E-03
Cm-242	0%	4.98E-05
Cm-243	0%	2.51E-03

Note: For radionuclides H-3, C-14, Tc-99 and I-129 if value is <MDA then MDA is used to report Curies shipped

Annual Radioactive Effluent Release Report**6.0 RADIOLOGICAL IMPACT TO MAN**

The Radiological Impact on Man due to radioactive effluent from the site is determined from NRC approved modeling, per Regulatory Guide 1.109 and NUREG 0133. Calculations are divided into 3 categories: Noble Gases, Particulates and Iodine, and Liquid Releases (fish and invertebrate consumption). This modeling involves conservative dose calculations to Adult, Teen, Child, and Infant age groups. Furthermore, dose modeling is performed for six separate organs as well as the total body dose. This well-established industry model provides doses (because of plant effluent) to a hypothetical maximally exposed individual offsite. While all age groups and organs are considered, it is this maximum value that is provided in the tables that follow.

An approved computer code is used to perform liquid and gaseous dose calculations according to the models and parameters presented in the Indian Point Offsite Dose Calculation Manual (ODCM). This information is stored in a database on site to enhance dose tracking and information management. Site airborne effluent dose calculations include annual average dispersion and deposition factors, averaged from data collected over approximately ten-year periods. When new data is gathered (approximately every ten years) the modeling is updated and used in subsequent airborne effluent calculations. Liquid offsite dose calculations involve fish and invertebrate consumption pathways only, as determined appropriate in the ODCM. While the ODCM identified some site-specific dose factors, the bulk of this information is obtained directly from Regulatory Guide 1.109 and NUREG 0133. Details of the calculations, site-specific data, and their bases are presented in the ODCM. See the tables at the end of this section for the 10CFR50 Appendix I Dose Assessments.

6.1 Dose to Members of the Public Inside the Site Boundary

Members of the public visiting the site receive minimal dose because of onsite releases due to the relatively insignificant total amount of time they are on site, as well as the immeasurably low levels of dose at the critical receptors. Their doses can be calculated from standard ODCM methodology, with typical occupancy factors employed. These factors are determined by comparing a conservative assumption for their expected hours on site, to 8760 hours (the number of hours in a year, used in calculations in the ODCM).

Example 1: Several students visit the site for 8-hour tour.
Their occupancy factor is: $8 / 8760$ or **0.0009**

Example 2: A man drives his wife to work and drops her off at the security gate each morning, with a stay time of 2 minutes per day. His occupancy factor is calculated as follows:
 $2 \text{ min/day} * 250 \text{ days/year} / 60 \text{ min/hr} / 8760 \text{ hr/year} = \mathbf{0.0010}$

6.2 Dose to a Member of the Public due to Release of Radioactive Material in Groundwater

Curies and dose contribution from activity discovered in onsite groundwater and storm drain pathways during the year are discussed in more detail in Attachment 2. The offsite dose calculation involves multiple source term measurements, as well as computations for release and dilution flow. A summary of the quantification methodology, and the resulting calculated doses, is also provided in Attachment 2. The Summation of Dose Assessments (Table 6-1) below provides a means to compare ground water doses with those of other components making up the total offsite dose.

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6.3 40CFR Part 190 Dose to Individual in the Unrestricted Area

Unit and pathway-specific dose data can be found on the Radiological Impact on Man tables following this discussion. For simplicity and to demonstrate compliance with 40CFR190, the following table indicates the maximum hypothetical Total Dose to an individual from operation of the facility, including any measured direct shine component from the site property.

Table 6-1 Summation of Dose Assessments

Year: 2022		Total Body	Thyroid	Max Organ
40 CFR 190 limit ==>	IPEC	25 mrem	75 mrem	25 mrem
Routine Airborne Effluents ¹	Units 1 and 2	2.09E-04	2.09E-04	2.09E-04
Routine Liquid Effluents	Units 1 and 2	3.53E-02	5.09E-05	7.19E-02
Liquid Releases of C ¹⁴	Units 1 and 2	0.00E+00	0.00E+00	0.00E+00
Airborne Releases of C ¹⁴	Units 1 and 2	0.00E+00	0.00E+00	0.00E+00
Routine Airborne Effluents ¹	Unit 3	1.69E-03	1.69E-03	1.69E-03
Routine Liquid Effluents	Unit 3	0.00E+00	0.00E+00	0.00E+00
Liquid Releases of C ¹⁴	Unit 3	0.00E+00	0.00E+00	0.00E+00
Airborne Releases of C ¹⁴	Unit 3	0.00E+00	0.00E+00	0.00E+00
Ground Water & Storm Drain Totals	IPEC ²	8.48E-05	2.85E-07	3.45E-04
Direct Shine from areas such as dry cask storage, radwaste storage, SG Mausoleum, etc.	IPEC ³	3.00E-01	3.00E-01	3.00E-01
Indian Point Energy Center Total Dose, per 40 CFR 190	IPEC	3.37E-01	3.02E-01	3.74E-01

Note 1: Routine airborne dose in this table is conservatively represented as a sum of Iodine, Particulate, and Tritium dose (excluding C-14, in mrem) with a mrem term added from noble gas gamma air energy (mrad, expressed as mrem). This 'addition' does not represent a real dose and is listed here solely to help demonstrate compliance with 40CFR190. (Doses by type of release and comparison to the specific limits of 10CFR50 Appendix I are summarized on the following pages.)

Note 2: Groundwater curie and dose calculations are provided in Attachment 2.

Note 3: 40CFR190 requires the reporting of total dose, including that of direct shine. Direct shine dose from sources other than dry cask are indistinguishable from background. Direct shine dose is determined from TLDs near the dry cask area and site boundary, compared with REMP TLDs and historical values, and corrected with occupancy factors to determine a bounding, worst-case assessment of direct shine dose to a real individual. Details of each year's dose evaluation are available on site.

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Table 6-2 Unit 2 Appendix I Dose Assessment

A. LIQUID DOSES

		Qtr 1	Qtr 2	Qtr 3	Qtr 4	ANNUAL
Organ Dose	(mrem)	2.26E-02	1.73E-02	2.02E-02	1.21E-02	7.19E-02
Applicable Limit	(mrem)	5	5	5	5	10
Percent of Limit	(%)	4.51E-01	3.45E-01	4.03E-01	2.41E-01	7.19E-01
Age Group		Teenager	Child	Child	Child	Child
Critical Organ		Liver	Bone	Bone	Bone	Bone

Adult Total Body	(mrem)	1.45E-02	1.01E-02	4.16E-03	6.60E-03	3.53E-02
Applicable Limit	(mrem)	1.5	1.5	1.5	1.5	3.0
Percent of Limit	(%)	9.67E-01	6.71E-01	2.77E-01	4.40E-01	1.18E+00

Note: Liquid Annual dose is the Dose Analysis for the year, it is not a sum of the quarters

B. AIRBORNE NOBLE GAS DOSES

		Qtr 1	Qtr 2	Qtr 3	Qtr 4	ANNUAL
Gamma Air	(mrad)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Applicable Limit	(mrad)	5	5	5	5	10
Percent of Limit	(%)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Beta Air	(mrad)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Applicable Limit	(mrad)	10	10	10	10	20
Percent of Limit	(%)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

C. AIRBORNE IODINE, PARTICULATE, & TRITIUM DOSES (excluding C-14, for info only)

		Qtr 1	Qtr 2	Qtr 3	Qtr 4	ANNUAL
Iodine/Part	(mrem)	4.33E-05	3.90E-05	8.25E-05	4.39E-05	2.09E-04
Applicable Limit	(mrem)	7.5	7.5	7.5	7.5	15
Percent of Limit	(%)	5.77E-04	5.20E-04	1.10E-03	5.86E-04	1.39E-03
Age Group		Child	Child	Child	Child	Child
Critical Organ		Liver	Liver	Liver	Liver	Liver

D. AIRBORNE IODINE, PARTICULATE, TRITIUM, and CARBON-14 DOSES

Child TB Dose	(mrem)	4.33E-05	3.90E-05	8.25E-05	4.39E-05	2.09E-04
Applicable Limit	(mrem)	7.5	7.5	7.5	7.5	15
Percent of Limit	(%)	5.77E-04	5.20E-04	1.10E-03	5.86E-04	1.39E-03
		Qtr 1	Qtr 2	Qtr 3	Qtr 4	ANNUAL
Child Bone Dose	(mrem)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Applicable Limit	(mrem)	7.5	7.5	7.5	7.5	15
Percent of Limit	(%)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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Table 6-3 Unit 3 Appendix I Dose Assessment

A. LIQUID DOSES

		Qtr 1	Qtr 2	Qtr 3	Qtr 4	ANNUAL
Organ Dose	(mrem)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Applicable Limit	(mrem)	5	5	5	5	10
Percent of Limit	(%)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Age Group		-	-	-	-	-
Critical Organ		-	-	-	-	-

Adult Total Body	(mrem)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Applicable Limit	(mrem)	1.5	1.5	1.5	1.5	3.0
Percent of Limit	(%)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Note: Liquid Annual dose is the Dose Analysis for the year, it is not a sum of the quarters

B. AIRBORNE NOBLE GAS DOSES

		Qtr 1	Qtr 2	Qtr 3	Qtr 4	ANNUAL
Gamma Air	(mrad)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Applicable Limit	(mrad)	5	5	5	5	10
Percent of Limit	(%)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Beta Air	(mrad)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Applicable Limit	(mrad)	10	10	10	10	20
Percent of Limit	(%)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

C. AIRBORNE IODINE, PARTICULATE, & TRITIUM DOSES (excluding C-14, for info only)

		Qtr 1	Qtr 2	Qtr 3	Qtr 4	ANNUAL
Iodine/Part	(mrem)	2.57E-04	3.55E-04	3.47E-04	7.33E-04	1.69E-03
Applicable Limit	(mrem)	7.5	7.5	7.5	7.5	15
Percent of Limit	(%)	3.43E-03	4.73E-03	4.62E-03	9.77E-03	1.13E-02
Age Group		Child	Child	Child	Child	Child
Critical Organ		Liver	Liver	Liver	Liver	Liver

D. AIRBORNE IODINE, PARTICULATE, TRITIUM, and CARBON-14 DOSES

Child TB Dose	(mrem)	2.57E-04	3.55E-04	3.47E-04	7.33E-04	1.69E-03
Applicable Limit	(mrem)	7.5	7.5	7.5	7.5	15
Percent of Limit	(%)	3.43E-03	4.73E-03	4.62E-03	9.77E-03	1.13E-02
		Qtr 1	Qtr 2	Qtr 3	Qtr 4	ANNUAL
Child Bone Dose	(mrem)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Applicable Limit	(mrem)	7.5	7.5	7.5	7.5	15
Percent of Limit	(%)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

7.0 METEOROLOGICAL DATA

The site meteorological data is maintained on-site and available for review.

Annual Radioactive Effluent Release Report**Attachment 1 – Carbon-14 (C-14) Discussion - Deleted**

The airborne and liquid effluent doses from C-14, for both units were set to zero because both units were permanently shut down and defueled in 2022. Unit 2 was permanently shut down in April 2020, and Unit 3 was permanently shut down in April 2021.

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Attachment 2 – Groundwater Monitoring Program Results

Summary of IPEC Groundwater and Storm Water Activity, 2022

The precipitation mass balance model applied in previous years was applied for offsite dose calculations in 2022, with some minor calibration updates performed in 2009 by the contractor regarding the distribution of groundwater flow through the site. Groundwater elevation readings continued to validate the model throughout the year.

As defined in the ODCM, a conservative method of source term selection is used for determining offsite dose from Groundwater and Storm Water. If a result is *below MDC* (whether positive or negative) it is *not* included in the computed average. This computed average is therefore biased high (more conservative from a dose computation perspective) relative to an average computed using all the data (many of which indicate no activity). In cases where all the sampling locations assigned to a given stream tube provided results below the MDC, then an average activity value of zero was assigned to the effected portion of the stream tube. (This mathematically allows the calculation to proceed in the absence of positive detections).

Historical average precipitation at IPEC has been approximately 3 feet per year. In 2011, precipitation was unusually high (over 6 feet). In 2022, precipitation was measured at 3.15 feet per year (or inches per month, as an average). Doses from Groundwater/Storm water are dependent on two factors: source term and precipitation during the effected year.

Results of 2022 Groundwater and Storm water offsite dose evaluation

The results of the assessment are shown below. These dose values are a small portion of the annual limits (<0.1%) and were added to the Total Dose table in the opening summary of the Radiological Impact to Man section of this report (Section 6).

Groundwater (GW) and storm water tritium released from IPEC in 2022 totaled approximately 0.06 curies, resulting in a total body dose of significantly less than 0.1 mrem. It is evident that tritium alone, whether from ground water or routine effluents, does not arithmetically contribute to integrated offsite dose.

Sampling near the effluent points identified only trace levels of Tritium and Strontium-90. These data, as part of the Monitored Natural Attenuation analyses, show a continuation of the decreasing trends established with the termination of the identified Unit 2 SFP leaks (tritium plume) and the defueling and draining of Unit 1 SFPs (strontium plume). Strontium-90, a legacy isotope from Unit 1, contributed approximately 0.000029 curies to site effluent from the groundwater pathway. Combined GW releases from IPEC in 2022 (all radionuclides) resulted in a calculated annual dose of less than 0.004 % of the annual limits for whole body and critical organ:

IPEC Groundwater and Storm Water Effluent Dose, 2022

0.0000848 mrem to the total body	(0.0028% limit)
0.000345 mrem to the critical organ, adult bone	(0.0035% limit)

The annual dose from combined groundwater and storm water pathways remains well below applicable limits. When combined with routine liquid effluents (Section 6), the total dose also remains significantly below ALARA limits of 3 mrem total body, and 10 mrem to the critical organ.

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Southern Clean Zone

ISOTOPE	BONE	LIVER	TOT BODY	THYROID	KIDNEY	LUNG	GI-LLI	<i>uCi</i>
H-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Co-60	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ni-63	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sr-90	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cs-137	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sb-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Totals	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Totals: Adult Doses, in mrem

H-3 only	0.00E+00	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	2.85E-07	<i>Total uCis</i>	
	BONE	LIVER	TOT BODY	THYROID	KIDNEY	LUNG	GI-LLI	5.81E+04	H3
all isotopes	3.45E-04	2.85E-07	8.48E-05	2.85E-07	2.85E-07	2.85E-07	1.02E-05	0.00E+00	Co
								0.00E+00	Ni
Adult Doses								2.86E+01	Sr
% Annual Limit	0.00345	0.000	0.00283	0.000	0.000	0.000	0.000	0.00E+00	Cs
								0.00E+00	Sb

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Attachment 3 – Laboratory Analytical Results

The following pages list the results of the 2022 groundwater samples. Note that the positive results are shown in bold print.

Well ID	Sample Date	2022 Laboratory Analytical Results											
		H-3 Result (pCi/L)	H-3 3 Sigma (Std. Dev.)	Sr-90 Result (pCi/L)	Sr-90 3 Sigma (Std. Dev.)	Cs-137 Result (pCi/L)	Cs-137 3 Sigma (Std. Dev.)	Co-60 Result (pCi/L)	Co-60 3 Sigma (Std. Dev.)	Ni-63 Result (pCi/L)	Ni-63 3 Sigma (Std. Dev.)	Sb-125 Result (pCi/L)	Sb-125 3 Sigma (Std. Dev.)
I-2	5/26/2022	-1.81E+02	3.66E+02	-0.4	1.5	-0.8	10.6	0.7	5.9			3.0	14.2
MH-5 VCFD	3/25/2022	-4.07E+00	3.57E+02	1.4	1.8	2.3	4.8	-1.0	5.8			2.5	14.3
MH-5 VCFD	4/18/2022	1.00E+03											
MH-5 VCFD	5/17/2022	1.97E+02	3.03E+02	-0.5	1.7	1.0	6.1	3.1	5.6			-4.9	11.5
MH-5 VCFD	6/13/2022	1.08E+03	4.20E+02	0.8	1.4	-2.3	5.8	1.1	5.2			4.6	13.1
MH-5 VCFD	7/12/2022	-4.36E+01	2.69E+02	0.5	1.4	-4.9	9.4	-1.7	8.7			-3.0	15.1
MH-5 VCFD	8/15/2022	1.58E+02	2.90E+02	-1.3	1.4	-2	6	-0.3	6.2			0.4	12.3
MH-5 VCFD	9/12/2022	6.69E+02	4.29E+02	0.7	1.7	0.2	5.8	-2.0	8.8			-0.4	15.9
MH-5 VCFD	10/13/2022	7.29E+02	4.08E+02	0.3	0.8	7.3	9.6	2.0	9.6			0.3	22.6
MH-5 VCFD	11/7/2022	8.98E+01	3.36E+02	0.8	1.4	0.7	7.8	-3.5	7.7			14.7	35.4
MH-5 VCFD	12/20/2022	1.81E+03	5.13E+02	1.3	1.8	-1.5	5.3	0.5	4.3			7.3	14.9
MW-107	5/31/2022	4.54E+01	2.80E+02	-1.0	1.7	0.4	8.1	-2.5	5.2			6.1	13.8
MW-107	11/18/2022	-9.04E+01	3.09E+02	0.6	0.9	2	5	0.0	4.5	-1	15	2.4	12.9
MW-110	11/18/2022	6.30E+01	3.36E+02	0.0	1.3	-0.5	4.1	0.0	6.3	12.1	14.9	4.1	12.7
MW-111	3/25/2022	2.46E+02	3.81E+02	0.4	1.7	-1.5	6.1	0.8	5.6			7.6	18.0
MW-111	5/17/2022	4.00E+03	6.27E+02	1.7	1.8	-0.3	4.7	-1.3	6.0			-1.7	11.0
MW-111	8/11/2022	5.54E+02	3.63E+02	0.5	1.5	-4	9	1.0	5.6			5.1	15.9
MW-111	11/7/2022	1.05E+02	3.39E+02	0.2	1.1	-0.3	6.2	-1.1	5.1			7.1	18.5
MW-30-71	2/28/2022	1.85E+04	1.35E+03	1.0	1.3	3.2	6.3	2.4	5.3			1.6	16.0
MW-30-71	3/24/2022	1.29E+04	1.01E+03	0.6	1.7	-7.2	10.7	3.4	6.7			1.3	17.8
MW-30-71	4/19/2022	2.02E+04	1.27E+03	1.7	1.2	-0.4	6.1	1.7	6.9			2.1	15.7
MW-30-71	5/25/2022	2.84E+04											
MW-30-71	9/9/2022	3.38E+04											
MW-30-71	10/13/2022	3.87E+04											
MW-30-71	11/10/2022	5.47E+04											
MW-30-71	12/20/2022	5.51E+04											
MW-30-84	2/1/2022	4.33E+04	2.01E+03	0.9	1.0	1.3	4.4	4.4	5.8			-0.7	13.9
MW-30-84	3/24/2022	4.08E+04	1.70E+03	1.0	1.3	3.3	7.4	-2.0	5.8			-11.0	15.9
MW-30-84	5/25/2022	3.61E+04	2.16E+03	1.2	1.6	4.5	6.7	0.3	5.7			-1.0	11.0
MW-30-84	9/9/2022	3.16E+04	2.49E+03	1.3	1.4	2.1	5.6	0.9	4.6			1.7	12.4
MW-30-84	11/10/2022	3.03E+04	1.30E+03	0.7	1.7	0	7	1.4	5.8			-0.9	13.3
MW-31-49	3/23/2022	1.01E+02	3.75E+02	1.5	1.8	1.7	4.7	2.4	3.9			-3.2	11.5
MW-31-49	5/23/2022	8.10E+01	3.87E+02	2.2	2.1	-0.6	7.0	4.0	7.6			-3.9	15.9
MW-31-49	9/9/2022	1.25E+02	3.33E+02	0.5	1.2	2.8	6.3	-2.3	6.0			0.4	18.4
MW-31-49	11/10/2022	4.60E+02	4.05E+02	1.0	1.7	3.0	6.5	-0.4	4.9			1.0	17.7
MW-31-63	2/23/2022	2.01E+04	1.23E+03	1.4	1.8	-0.9	3.8	1.1	4.9			0.0	34.2
MW-31-63	3/23/2022	1.47E+04	1.11E+03	0.3	1.7	3.6	6.1	0.9	5.5			18.4	34.5
MW-31-63	4/19/2022	1.08E+04	9.45E+02	10.7	1.5	4.9	10.3	-2.0	6.0			9.2	21.9
MW-31-63	5/23/2022	1.07E+04	9.45E+02	0.4	0.9	0.9	5.6	0.3	6.1			7.1	14.8
MW-31-63	7/13/2022	8.21E+03	8.37E+02	1.0	1.3	276.0	29.5	-0.5	5.6			4.6	20.2
MW-31-63	9/9/2022	1.46E+04	1.68E+03	1.2	1.5	-1.8	5.0	0.0	4.9			0.0	49.5
MW-31-63	10/13/2022	1.47E+04	1.16E+03	1.2	1.7	-1	4	0.6	5.9			6.1	15.0
MW-31-63	11/10/2022	1.39E+04	9.30E+02	-0.5	1.5	8.8	7.4	-0.9	7.6			14.8	17.3
MW-31-63	12/22/2022	9.45E+03	9.18E+02	0.5	1.6	50.6	14.3	-1.9	4.0			0.0	34.2
MW-31-85	3/23/2022	2.35E+03	5.61E+02	0.9	1.5	0.7	7.5	4.4	7.8			-6.2	17.0
MW-31-85	5/23/2022	2.37E+03	5.55E+02	0.6	1.3	6.0	16.7	-1.7	5.9			8.0	15.9
MW-31-85	9/9/2022	9.77E+02	5.37E+02	0.9	1.3	-1.9	10.1	3.1	6.4			4.1	16.2
MW-31-85	11/10/2022	2.22E+03	5.94E+02	0.8	1.7	1.7	6.0	-0.1	4.8			5.1	14.9
MW-32-131	5/20/2022	1.40E+03											
MW-32-149	5/20/2022	3.47E+02	3.99E+02	0.8	1.7	3.6	12.0	-0.8	6.5			3.3	13.7
MW-32-149	9/5/2022	1.56E+02	3.39E+02	1.3	1.5	0.8	6.6	-0.3	6.7			1.4	16.5
MW-32-149	11/10/2022	1.23E+02	3.99E+02	-0.2	1.5	2.0	6.4	2.5	6.6			-1.0	16.2
MW-32-173	3/28/2022	4.93E+02	3.81E+02	0.1	1.5	1.6	5.6	1.3	5.9			-1.3	12.9
MW-32-173	5/19/2022	1.59E+02	3.87E+02	1.6	1.8	-0.6	5.6	-1.4	6.1			-5.9	13.1
MW-32-173	9/5/2022	1.56E+02	3.45E+02	1.4	1.6	-1.7	5.8	5.7	5.4			-3.1	13.2
MW-32-173	11/10/2022	2.13E+02	4.11E+02	-0.1	0.9	3.4	6.2	-2.1	5.9			1.5	15.7
MW-32-190	3/28/2022	2.94E+02	3.93E+02	-1.0	1.4	-1.0	9.2	1.8	5.8			0.8	16.2
MW-32-190	5/20/2022	4.77E+02	4.17E+02	1.1	1.7	0.9	5.0	1.3	4.9			-1.2	13.7
MW-32-190	9/5/2022	4.04E+02	4.14E+02	0.4	1.6	0.3	5.4	-2.8	6.7			-2.6	13.2
MW-32-190	11/10/2022	2.22E+02	4.11E+02	0.1	1.6	2.1	5.1	2.8	6.7			0.0	31.2
MW-32-48	2/1/2022	4.09E+04	1.95E+03	-0.1	1.6	-0.4	5.3	0.0	10.1			0.0	25.2
MW-32-59	2/23/2022	2.06E+04	1.24E+03	1.3	1.7	1.2	6.9	3.7	6.2			20.6	23.8
MW-32-59	3/28/2022	7.07E+03	8.04E+02	1.4	1.8	-0.1	4.4	0.1	4.5			17.4	24.1
MW-32-59	4/18/2022	1.93E+03	5.37E+02	1.1	1.8	-4.4	10.0	-1.7	7.3			6.4	15.2
MW-32-59	5/19/2022	1.24E+04	1.01E+03	1.5	1.8	2.2	6.0	2.8	6.2			26.0	27.2
MW-32-59	6/6/2022	6.15E+03	1.01E+03	-0.1	1.6	1.3	4.4	0.2	4.7			19.9	34.5
MW-32-59	7/12/2022	8.17E+03	8.31E+02	1.0	1.4	2.7	6.1	-2.9	6.9			10.3	18.2

Annual Radioactive Effluent Release Report

Well ID	Sample Date	2022 Laboratory Analytical Results											
		H-3 Result (pCi/L)	H-3 3 Sigma (Std. Dev.)	Sr-90 Result (pCi/L)	Sr-90 3 Sigma (Std. Dev.)	Cs-137 Result (pCi/L)	Cs-137 3 Sigma (Std. Dev.)	Co-60 Result (pCi/L)	Co-60 3 Sigma (Std. Dev.)	Ni-63 Result (pCi/L)	Ni-63 3 Sigma (Std. Dev.)	Sb-125 Result (pCi/L)	Sb-125 3 Sigma (Std. Dev.)
MW-32-59	9/5/2022	1.06E+04	1.46E+03	0.8	1.4	-2.1	6.3	-2.1	7.4			12.6	30.9
MW-32-59	10/14/2022	1.61E+04	1.10E+03	0.3	0.8	-3.7	7.4	1.6	9.0			17.1	21.2
MW-32-59	11/10/2022	2.23E+03	4.95E+02	0.9	1.7	0.0	12.7	5.4	7.8			3.0	15.0
MW-32-59	12/20/2022	1.34E+03	4.77E+02	0.3	1.7	-1.6	4.5	3.7	5.3			14.0	13.2
MW-32-85	2/1/2022	1.84E+04	1.34E+03	0.3	1.3	-2.7	6.2	3.4	5.8			5.5	16.4
MW-32-85	2/23/2022	1.69E+04	1.13E+03	1.8	1.8	2.5	6.4	-1.8	6.3			-2.8	14.3
MW-32-85	3/28/2022	1.59E+04	1.14E+03	0.4	1.6	-2.2	6.4	-3.1	6.5			-6.6	18.2
MW-32-85	4/18/2022	1.31E+04	1.03E+03	1.6	1.8	0.2	8.6	2.8	6.8			-1.5	15.1
MW-32-85	5/19/2022	1.41E+04	1.07E+03	0.7	1.7	-2.2	6.1	2.6	5.8			2.9	14.2
MW-32-85	7/12/2022	1.20E+04	1.00E+03	-0.3	0.9	-5.7	8.5	1.3	7.5			0.5	14.1
MW-32-85	9/5/2022	1.36E+04	1.68E+03	1.0	1.4	-2.1	5.6	1.0	5.4			0.0	56.4
MW-32-85	10/14/2022	1.21E+04	9.78E+02	-0.2	0.9	-0.4	4.9	2.3	4.6			-3.0	13.2
MW-32-85	11/10/2022	1.14E+04	7.56E+02	1.3	1.7	6.7	6.6	2.5	4.9			-0.9	17.7
MW-32-85	12/20/2022	1.13E+04	9.78E+02	-1.2	1.3	-0.3	4.8	-1.5	4.1			-4.2	13.1
MW-33	3/25/2022	2.08E+03	5.19E+02	1.1	1.7	1.5	6.0	-0.2	3.5			-4.1	14.0
MW-33	5/17/2022	5.65E+02	4.17E+02	0.4	1.7	-0.2	7.0	1.5	6.1			-1.4	15.9
MW-33	8/11/2022	3.53E+03	7.17E+02	0.8	1.4	2.1	10.9	-0.3	7.2			9.4	19.9
MW-33	11/7/2022	1.99E+03	5.55E+02	0.6	1.4	1.4	6.6	2.1	5.0			-0.3	16.6
MW-35	2/21/2022	4.03E+02	3.93E+02	-0.3	1.5	2.7	7.0	-1.7	7.7			3.1	16.1
MW-35	3/25/2022	1.98E+03	5.07E+02	0.8	1.7	1.0	12.9	-0.8	5.6			-1.0	12.5
MW-35	4/19/2022	5.61E+02	4.29E+02	1.3	1.1	1.3	5.7	-2.1	6.0			2.2	14.4
MW-35	5/17/2022	4.74E+02	3.51E+02	0.3	1.6	2.1	6.2	-0.9	6.0			3.0	15.8
MW-35	6/13/2022	1.06E+03	4.20E+02	1.0	1.1	0.2	5.0	-0.7	5.4			-5.6	13.1
MW-35	7/13/2022	5.87E+02	3.75E+02	0.1	1.6	-1.5	4.4	1.6	4.7			-5.6	11.0
MW-35	8/11/2022	3.49E+02	3.24E+02	0.9	1.5	-3.2	6.1	1.5	6.4			0.8	15.8
MW-35	9/12/2022	1.20E+02	3.90E+02	1.4	1.6	0.4	6.0	0.0	5.2			-6.4	14.7
MW-35	10/14/2022	2.27E+02	3.63E+02	0.7	1.0	0.6	5.3	0.7	4.2			3.3	12.2
MW-35	11/7/2022	1.21E+02	3.42E+02	0.6	0.8	-3.9	8.3	0.9	5.3			3.6	13.7
MW-35	12/20/2022	3.45E+02	3.90E+02	0.5	1.6	-1.6	5.7	2.0	8.0			3.3	15.1
MW-36-24	3/14/2022	3.45E+02	4.20E+02	1.6	1.8	-0.2	6.0	-0.8	4.0			-1.6	14.1
MW-36-24	5/16/2022	4.65E+02	3.66E+02	1.7	1.8	-0.5	6.8	-0.8	6.4			-5.8	14.7
MW-36-24	8/15/2022	5.59E+02	3.57E+02	1.2	1.2	-1.3	4.9	-1.8	3.8			-3.6	11.7
MW-36-24	11/16/2022	1.62E+02	4.08E+02	-0.4	1.5	-2.1	5.0	3.0	5.2			2.4	13.6
MW-36-41	3/14/2022	5.45E+03	7.47E+02	4.9	2.1	-2.5	6.7	1.8	6.8			4.9	13.3
MW-36-41	5/16/2022	5.41E+03	1.07E+03	2.7	2.0	2.3	5.6	-0.4	5.2			-4.9	13.4
MW-36-41	8/15/2022	3.84E+03	8.67E+02	3.4	2.1	0.9	5.9	-2.8	6.1			-3.9	14.4
MW-36-41	11/16/2022	2.60E+03	6.00E+02	4.7	2.3	-2.9	5.3	4.3	5.9			-0.9	13.3
MW-36-52	3/14/2022	5.44E+02	4.17E+02	0.9	1.4	-1.8	5.9	1.4	5.3			9.1	20.8
MW-36-52	5/16/2022	4.37E+02	3.99E+02	-1.7	1.4	2.3	5.1	-0.8	4.4			-7.3	14.5
MW-36-52	8/15/2022	9.25E+02	4.32E+02	1.9	1.9	-2.0	5.5	-0.6	5.1			1.2	14.0
MW-36-52	11/16/2022	4.36E+01	4.02E+02	1.7	1.9	2.9	4.6	-0.2	5.1			0.8	11.6
MW-37-22	5/16/2022	4.30E+03	6.48E+02	3.8	2.0	3.1	4.8	0.0	5.5			5.8	14.0
MW-37-22	11/16/2022	2.38E+03	5.88E+02	4.5	1.9	2.4	6.0	0.9	8.0			1.3	15.4
MW-37-32	5/16/2022	3.00E+03	5.73E+02	10.6	2.6	-1.4	6.0	2.9	4.7			-3.0	11.1
MW-37-32	11/16/2022	1.65E+03	5.04E+02	4.5	2.1	0.0	6.0	3.1	6.0			-1.4	12.9
MW-37-40	5/16/2022	2.01E+03	5.10E+02	13.9	3.2	0.7	5.3	1.8	6.6			-0.2	14.1
MW-37-40	11/16/2022	1.94E+03	5.37E+02	10.7	2.7	-5.8	8.0	-1.9	7.7			-4.9	12.6
MW-37-57	5/16/2022	1.96E+03	5.10E+02	15.0	3.3	0.5	6.0	5.5	9.5			0.1	13.8
MW-37-57	11/16/2022	1.84E+03	5.34E+02	13.4	3.3	0.1	6.0	-5.3	5.5			4.8	13.3
MW-39-102	6/1/2022	-8.54E+01	3.75E+02	1.5	1.5	-1.3	6.2	-4.4	5.9			-4.2	12.3
MW-39-102	11/22/2022	-1.01E+02	3.45E+02	0.3	1.1	3.9	6.6	1.4	6.5			-4.8	16.7
MW-39-183	6/1/2022	-1.81E+02	3.63E+02	-0.1	1.2	0.7	4.8	-0.3	4.5			5.5	13.4
MW-39-183	11/22/2022	-1.56E+02	3.36E+02	-1.0	1.6	1.9	6.8	-0.5	7.0			2.0	16.6
MW-39-195	6/1/2022	-3.91E+01	3.75E+02	0.8	1.6	-0.1	4.7	-0.8	4.3			-3.3	12.0
MW-39-195	11/22/2022	-8.16E+01	3.51E+02	1.3	1.8	-1.9	10.0	2.8	7.3			-2.2	21.2
MW-39-67	6/1/2022	3.10E+02	3.18E+02	-0.7	1.6	-2.8	6.5	-1.3	6.8			3.7	14.1
MW-39-67	11/22/2022	1.58E+02	3.87E+02	0.9	1.0	-0.7	5.5	2.8	5.3			-7.3	14.1
MW-39-84	6/1/2022	1.96E+02	2.98E+02	1.2	1.8	0.5	7.6	-1.8	7.3			-5.5	16.1
MW-39-84	11/22/2022	4.87E+01	3.66E+02	0.4	0.8	3.4	5.6	-0.4	5.3			8.2	12.8
MW-40-100	3/17/2022	1.41E+02	2.84E+02	0.4	1.6	5.1	10.3	5.4	6.9			5.6	17.8
MW-40-100	5/27/2022	-1.56E+02	3.66E+02	0.8	1.7	2.0	9.5	3.1	6.2			10.6	14.0
MW-40-100	8/16/2022	4.35E+01	2.91E+02	0.7	1.4	1.7	7.3	0.5	5.7			13.2	19.0
MW-40-100	11/17/2022	8.35E+01	3.72E+02	-0.4	1.0	3.8	7.7	1.0	6.4			7.0	16.8
MW-40-127	3/17/2022	2.10E+02	2.87E+02	0.5	1.6	0.7	5.2	-1.7	5.0			2.2	12.1
MW-40-127	5/27/2022	1.60E+01	3.84E+02	-0.8	1.5	-0.5	6.4	1.4	5.7			3.4	13.2
MW-40-127	8/16/2022	7.89E+01	3.21E+02			-0.4	7.0	1.7	6.0			-2.2	12.2
MW-40-127	11/17/2022	1.74E+02	3.72E+02	0.8	1.8	2.3	6.5	1.8	5.8			-11.1	18.8

Annual Radioactive Effluent Release Report

Well ID	Sample Date	2022 Laboratory Analytical Results											
		H-3 Result (pCi/L)	H-3 3 Sigma (Std. Dev.)	Sr-90 Result (pCi/L)	Sr-90 3 Sigma (Std. Dev.)	Cs-137 Result (pCi/L)	Cs-137 3 Sigma (Std. Dev.)	Co-60 Result (pCi/L)	Co-60 3 Sigma (Std. Dev.)	Ni-63 Result (pCi/L)	Ni-63 3 Sigma (Std. Dev.)	Sb-125 Result (pCi/L)	Sb-125 3 Sigma (Std. Dev.)
MW-40-162	3/17/2022	9.94E+01	2.77E+02	1.6	1.9	3.8	8.6	2.1	6.9			6.4	19.8
MW-40-162	5/27/2022	7.02E+00	2.45E+02	0.4	1.7	-1.3	4.9	-0.9	5.7			1.6	13.2
MW-40-162	8/16/2022	1.21E-01	2.87E+02	0.7	1.3	1.9	5.7	3.0	5.6			-1.0	13.0
MW-40-162	11/17/2022	2.70E+02	3.87E+02	-0.3	1.2	-4.0	9.5	-1.8	7.8			-4.8	19.2
MW-40-27	3/17/2022	1.67E+02	3.78E+02	0.1	1.6	0.0	12.7	0.6	5.8			-8.0	13.1
MW-40-27	5/27/2022	1.08E+02	3.90E+02	0.7	1.7	1.0	8.4	2.6	5.3			-14.1	17.4
MW-40-27	8/16/2022	1.30E+02	2.76E+02	0.5	1.7	-0.1	5.3	2.1	4.2			-1.0	12.6
MW-40-27	11/17/2022	1.10E+02	3.66E+02			1.2	5.9	-0.7	5.7			12.0	37.2
MW-40-46	3/17/2022	4.15E+02	4.08E+02	0.0	1.6	0.2	11.5	-2.9	6.5			-9.4	16.1
MW-40-46	5/27/2022	1.26E+02	3.93E+02	1.7	1.8	-1.3	5.9	1.3	5.3			2.9	12.4
MW-40-46	8/16/2022	8.66E+01	2.58E+02	0.6	1.4	1.7	5.2	0.5	4.1			-1.3	12.3
MW-40-46	11/17/2022	1.94E+02	3.66E+02	0.5	1.7	4.0	11.4	0.6	6.5			0.3	15.8
MW-40-81	3/17/2022	2.58E+02	3.21E+02	0.9	1.8	-0.4	6.0	-1.9	7.2			6.7	18.1
MW-40-81	5/27/2022	-1.71E+01	3.78E+02	0.1	1.6	-0.9	6.7	5.1	6.1			-3.0	14.2
MW-40-81	8/16/2022	2.23E+01	2.91E+02	0.1	1.4	-5.3	10.2	-0.8	9.0			-4.1	18.7
MW-40-81	11/17/2022	1.40E+01	3.54E+02	0.2	1.7	0.6	6.2	0.6	8.0			-2.3	16.4
MW-41-40	3/15/2022	6.41E+02	4.26E+02	1.0	1.7	3.9	5.5	-1.8	5.5	4.6	15.0	-4.7	13.9
MW-41-40	5/23/2022	7.44E+01	3.75E+02	1.4	1.8	-0.3	5.4	-1.3	5.1	-1.2	20.4	-0.4	14.0
MW-41-40	8/11/2022	4.35E+01	2.71E+02	0.4	1.6	1.8	5.4	9.5	12.5	-5.1	17.9	0.6	16.9
MW-41-40	11/9/2022	-2.96E+01	3.18E+02	0.0	1.1	4.7	6.2	3.2	7.3	8.5	20.3	-7.0	16.9
MW-41-63	3/15/2022	1.51E+03	4.95E+02	1.4	1.6	-1.8	11.5	3.9	8.1	1.2	13.8	2.8	15.6
MW-41-63	5/23/2022	2.88E+02	4.05E+02	1.8	1.9	-1.8	5.8	2.8	5.3	-9.0	19.8	2.3	13.0
MW-41-63	8/11/2022	9.57E+01	2.96E+02	-0.1	1.3	2.1	7.3	0.4	6.0	1.5	18.2	-2.3	14.6
MW-41-63	11/9/2022	-8.59E+01	3.06E+02	0.9	1.0	1.3	8.3	3.5	8.2	-1.4	14.8	3.1	21.8
MW-42-49	2/21/2022	4.55E+02	4.38E+02	60.0	5.0	91300.0	528.0	-1.6	6.5	1150.0	42.3	7.5	242.7
MW-42-49	3/22/2022	1.93E+02	4.17E+02	42.3	5.1	67300.0	441.0	1.1	7.2	939.0	39.3	46.3	175.2
MW-42-49	4/20/2022	5.96E+02	3.75E+02	10.4	4.4	34000.0	324.0	0.0	6.4	335.0	36.3	2.8	135.9
MW-42-49	5/18/2022	2.35E+02	4.14E+02	26.5	4.0	34300.0	315.0	3.5	6.6	459.0	32.7	-61.4	143.7
MW-42-49	6/6/2022	6.81E+02	4.23E+02	2.2	2.0	16200.0	198.0	1.6	5.6	239.0	30.6	-15.0	92.7
MW-42-49	7/13/2022	3.69E+02	4.11E+02	41.7	5.1	35600.0	303.0	1.8	6.1	633.0	46.8	1.4	122.4
MW-42-49	8/11/2022	7.88E+01	2.99E+02	33.2	4.8	35800.0	282.9	0.4	6.0	463.0	40.5	18.3	119.7
MW-42-49	9/12/2022	1.30E+02	3.06E+02	7.0	2.8	15200.0	195.0	-1.0	5.6	132.0	26.1	15.9	79.5
MW-42-49	10/14/2022	9.83E+01	3.30E+02	3.4	1.9	10700.0	160.5	-3.2	3.9	99.5	19.0	-14.7	64.2
MW-42-49	11/7/2022	2.62E+02	3.57E+02	16.1	3.4	31200.0	324.0	3.4	6.2	412.0	30.3	-40.4	124.8
MW-42-49	12/22/2022	1.47E+02	3.75E+02	5.4	2.5	42500.0	360.0	0.2	8.0	320.0	32.1	-28.9	158.7
MW-42-78	3/22/2022	4.97E+02	4.11E+02	1.6	1.8	-2.0	8.9	3.3	6.6	7.1	18.2	13.9	29.9
MW-42-78	5/18/2022	2.39E+02	3.87E+02	0.4	1.7	-2.3	10.7	3.1	5.4	-3.4	11.1	-10.8	18.2
MW-42-78	8/11/2022	7.21E+01	2.83E+02	1.6	1.8	0.0	6.0	0.5	5.3	-9.7	18.0	-3.8	15.1
MW-42-78	11/7/2022	3.84E+02	3.78E+02	-0.3	1.4	1.9	5.1	-1.3	5.0	4.4	15.0	0.4	14.6
MW-43-28	5/23/2022	1.26E+02	3.93E+02	0.3	1.7	6.5	8.8	0.5	6.4	1.5	10.3	3.7	17.1
MW-43-62	5/23/2022	-3.07E+01	3.78E+02	1.6	1.8	0.2	11.2	-0.5	5.5	-4.1	10.8	0.0	13.9
MW-44-102	6/1/2022	4.60E+01	3.84E+02	1.5	1.7	-0.5	10.0	-1.0	7.4			2.3	20.8
MW-44-102	11/22/2022	2.48E+02	3.63E+02	1.4	1.8	3.7	5.9	1.9	5.5			-2.9	15.4
MW-44-66	6/1/2022	8.51E+00	3.87E+02	0.2	1.6	-0.4	5.7	1.2	4.6			-3.4	15.9
MW-44-66	11/22/2022	2.24E+02	3.69E+02	0.7	1.5	-1.0	6.6	-0.6	6.8			1.6	15.7
MW-45-42	3/15/2022	5.25E+03	7.17E+02	1.2	1.8	1.4	7.5	1.1	5.6			4.3	16.1
MW-45-42	5/23/2022	4.79E+03	6.99E+02	0.6	1.7	-1.4	5.6	-0.6	6.0			-6.7	12.7
MW-45-42	8/11/2022	6.13E+03	9.90E+02	1.1	1.8	-0.9	4.9	-0.4	5.9			-1.9	13.1
MW-45-42	11/9/2022	3.87E+03	7.14E+02	0.9	1.6	3.4	6.1	-1.2	7.3			-1.1	16.8
MW-45-61	3/15/2022	4.44E+03	6.78E+02	0.9	1.7	1.8	5.1	1.4	5.8			4.4	13.3
MW-45-61	5/23/2022	1.96E+03	5.34E+02	1.5	1.9	5.1	6.3	2.8	6.2			-1.3	16.6
MW-45-61	8/11/2022	4.67E+03	9.21E+02	0.7	0.8	2.1	5.0	2.2	6.9			-0.4	13.0
MW-45-61	11/9/2022	4.74E+03	7.68E+02	0.1	1.1	0.4	5.8	0.4	5.6			7.3	17.3
MW-46	2/21/2022	1.28E+03	4.68E+02	1.0	1.7	2.9	5.8	8.0	8.0			-3.4	14.4
MW-46	3/15/2022	1.62E+03	4.95E+02	1.7	1.8	1.0	4.3	2.4	5.6			-2.4	10.6
MW-46	5/18/2022	7.80E+02	4.59E+02	0.9	1.8	1.1	8.6	3.6	7.6			-6.5	13.9
MW-46	6/13/2022	1.09E+03	3.99E+02	1.1	1.8	0.3	4.2	0.6	4.9			-0.4	10.5
MW-46	8/10/2022	8.83E+02	3.96E+02	0.2	1.6	6.3	13.9	-2.0	7.0			8.2	15.6
MW-46	9/12/2022	9.81E+02	4.26E+02	1.0	1.4	3.6	4.9	-2.0	5.3			3.2	12.1
MW-46	11/21/2022	9.79E+02	4.83E+02	1.5	1.8	2.5	11.8	-0.4	6.5			-4.7	18.9
MW-46	12/21/2022	1.36E+03	4.56E+02	0.5	1.7	3.3	4.9	-0.7	4.7			2.5	13.0
MW-49-26	5/12/2022	2.54E+03	5.61E+02	12.1	2.5	7.3	17.3	-0.3	7.7	2.0	19.6	4.1	16.1
MW-49-26	11/11/2022	2.36E+03	5.91E+02	9.4	2.8	1.7	4.4	-1.1	4.4	-7.0	21.4	3.4	12.1
MW-49-42	5/12/2022	2.74E+03	5.76E+02	12.3	2.9	0.0	8.3	-1.1	5.2	-5.2	19.3	2.2	12.8
MW-49-42	11/11/2022	3.21E+03	6.51E+02	10.3	2.9	0.9	5.3	-1.1	5.6	-11.0	14.1	4.1	15.5
MW-49-65	5/12/2022	2.21E+03	5.46E+02	6.3	2.2	0.7	3.9	0.2	4.4	-6.2	20.7	8.9	14.0
MW-49-65	11/11/2022	1.89E+03	5.37E+02	7.6	2.4	-2.7	5.5	-0.1	4.4	-3.1	14.9	-3.6	12.0

Annual Radioactive Effluent Release Report

Well ID	Sample Date	2022 Laboratory Analytical Results											
		H-3 Result (pCi/L)	H-3 3 Sigma (Std. Dev.)	Sr-90 Result (pCi/L)	Sr-90 3 Sigma (Std. Dev.)	Cs-137 Result (pCi/L)	Cs-137 3 Sigma (Std. Dev.)	Co-60 Result (pCi/L)	Co-60 3 Sigma (Std. Dev.)	Ni-63 Result (pCi/L)	Ni-63 3 Sigma (Std. Dev.)	Sb-125 Result (pCi/L)	Sb-125 3 Sigma (Std. Dev.)
MW-50-42	3/17/2022	1.65E+03	5.07E+02	4.3	1.9	3.4	6.9	0.4	7.2	16.7	24.0	0.7	15.3
MW-50-42	5/16/2022	1.78E+03	5.01E+02	1.9	1.8	0.8	5.7	-0.7	5.0	1.8	12.2	4.4	15.0
MW-50-42	8/8/2022	1.08E+03	4.53E+02	6.1	2.7	-0.7	6.3	0.3	6.5	-2.1	17.9	4.1	17.0
MW-50-42	11/11/2022	6.23E+02	3.99E+02	3.1	2.0	3.2	6.7	0.7	6.6	-8.7	14.6	5.4	16.3
MW-50-66	3/17/2022	2.14E+03	5.46E+02	11.5	2.7	0.0	5.1	4.1	5.2	11.7	19.1	3.2	13.8
MW-50-66	5/16/2022	2.08E+03	5.19E+02	15.0	3.3	3.1	6.5	1.5	6.5	7.0	14.1	4.3	15.7
MW-50-66	8/8/2022	2.14E+03	5.07E+02	10.6	3.5	3.5	6.0	0.0	6.3	3.0	19.0	-0.3	14.8
MW-50-66	11/11/2022	1.98E+03	5.43E+02	11.5	2.9	0.0	5.2	-1.4	5.4	2.0	23.8	6.0	12.8
MW-51-104	3/18/2022	2.71E+02	3.15E+02	-0.5	1.5	-2.2	6.1	1.5	5.3			-2.9	15.1
MW-51-104	5/27/2022	-2.00E+01	2.38E+02	1.5	1.8	-1.5	5.6	0.5	5.2			3.9	11.8
MW-51-104	8/16/2022	6.51E+01	3.12E+02	0.7	1.3	3.3	5.8	0.6	5.6			3.5	12.2
MW-51-104	11/17/2022	-2.56E+01	3.84E+02	-0.6	1.4	-0.5	4.6	0.1	4.7			-4.6	12.5
MW-51-135	3/18/2022	2.32E+02	2.94E+02	-1.3	1.4	-1.7	6.3	-1.4	6.5			0.4	17.1
MW-51-135	5/27/2022	7.56E+01	2.81E+02	0.0	1.5	3.1	10.1	2.4	7.5			0.9	15.1
MW-51-135	8/16/2022	-6.69E+01	2.76E+02	0.7	1.3	-1.4	5.1	1.2	4.8			-2.5	11.5
MW-51-135	11/17/2022	-5.41E+01	3.78E+02	1.0	1.7	0.7	6.4	1.6	6.3			3.4	17.8
MW-51-163	3/18/2022	1.55E+02	3.72E+02	0.2	1.6	1.2	5.3	-0.6	6.8			-7.6	14.2
MW-51-163	5/27/2022	3.43E+01	2.59E+02	0.5	1.7	2.4	6.5	-0.7	6.9			-1.1	17.6
MW-51-163	8/16/2022	8.06E+01	3.27E+02	0.5	1.1			-6.9	7.7			-5.2	19.8
MW-51-163	10/14/2022	1.93E+02	3.42E+02	-0.4	1.1	-0.7	5.3	-1.1	5.2			3.8	11.9
MW-51-163	11/17/2022	2.70E+02	3.87E+02	0.7	1.7	0.6	5.6	-0.9	4.1			-2.9	15.5
MW-51-189	3/18/2022	2.25E+02	3.90E+02	-0.5	1.4	-1.7	9.6	-1.8	6.8			8.5	17.0
MW-51-189	5/27/2022	-4.38E+01	2.48E+02	0.9	1.7	1.3	5.3	2.7	7.4			3.2	14.2
MW-51-189	8/16/2022	-4.70E+01	2.84E+02	1.4	1.6	1.5	5.8	-1.6	6.9			2.5	17.6
MW-51-189	11/17/2022	3.59E+02	3.96E+02	0.6	1.6	2.3	5.0	2.2	5.7			1.4	14.6
MW-51-40	3/18/2022	1.47E+02	3.06E+02	0.5	1.6	-1.8	6.5	0.4	5.8			-6.3	13.1
MW-51-40	5/27/2022	-3.53E+01	2.35E+02	-0.2	1.6	0.3	5.0	-4.0	6.5			2.6	11.3
MW-51-40	8/16/2022	6.68E+01	3.21E+02	1.4	1.4	1.5	5.3	-0.7	4.9			1.2	13.3
MW-51-40	11/17/2022	1.81E+02	4.08E+02	1.2	1.7	-0.1	4.5	3.2	5.6			-8.2	13.5
MW-51-79	3/18/2022	2.02E+02	3.27E+02	1.6	1.8	0.4	10.8	1.7	5.0			-4.2	13.6
MW-51-79	5/27/2022	6.40E+01	2.68E+02	0.4	1.7	-0.8	5.4	3.1	5.2			2.6	12.5
MW-51-79	8/16/2022	8.00E-02	2.90E+02	0.9	1.2	-2.2	11.3	-3.3	9.8			-2.6	19.0
MW-51-79	11/17/2022	5.07E+01	3.99E+02	-0.5	1.5	1.6	5.4	1.5	3.8			-2.3	13.5
MW-52-118	5/24/2022	7.03E+01	2.32E+02	-0.2	1.5	-1.3	6.5	-1.9	5.2			-2.9	13.4
MW-52-162	5/24/2022	3.10E+02	2.89E+02	1.4	1.8	-10.7	10.4	-0.6	6.9			-2.3	16.4
MW-52-18	5/24/2022	3.96E+02	3.09E+02	1.7	1.9	0.1	5.5	3.6	7.1			-7.3	14.1
MW-52-181	5/24/2022	2.67E+02	2.80E+02	0.4	1.4	6.1	11.5	0.5	5.2			-2.3	16.5
MW-52-48	5/24/2022	4.20E+01	2.27E+02	0.6	1.7	3.8	5.4	1.2	3.3			-0.4	12.6
MW-52-64	5/24/2022	8.75E+01	2.42E+02	2.5	1.8	1.4	5.6	0.4	6.1			-0.8	13.4
MW-53-120	2/23/2022	5.40E+03	7.08E+02	13.9	3.3	3.3	9.0	-0.1	10.0	-3.3	14.4	0.9	17.5
MW-53-120	3/23/2022	6.04E+03	7.65E+02	19.1	2.5	1.0	10.1	1.3	5.8	14.3	18.8	-6.7	15.3
MW-53-120	4/20/2022	6.50E+03	7.86E+02	23.4	4.0	-6.0	9.2	-4.0	6.5	-2.6	20.6	-2.5	15.2
MW-53-120	5/18/2022	5.56E+03	7.02E+02	21.9	3.8	2.3	7.2	-3.3	5.8	3.3	15.8	0.3	10.2
MW-53-120	7/13/2022	4.53E+03	5.91E+02	17.2	3.3			1.6	7.3	-1.7	18.6	0.7	13.9
MW-53-120	8/11/2022	6.22E+03	1.11E+03	18.2	3.6	3.3	14.7	2.9	7.4	4.8	18.5	4.8	17.1
MW-53-120	9/12/2022	4.77E+03	9.78E+02	21.9	4.0	-2.6	9.6	-3.0	5.9	7.4	19.4	5.6	17.4
MW-53-120	10/13/2022	4.30E+03	6.87E+02	14.9	4.2	1.2	7.2	3.3	8.0	18.2	18.2	-8.5	19.3
MW-53-120	11/7/2022	4.85E+03	7.80E+02	17.6	2.9	4.1	12.8	-0.1	6.5	17.7	20.2	-3.6	16.6
MW-53-120	12/22/2022	4.93E+03	6.96E+02	17.5	3.8	-1.4	10.3	-4.0	10.4	-14.6	24.6	-9.5	19.9
MW-53-82	3/23/2022	3.51E+02	4.02E+02	1.8	1.8	1.3	10.1	5.7	6.4	13.2	18.4	5.3	12.6
MW-53-82	5/18/2022	-9.19E+00	3.66E+02	1.0	1.7	1.8	6.3	0.9	7.1	1.8	11.6	-1.0	16.0
MW-53-82	8/11/2022	1.23E+03	5.58E+02	1.7	1.9	3.1	6.9	-3.3	8.1	5.2	18.4	-2.2	16.3
MW-53-82	11/7/2022	4.88E+02	3.84E+02	0.3	1.1	3.2	5.4	0.7	4.9	4.9	22.6	-3.0	12.8
MW-54-123	3/17/2022	1.98E+03	5.19E+02	0.4	1.6	3.1	13.2	1.5	7.0	15.5	18.7	5.7	15.6
MW-54-123	5/24/2022	1.36E+03	4.56E+02	1.7	0.9	0.3	6.0	-1.9	6.7	1.9	20.5	-3.5	18.6
MW-54-123	8/15/2022	1.48E+03	6.00E+02	-0.7	1.4	1.0	4.4	-1.9	5.2	7.9	18.5	1.4	11.0
MW-54-123	11/11/2022	1.07E+03	4.47E+02	0.8	1.6	0.0	6.1	-0.7	7.0	-3.3	14.9	-4.1	16.4
MW-54-144	3/17/2022	1.41E+03	4.92E+02	7.3	2.3	-2.3	5.9	-1.1	5.9	4.4	18.2	-0.2	15.6
MW-54-144	5/24/2022	1.39E+03	4.68E+02	5.8	2.4	0.3	6.2	-2.2	6.3	-9.8	20.6	4.3	16.6
MW-54-144	8/15/2022	1.12E+03	5.37E+02	6.5	2.6	-3.6	5.8	-2.5	5.7	5.9	18.8	-6.9	15.3
MW-54-144	11/11/2022	1.88E+03	5.37E+02	3.6	2.0	2.2	5.9	-0.1	5.4	-0.4	15.1	-0.3	14.4
MW-54-173	3/17/2022	2.49E+03	5.70E+02	3.5	1.6	6.1	13.2	-1.3	8.3	8.7	18.3	1.1	21.1
MW-54-173	5/24/2022	2.57E+03	6.15E+02	6.1	2.4	1.9	5.3	1.2	5.8	9.1	21.2	7.4	12.0
MW-54-173	8/15/2022	2.95E+03	8.04E+02	4.3	2.3	-2.0	6.2	-0.2	5.6	1.7	18.8	4.5	11.7
MW-54-173	11/11/2022	2.38E+03	5.82E+02	2.6	2.1	-4.8	7.9	2.2	4.6	-7.0	15.2	-0.6	15.8
MW-54-190	3/17/2022	1.73E+03	5.13E+02	10.5	2.8	-1.3	4.6	-0.9	3.9	13.2	19.5	0.1	10.3
MW-54-190	5/24/2022	1.80E+03	5.16E+02	8.7	3.0	0.7	8.8	-1.0	9.1	-8.4	20.2	5.4	17.7

Annual Radioactive Effluent Release Report

Well ID	Sample Date	2022 Laboratory Analytical Results											
		H-3 Result (pCi/L)	H-3 3 Sigma (Std. Dev.)	Sr-90 Result (pCi/L)	Sr-90 3 Sigma (Std. Dev.)	Cs-137 Result (pCi/L)	Cs-137 3 Sigma (Std. Dev.)	Co-60 Result (pCi/L)	Co-60 3 Sigma (Std. Dev.)	Ni-63 Result (pCi/L)	Ni-63 3 Sigma (Std. Dev.)	Sb-125 Result (pCi/L)	Sb-125 3 Sigma (Std. Dev.)
MW-54-190	8/15/2022	1.20E+03	5.55E+02	10.0	3.0	0.1	6.9	0.6	7.1	-4.6	20.0	3.4	16.1
MW-54-190	11/11/2022	1.57E+03	5.10E+02	8.6	2.3	0.5	5.6	2.6	6.5	-7.9	14.5	-1.6	14.4
MW-54-37	3/17/2022	1.01E+03	4.59E+02	2.6	2.0	-1.0	5.5	0.6	6.7	1.9	17.0	-3.2	11.3
MW-54-37	5/24/2022	5.57E+02	4.26E+02	2.5	1.9	5.7	6.9	-4.2	7.1	5.1	20.7	-0.6	17.0
MW-54-37	8/15/2022	6.24E+02	4.41E+02	1.1	1.7	5.2	10.9	1.2	6.2	-4.3	18.1	1.2	13.2
MW-54-37	11/11/2022	7.43E+02	4.17E+02	2.2	1.8	-2.4	5.6	6.9	8.9	-10.3	14.1	8.1	14.6
MW-54-58	3/17/2022	1.31E+03	4.86E+02	0.8	1.7	1.8	5.5	-0.3	5.3	12.9	18.9	-0.8	14.9
MW-54-58	5/24/2022	1.39E+03	4.92E+02	3.6	1.8	-0.8	6.1	-3.7	7.2	-3.0	20.7	1.5	13.4
MW-54-58	8/15/2022	1.39E+03	5.73E+02	2.9	2.0	-0.6	4.3	-1.2	4.1	6.3	19.1	3.9	11.0
MW-54-58	11/11/2022	1.34E+03	4.80E+02	1.5	1.7	5.9	8.7	3.7	5.3	-8.6	14.8	6.0	14.0
MW-55-24	3/25/2022	3.40E+02	3.87E+02	7.6	2.5	-1.8	5.7	-0.5	5.7	4.1	15.3	-4.3	13.3
MW-55-24	5/17/2022	5.72E+02	3.54E+02	6.4	2.2	-13.3	11.2	-3.0	7.4	-0.8	11.8	-2.4	19.1
MW-55-24	8/12/2022	4.26E+02	3.93E+02	8.6	3.0	-1.3	5.5	-3.1	5.9	12.7	19.6	-2.5	12.1
MW-55-24	11/7/2022	2.48E+02	3.60E+02	4.3	1.9	2.1	6.2	2.3	6.2	7.2	14.5	-9.4	15.5
MW-55-35	3/25/2022	8.49E+02	4.29E+02	10.1	2.8	0.2	6.2	1.4	6.4	-6.5	14.6	-2.3	12.4
MW-55-35	5/17/2022	9.37E+02	4.32E+02	15.5	3.0	-1.2	5.7	0.5	4.8	4.1	11.9	4.4	16.9
MW-55-35	8/12/2022	7.13E+02	4.14E+02	9.5	2.9	-2.7	5.3	1.8	5.3	7.0	18.4	3.0	14.8
MW-55-35	11/7/2022	6.57E+02	4.14E+02	8.0	2.3	2.0	5.3	-1.5	5.0	1.7	14.7	5.0	13.8
MW-55-54	3/25/2022	3.08E+03	5.70E+02	7.5	2.5	-1.7	6.4	-0.3	4.9	-0.8	14.5	2.6	14.8
MW-55-54	5/17/2022	2.46E+03	6.15E+02	10.1	2.8	-0.6	5.7	1.9	4.4	2.0	13.7	1.4	14.2
MW-55-54	8/12/2022	2.20E+03	7.11E+02	5.8	2.5	0.2	4.6	0.0	5.7	9.0	19.2	-2.3	11.2
MW-55-54	11/7/2022	1.82E+03	5.40E+02	6.8	2.3	-0.6	4.9	-0.6	5.6	6.5	14.9	-7.1	11.5
MW-56-53	5/26/2022	-1.27E+02	3.72E+02	1.3	1.8	0.5	7.1	1.5	5.1			-2.0	16.7
MW-56-53	11/21/2022	-6.69E+01	3.48E+02	0.3	1.7	2.3	4.9	1.1	3.8			0.8	11.4
MW-56-83	5/26/2022	1.65E+03	5.13E+02	1.5	1.8	-0.4	7.0	1.0	7.1			-1.1	16.1
MW-56-83	11/21/2022	7.13E+02	4.20E+02	0.4	1.6	-0.2	6.8	-3.3	6.6	-2.3	21.6	4.6	16.0
MW-57-11	5/16/2022	5.37E+02	4.02E+02	6.0	2.5	2.6	9.5	-2.3	4.7	-0.5	12.3	-3.7	11.5
MW-57-20	5/16/2022	6.08E+02	4.17E+02	0.6	1.3	0.8	5.8	0.1	5.4	0.2	11.1	4.1	15.2
MW-57-45	5/16/2022	8.27E+02	4.35E+02	1.4	1.8	-4.9	8.7	2.3	5.9	-2.4	14.3	0.7	13.5
MW-58-26	5/13/2022	2.06E+02	2.94E+02	0.5	1.7	-0.8	5.4	1.4	9.0			7.8	19.1
MW-58-26	11/9/2022	6.30E+01	3.33E+02	0.1	0.8	1.3	5.1	1.0	4.7			1.1	9.7
MW-58-65	5/13/2022	4.06E+02	3.54E+02	0.4	1.6	0.6	6.8	-1.9	6.5			-6.3	15.8
MW-58-65	11/9/2022	3.46E+02	3.72E+02	-0.4	0.5	0.2	5.1	1.7	5.1			0.7	11.9
MW-60-135	6/2/2022	1.16E+03	5.37E+02	-1.0	1.5	4.1	9.5	2.4	5.8			3.2	12.2
MW-60-154	6/2/2022	9.40E+02	4.86E+02	-1.1	1.5	0.6	5.3	1.2	5.2			-0.7	11.7
MW-60-176	6/2/2022	8.94E+02	4.53E+02	0.4	1.7	-0.5	5.7	1.8	6.3			-11.0	12.0
MW-60-35	6/2/2022	4.54E+01	3.84E+02	0.5	1.3	-2.8	8.3	0.6	8.3			-0.5	16.4
MW-60-53	6/2/2022	2.04E+02	2.92E+02	0.1	1.3	-0.2	5.7	-0.1	6.5			4.5	16.0
MW-60-72	6/2/2022	2.31E+02	3.03E+02	1.2	1.6	-0.1	6.9	5.2	7.9			6.7	15.8
MW-62-138	3/21/2022	6.08E+02	4.59E+02	0.4	1.5	2.1	11.3	-3.0	7.9			1.3	18.8
MW-62-138	5/13/2022	4.85E+02	3.81E+02	0.6	1.7	1.1	5.4	-0.9	5.6			-2.6	13.5
MW-62-138	8/9/2022	5.54E+02	3.57E+02	0.7	1.3	1.0	8.1	4.0	6.6			2.9	15.8
MW-62-138	11/15/2022	3.59E+02	3.78E+02	0.7	1.7	2.5	4.4	0.2	4.9			-2.6	11.7
MW-62-18	3/21/2022	1.18E+02	3.72E+02	-0.6	1.2	0.1	4.6	0.8	5.5			-4.9	12.4
MW-62-18	5/13/2022	2.14E+02	3.72E+02	1.9	1.8	1.6	6.4	2.1	6.7			-7.3	13.2
MW-62-18	8/9/2022	8.93E+01	3.12E+02	1.0	1.3	0.5	4.8	1.6	4.9			4.7	12.9
MW-62-18	11/15/2022	8.50E+01	3.18E+02	0.5	1.6	0.7	5.7	4.0	7.5			3.9	16.3
MW-62-182	3/21/2022	8.27E+02	4.71E+02	0.6	1.7	-1.0	6.3	0.4	6.0			6.7	17.3
MW-62-182	5/13/2022	8.76E+02	4.74E+02	0.0	1.7	3.9	10.5	-5.9	9.0			12.1	17.1
MW-62-182	8/9/2022	7.14E+02	3.81E+02	-0.2	1.5	2.8	5.4	-0.3	7.0			10.8	14.8
MW-62-182	11/15/2022	1.05E+03	4.38E+02	0.9	1.7	4.6	6.9	3.2	6.0			-0.2	16.9
MW-62-37	3/21/2022	6.57E+02	4.35E+02	1.6	1.8	3.8	5.8	-0.8	5.0			6.3	14.3
MW-62-37	5/13/2022	9.71E+02	4.95E+02	-0.4	1.6	3.5	14.3	1.4	5.2			-0.9	12.5
MW-62-37	8/9/2022	4.97E+02	3.60E+02	0.5	1.0	1.4	4.8	-0.3	6.2			-1.0	11.9
MW-62-37	11/15/2022	5.00E+02	3.81E+02	0.0	1.0	2.1	5.8	1.4	4.5			-1.3	12.5
MW-62-53	3/21/2022	8.66E+02	4.86E+02	0.4	1.7	-3.5	6.5	0.0	3.9			-2.6	12.0
MW-62-53	5/13/2022	8.98E+02	4.80E+02	0.6	1.7	-1.1	4.9	0.4	4.3			6.3	13.9
MW-62-53	8/9/2022	9.04E+02	3.99E+02	0.6	1.2	0.2	5.9	-2.5	5.1			3.2	12.6
MW-62-53	11/15/2022	8.53E+02	4.26E+02	0.0	1.6	-1.6	5.0	2.0	5.1			1.2	12.2
MW-62-71	3/21/2022	8.31E+02	4.83E+02	1.7	1.8	-1.3	6.1	1.3	5.0			0.6	16.0
MW-62-71	5/13/2022	1.01E+03	4.95E+02	0.8	1.8	0.0	4.1	-0.3	4.7			-7.0	10.8
MW-62-71	8/9/2022	7.95E+02	3.84E+02	1.6	1.6	-4.1	9.3	-1.4	9.9			-4.8	16.9
MW-62-71	11/15/2022	4.65E+02	3.69E+02	1.4	1.8	-2.4	7.4	-3.1	6.6			1.1	14.2
MW-62-92	3/21/2022	9.60E+02	4.95E+02	0.9	1.8	4.6	16.8	-1.7	7.2			-2.1	14.9
MW-62-92	5/13/2022	1.41E+03	5.67E+02	0.4	1.7	-0.4	6.2	-3.0	7.7			-0.1	15.5
MW-62-92	8/9/2022	9.38E+02	4.02E+02	0.6	1.2	2.7	6.2	1.1	6.9			5.6	27.4
MW-62-92	11/15/2022	8.53E+02	4.26E+02	0.1	1.5	1.6	15.8	-0.2	6.2			-1.0	15.9

Annual Radioactive Effluent Release Report

Well ID	Sample Date	2022 Laboratory Analytical Results											
		H-3 Result (pCi/L)	H-3 3 Sigma (Std. Dev.)	Sr-90 Result (pCi/L)	Sr-90 3 Sigma (Std. Dev.)	Cs-137 Result (pCi/L)	Cs-137 3 Sigma (Std. Dev.)	Co-60 Result (pCi/L)	Co-60 3 Sigma (Std. Dev.)	Ni-63 Result (pCi/L)	Ni-63 3 Sigma (Std. Dev.)	Sb-125 Result (pCi/L)	Sb-125 3 Sigma (Std. Dev.)
MW-63-112	5/12/2022	6.29E+02	4.14E+02	1.5	1.5	-3.8	7.8	1.8	5.9			-9.1	18.4
MW-63-112	11/21/2022	2.63E+02	3.99E+02	-0.8	1.5	-0.3	6.6	1.9	6.4			0.3	13.8
MW-63-121	5/12/2022	7.81E+02	4.29E+02	0.9	1.7	-0.2	5.9	2.2	7.5			2.2	14.9
MW-63-121	11/21/2022	1.84E+02	3.75E+02	0.0	1.6	2.2	5.1	-2.8	5.6			-2.3	14.5
MW-63-163	5/12/2022	6.38E+02	4.17E+02	1.0	1.7	1.2	5.6	4.0	8.2			-2.1	14.1
MW-63-163	11/21/2022	1.99E+02	3.81E+02	0.9	1.0	2.2	5.5	1.5	7.2			5.4	16.1
MW-63-174	5/12/2022	8.16E+02	4.29E+02	0.9	1.4	-1.9	7.1	2.1	4.9			3.5	15.6
MW-63-174	11/21/2022	3.62E+02	4.05E+02	0.4	1.7	-5.3	8.6	0.0	6.3			-1.0	16.4
MW-63-18	5/12/2022	4.01E+02	3.93E+02	1.3	0.9	1.3	5.9	6.3	6.9			5.5	14.7
MW-63-18	11/21/2022	9.81E+01	3.69E+02	1.4	1.8	0.5	4.8	2.6	4.8			-9.0	13.4
MW-63-34	5/12/2022	5.42E+02	4.08E+02	0.8	1.7	-1.1	4.7	1.6	5.3			6.3	12.9
MW-63-34	11/21/2022	4.68E+02	3.93E+02	-0.6	1.6	2.2	5.0	1.2	6.3			7.6	12.9
MW-63-50	5/12/2022	4.65E+02	4.02E+02	0.6	1.0	-6.2	10.2	1.0	6.6			0.6	15.8
MW-63-50	11/21/2022	3.41E+02	4.05E+02	0.6	1.7	1.9	7.6	-1.1	6.1			8.9	14.9
MW-63-93	5/12/2022	4.60E+02	3.99E+02			-0.5	6.8	-3.2	6.8			-8.0	14.1
MW-63-93	11/21/2022	1.84E+02	3.78E+02	1.7	1.9	-5.2	6.4	2.0	7.9			-5.0	17.9
MW-66-21	3/28/2022	4.89E+02	4.05E+02	1.2	1.8	3.4	8.2	-1.7	4.9	-2.5	14.8	-0.6	11.0
MW-66-21	5/12/2022	3.58E+02	3.75E+02	1.7	1.7	0.6	6.6	-0.8	6.2	4.7	21.2	0.1	13.6
MW-66-21	8/9/2022	3.26E+02	4.17E+02	0.4	1.7	-2.1	6.7	-1.4	5.7	-6.4	17.9	-7.3	15.7
MW-66-21	11/14/2022	3.73E+02	4.11E+02	1.2	1.2	0.0	4.6	0.0	4.1	-5.1	15.0	-3.3	13.4
MW-66-36	3/28/2022	3.28E+03	6.24E+02	4.5	2.1	0.5	5.2	0.6	7.1	5.0	19.0	-4.9	14.8
MW-66-36	5/17/2022	2.96E+03	6.54E+02	5.5	2.3	-1.7	5.3	0.7	5.3	-1.0	11.6	-0.5	11.6
MW-66-36	8/9/2022	2.90E+03	5.31E+02	5.7	2.5	3.4	5.5	-0.1	5.6	-5.1	18.7	6.2	13.2
MW-66-36	11/14/2022	3.16E+03	5.76E+02	4.7	1.5	-0.8	4.5	1.3	5.8	-15.5	20.0	4.5	13.4
MW-67-105	3/28/2022	1.86E+03	5.22E+02	0.4	1.7	3.8	8.9	-0.7	4.2	-4.2	15.0	6.0	12.2
MW-67-105	5/10/2022	1.16E+03	4.53E+02	1.6	1.9	-1.2	5.7	-2.6	5.3	8.4	20.8	5.0	14.4
MW-67-105	8/9/2022	1.08E+03	4.62E+02	1.3	1.6	-0.6	6.3	-0.7	4.4	-5.1	18.3	2.3	12.9
MW-67-105	11/14/2022	1.55E+03	5.28E+02	-0.7	1.1	-2.0	5.5	-0.9	5.7	-4.1	13.3	-3.9	13.4
MW-67-173	3/28/2022	6.88E+02	4.26E+02	-0.2	1.5	0.7	5.4	-1.1	8.1	-0.2	15.6	4.8	15.0
MW-67-173	5/10/2022	9.94E+02	4.23E+02	-2.1	5.2	0	14	0.7	9.5	0	20	-0.6	20.1
MW-67-173	8/9/2022	7.51E+02	4.38E+02			-1.1	4.9	-1.2	4.9	-4.1	20.1	-0.6	13.4
MW-67-173	11/14/2022	8.22E+02	4.83E+02	0.6	1.3	0.4	4.4	1.5	3.4	-7.7	15.5	2.5	10.6
MW-67-219	3/28/2022	1.57E+03	5.07E+02	-0.4	1.5	1.5	5.8	1.0	5.1	-3.7	19.4	3.0	11.0
MW-67-219	5/10/2022	1.50E+03	4.89E+02	1.9	1.9	-9	8	0.1	6.5	2	20	-5.3	16.5
MW-67-219	8/9/2022	8.87E+02	4.29E+02	0.5	1.6	-0.4	5.1	-1.7	3.4	-0.6	19.3	4.3	11.4
MW-67-219	11/14/2022	1.07E+03	5.04E+02	0.9	1.2	2.7	6.4	0.0	6.5	-4.3	14.7	6.9	14.1
MW-67-276	3/28/2022	9.99E+02	4.59E+02	1.1	1.7	2.9	15.2	-0.2	10.7	-1.2	15.0	-0.8	18.3
MW-67-276	5/10/2022	8.88E+02	4.41E+02	1.8	1.8	-1	5	-0.6	7.0	-2	20	2.7	14.0
MW-67-276	8/9/2022	6.66E+02	4.23E+02	0.2	1.6	1.8	5.8	5.5	5.6	-0.4	18.6	-4.0	15.1
MW-67-276	10/13/2022	8.45E+02	4.14E+02	1.2	1.4	1.1	4.8	1.3	5.5	9.8	14.4	0.0	33.6
MW-67-276	11/14/2022	9.26E+02	4.92E+02	0.8	1.4	0.0	6.2	-6.1	7.3	-4.7	14.9	-7.5	15.9
MW-67-340	3/28/2022	3.76E+02	3.99E+02	0.5	1.6	3.5	10.0	2.5	5.3	-6.8	14.4	6.1	12.6
MW-67-340	5/10/2022	3.82E+02	3.93E+02	1.7	1.8	1.6	5.5	-2.3	6.6	7.5	20.9	6.8	17.9
MW-67-340	8/9/2022	2.38E+02	4.05E+02	0.0	1.6	-1.4	6.3	0.2	6.2	0.4	17.2	7.5	12.1
MW-67-340	11/14/2022	2.63E+02	4.08E+02	0.4	1.5	4.2	7.0	0.2	8.1	-9.1	12.3	3.4	17.9
MW-67-39	3/28/2022	3.46E+03	6.27E+02	2.4	1.9	0.9	4.7	-1.6	5.3	-3.3	16.9	-3.4	12.1
MW-67-39	5/10/2022	2.81E+03	5.85E+02	6.2	2.1	1.1	5.4	1.9	5.6	-2.5	19.9	3.1	11.6
MW-67-39	8/9/2022	3.60E+03	5.70E+02	7.2	2.6	-1.2	4.5	0.5	5.0	1.4	17.6	-0.4	12.1
MW-67-39	11/14/2022	3.31E+03	5.91E+02	3.5	1.6	0.0	6.2	1.0	5.2	-13.2	13.7	-3.3	15.9
MW-68-103	3/22/2022	3.22E+02	3.90E+02	-0.3	1.5	-3.1	5.6	2.3	4.3			-0.1	14.8
MW-68-103	5/18/2022	4.05E+02	3.93E+02	1.4	1.8	0.9	6.0	0.3	5.4			0.8	18.6
MW-68-103	8/10/2022	4.70E+02	3.39E+02	1.2	1.2	2.3	5.0	2.8	4.4			0.3	11.9
MW-68-103	11/21/2022	3.29E+02	4.02E+02	1.8	1.9	2.3	5.2	3.6	5.3			2.2	13.1
MW-68-132	3/22/2022	3.15E+02	4.05E+02	0.5	1.7	-4.8	6.3	-1.1	5.5			-6.6	13.1
MW-68-132	5/18/2022	2.95E+02	3.90E+02	0.2	1.6	2.1	6.5	-2.6	5.4			-0.5	13.6
MW-68-132	8/10/2022	4.69E+02	3.51E+02	0.4	1.6	3.0	5.8	0.5	5.6			-6.5	12.7
MW-68-132	11/21/2022	2.42E+02	3.90E+02	-0.2	1.6	1.0	5.9	-1.2	5.4			2.9	12.1
MW-68-19	2/21/2022	7.91E+02	4.02E+02	1.0	1.2	-0.5	5.1	-0.8	4.2			8.3	13.8
MW-68-19	3/22/2022	1.34E+03	5.19E+02	1.4	1.8	-3.0	10.1	4.3	5.3			-2.1	14.6
MW-68-19	5/18/2022	2.01E+03	6.78E+02	1.2	1.8	4.6	15.0	0.9	7.1			-3.9	19.5
MW-68-19	6/13/2022	1.77E+03	4.68E+02	-0.2	1.6	1.4	4.5	1.4	4.5			2.3	11.4
MW-68-19	8/10/2022	2.06E+03	7.68E+02			-0.9	6.2	0.0	6.3			3.6	14.6
MW-68-19	9/12/2022	1.71E+03	4.83E+02	1.1	1.1	1.7	5.5	0.4	4.7			0.4	12.3
MW-68-19	11/21/2022	1.37E+03	5.19E+02	-0.1	1.5	-0.1	7.4	1.4	6.9			7.2	17.5
MW-68-19	12/21/2022	1.56E+03	4.71E+02	1.1	1.8	-1.5	7.1	-3.6	8.7			0.1	14.0
MW-68-29	2/21/2022	7.96E+02	4.20E+02	0.7	1.8	6.6	6.7	-1.1	6.4			1.4	16.9
MW-68-29	3/22/2022	8.72E+02	4.86E+02	0.3	1.4	-0.3	6.3	-0.4	5.6			0.4	11.3

Annual Radioactive Effluent Release Report

Well ID	Sample Date	2022 Laboratory Analytical Results											
		H-3 Result (pCi/L)	H-3 3 Sigma (Std. Dev.)	Sr-90 Result (pCi/L)	Sr-90 3 Sigma (Std. Dev.)	Cs-137 Result (pCi/L)	Cs-137 3 Sigma (Std. Dev.)	Co-60 Result (pCi/L)	Co-60 3 Sigma (Std. Dev.)	Ni-63 Result (pCi/L)	Ni-63 3 Sigma (Std. Dev.)	Sb-125 Result (pCi/L)	Sb-125 3 Sigma (Std. Dev.)
MW-68-29	5/18/2022	1.00E+03	4.11E+02	1.2	1.7	0.1	6.6	-0.5	5.1			10.7	17.8
MW-68-29	6/13/2022	9.20E+02	4.02E+02	1.6	1.8	-0.4	4.0	-0.9	3.9			-2.1	11.0
MW-68-29	8/10/2022	1.24E+03	7.08E+02	0.8	1.3	-4.8	10.4	3.1	7.1			5.2	14.5
MW-68-29	9/12/2022	1.00E+03	4.59E+02	1.7	1.9	-1.4	4.3	4.7	5.3			0.8	13.2
MW-68-29	11/21/2022	7.66E+02	4.56E+02	0.5	1.7	1.2	6.1	-2.4	7.2			6.6	14.2
MW-68-29	12/21/2022	8.80E+02	4.44E+02	1.6	1.8	2.6	5.7	0.0	5.7			-4.2	15.2
MW-68-57	2/21/2022	1.16E+03	4.56E+02	0.6	1.7	-7.6	12.1	1.1	6.3			-3.1	18.8
MW-68-57	3/22/2022	7.60E+02	4.74E+02	0.4	1.7	0.3	7.6	1.8	4.3			2.7	10.8
MW-68-57	5/18/2022	7.89E+02	4.50E+02	1.8	1.8	0	6	-5.9	6.9			1.6	14.8
MW-68-57	6/13/2022	6.07E+02	3.75E+02			1	5	0.2	3.6			-2.4	11.1
MW-68-57	8/10/2022	1.09E+03	6.96E+02	1.0	1.7	3.2	6.0	0.0	6.7			-0.1	15.0
MW-68-57	9/12/2022	8.58E+02	4.41E+02	0.2	1.5	-10.3	8.6	0.2	6.5			-2.1	12.7
MW-68-57	11/21/2022	7.51E+02	4.56E+02	0.7	1.7	-2.2	8.3	0.0	9.6			2.6	16.8
MW-68-57	12/21/2022	1.01E+03	4.50E+02	1.1	1.8	-2.2	4.2	0.6	5.3			6.9	13.6
U1-CSS	5/16/2022	6.89E+02	4.23E+02	2.1	1.6	0	10	4.0	5.9	-1	12	1.8	12.5
U1-CSS	11/16/2022	7.51E+02	5.19E+02	5.3	2.5	0.3	8.9	-1.5	8.3	-6.6	19.5	0.2	16.5
U1-NCD	2/7/2022	1.12E+03	5.61E+02	29.1	4.1	19800.0	215.4	1.9	7.1	409.0	32.1	-10.5	89.7
U1-NCD	5/2/2022	7.67E+02	3.75E+02	26.0	4.6	16400.0	191.7	6.4	6.3	329.0	35.7	0.6	80.7
U1-NCD	7/25/2022	3.31E+03	5.97E+02	12.9	3.5	9260.0	153.0	-1.5	6.3	269.0	27.3	5.7	69.9
U1-NCD	10/17/2022	1.19E+03	4.47E+02	9.4	1.7	14400.0	189.6	-0.6	5.4	324.0	27.8	-17.3	76.2
U1-SFDS	1/19/2022	1.74E+02	4.14E+02	5.2	1.6	0.0	12.9	0.9	8.0	2.1	17.3	3.5	14.3
U1-SFDS	3/30/2022	7.45E+01	3.93E+02	4.2	2.2	0.0	13.4	2.8	6.2	7.5	18.3	-1.2	14.0
U1-SFDS	6/22/2022	-3.86E+01	3.78E+02	5.3	1.9	0.0	5.4	1.7	4.0	-2.4	14.5	2.7	10.0
U1-SFDS	9/14/2022	1.65E+02	3.48E+02	3.8	1.7	5.8	5.9	-0.8	4.6	18.8	17.8	2.1	11.5
U1-SFDS	12/7/2022	2.06E+02	3.54E+02	1.9	1.4	5.0	6.8	-0.5	5.9	7.1	14.7	-3.8	15.6
U3-4D	3/14/2022	1.86E+02	3.90E+02	1.2	1.8	0.0	14.9	-2.9	7.3			-0.9	20.6
U3-4D	5/25/2022	3.27E+02	2.87E+02	1.8	1.9	-1.8	7.9	-0.6	8.0			1.3	16.3
U3-4D	8/12/2022	5.20E+02	3.51E+02	0.4	0.7	-0.2	5.1	0.3	4.9			2.0	13.9
U3-4D	11/18/2022	6.37E+01	3.72E+02	1.1	1.8	0.2	4.8	-0.9	3.9			-0.7	11.7
U3-4S	5/25/2022	8.61E+01	2.39E+02	1.4	1.8	-0.3	8.0	2.9	6.3			-10.8	15.1
U3-4S	11/18/2022	-3.71E+01	3.51E+02	-0.9	1.5	0.1	5.1	0.2	5.3			0.8	14.3
U3-T1	3/14/2022	4.01E+02	4.23E+02	0.9	1.7	0.4	5.5	-1.8	5.9			-0.9	14.5
U3-T1	5/25/2022	1.73E+02	2.62E+02	1.0	1.5	-1.3	9.7	0.0	5.0			0.1	12.1
U3-T1	8/12/2022	2.04E+02	2.98E+02	-0.2	0.9	-1.5	6.9	0.0	6.6			3.2	14.5
U3-T1	11/16/2022	1.72E+02	4.05E+02	1.0	1.7	1.1	6.1	0.6	8.3			-5.6	16.0
U3-T2	3/14/2022	8.32E+01	3.96E+02	0.1	1.5	0.0	8.5	0.7	5.0			1.6	12.4
U3-T2	5/25/2022	1.98E+03	5.40E+02	1.1	1.3	3	5	0.5	4.6			3.3	12.2
U3-T2	8/12/2022	1.81E+03	7.56E+02	1.5	1.7	1	4	2.8	5.7			4.0	11.2
U3-T2	11/16/2022	1.22E+03	5.19E+02	1.3	1.8	-1.6	5.4	1.9	4.8			2.7	12.5