



Entergy Operations, Inc.
River Bend Station
5485 U.S. Highway 61N
St. Francisville, LA 70775
Tel: 225-381-4177

Tim Schenk
Manager-Regulatory Assurance

RBG-47951

May 1, 2019

Attn: Document Control Desk
U. S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852-2738

Subject: 2018 Annual Radioactive Effluent Release Report
River Bend Station – Unit 1
License No. NPF-47
Docket No. 50-458

Enclosed is the River Bend Station (RBS) Annual Radioactive Effluent Release Report for the period of January 1, 2018 through December 31, 2018. This report is submitted in accordance with the RBS Technical Specifications, Section 5.6.3.

Should you have any questions regarding the enclosed, please contact Tim Schenk, at (225) 381-4177.

Sincerely,

A handwritten signature in black ink, appearing to read "Tim Schenk".

Tim Schenk

TAS/tf

Enclosure: 2018 Annual Radioactive Effluent Release Report

cc: NRC Region IV Regional Administrator, w/o Enclosure
NRC Senior Resident Inspector – River Bend Station, Unit 1
Ji Young Wiley, Department of Environmental Quality, Office of Environmental Compliance, Radiological Emergency Planning and Response Section
Public Utility Commission of Texas, Attn: PUC Filing Clerk
NRC Project Manager



Plant: River Bend Nuclear Station	Page 1 of 75
	YEAR: 2018
Document Number: RBG-47951	
Annual Radioactive Effluent Release Report	

TABLE OF CONTENTS

1.0	INTRODUCTION.....	3
2.0	SUPPLEMENTAL INFORMATION.....	3
3.0	GASEOUS EFFLUENTS.....	16
4.0	LIQUID EFFLUENTS	20
5.0	SOLID WASTE SUMMARY	25
6.0	RADIOLOGICAL IMPACT TO MAN	27
7.0	METEOROLOGICAL DATA.....	30

ATTACHMENTS

	Attachment 1 - Groundwater Monitoring Well Sampling Results	47
--	---	----

1.0 INTRODUCTION

This is the Annual Radioactive Effluent Release Report for the period of January 1, 2018, through December 31, 2018. This report is submitted in accordance with Technical Specification 5.6.3 of Appendix A to River Bend Station (RBS) License Number NPF-47.

2.0 SUPPLEMENTAL INFORMATION

2.1 Regulatory Limits

2.1.1 10CFR50, Appendix I Limits

1. Fission and activation gases:
 - a. In accordance with Technical Requirement (TR) 3.11.2.2, the air dose due to noble gases released in gaseous effluent to areas at and beyond the SITE BOUNDARY shall be limited to:
 - 1) Quarterly
 - Less than or equal to 5 mrad gamma
 - Less than or equal to 10 mrad beta
 - 2) 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 greater than 8 days.
 - a. In accordance with Technical Requirement 3.11.2.3, the dose to a MEMBER OF THE PUBLIC from radioiodines (I-131 and I-133), tritium (H-3) and all radionuclides in particulate form with half-lives greater than 8 days, in gaseous effluent releases to areas at and beyond the SITE BOUNDARY shall be limited to:
 - 1) Quarterly
 - Less than or equal to 7.5 mrem to any organ
 - 2) Yearly
 - Less than or equal to 15 mrem to any organ

Annual Radioactive Effluent Release Report

3. Liquid Effluents Dose
 - a. In accordance with Technical Requirement 3.11.1.2, the dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluent released to UNRESTRICTED AREAS shall be limited to:
 - 1) Quarterly
 - Less than or equal to 1.5 mrem total body
 - Less than or equal to 5 mrem critical organ
 - 2) Yearly
 - Less than or equal to 3 mrem total body
 - Less than or equal to 10 mrem critical organ
4. Total Dose (40CFR190)
 - a. In accordance with Technical Requirement 3.11.4, 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, Total Body or any Organ except Thyroid.
 - Less than or equal to 75 mrem, Thyroid

2.1.2 Miscellaneous Limits

1. Technical Requirement 3.11.2.1 - Fission and Activation Gases
 - a. In accordance with Technical Requirement 3.11.2.1, the dose rate due to radioactive materials released in gaseous effluents from the site to areas at and beyond the SITE BOUNDARY shall be:
 - Less than or equal to 500 mrem/year to the total body
 - Less than or equal to 3000 mrem/year to the skin
2. Technical Requirement 3.11.2.1 - Radioiodine (I-131 & I-133) and Particulate
 - a. In accordance with Technical Requirement 3.11.2.1, the dose rate due to radioiodines, 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

Annual Radioactive Effluent Release Report

3. Technical Requirement 3.11.1.1 - Liquid Effluent
 - a. In accordance with Technical Requirement 3.11.1.1, the concentration of radioactive material released in liquid effluent to UNRESTRICTED AREAS shall be limited to ten times the concentrations specified in 10CFR20, 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-04 microcuries/milliliter total concentration.
4. Technical Requirement 3.11.2.5 - Ventilation Exhaust Treatment
 - a. In accordance with Technical Requirement 3.11.2.5, the VENTILATION EXHAUST TREATMENT SYSTEM shall be used to reduce radioactive materials in gaseous waste prior to their discharge when the projected doses, due to gaseous effluent releases to areas and beyond the SITE BOUNDARY would exceed 0.3 mrem to any organ in a 31-day period.
5. Technical Requirement 3.11.1.3 - Liquid Radwaste Treatment System
 - a. In accordance with Technical Requirement 3.11.1.3, the liquid radwaste treatment system shall be used to reduce the radioactive materials in liquid waste prior to their discharge when the projected doses, due to the liquid effluent, to UNRESTRICTED AREAS would exceed 0.06 mrem to the total body or 0.2 mrem to any organ in a 31-day period.

2.2 Effluent Concentration Limits

1. Gaseous Releases
 - a. The concentrations of radioactive gaseous releases are based on the dose rate restrictions in RBS Technical Requirements, rather than the Effluent Concentration Limits (ECL) listed in 10CFR20 Appendix B, Table 2, Column 1.
2. Liquid Releases
 - a. The Effluent Concentration Limits of radioactive materials in liquid effluents are limited to ten times 10CFR20, Appendix B, Table 2, Column 2.

2.3 Measurements & Approximations of Total Radioactivity

1. Gaseous Effluent
 - a. Fission & activation gases

Periodic grab samples are obtained from the Main Plant Exhaust Duct, Fuel Building Exhaust Vent and Radwaste Building Exhaust Vent. These samples are analyzed using high purity germanium detectors coupled to computerized pulse height analyzers. The sampling and analysis frequencies are described in Table 4.

Annual Radioactive Effluent Release Report

Sampling and analysis of these effluent streams provide noble gas radionuclide relative abundance that can then be applied to the noble gas gross activity and gross activity release rate to obtain nuclide specific activities and release rates. The noble gas gross activity released within a specific time period is determined by integrating the stack monitor release rate over the considered time period. If no activity was detected between the stack grab sample and a significant increase in hourly averages was recorded, the nuclide relative abundance of the last sample (or the last similar event), which indicated the presence of activity, was used to obtain nuclide specific activities. Correction factors for the monitors are derived and applied for each sampling period whenever noble gas radionuclides are detected in the effluent stream.

b. Particulate and Radioiodine (I-131 & I-133)

Particulates, Iodine-131 and Iodine-133 are continuously sampled from the three release points using a particulate filter and charcoal cartridge in line with a sample pump (stack monitor pump). These filters and charcoal cartridges are removed and analyzed in accordance with the frequencies specified in Table 4. Analysis is performed to identify and quantify radionuclides using high purity germanium detectors coupled to computerized pulse height analyzers. Given the nuclide specific activity concentrations, process flow rate, and duration of the sample, the nuclide specific activity released to the environment can be obtained. Due to the continuous sampling process, it is assumed that the radioactive material is released to the environment at a constant rate within the sampling period. Strontium-89 and Strontium-90 (Sr-89 and Sr-90) are quantitatively analyzed by counting by gas flow proportional counting. Gross alpha analysis is performed using a zinc sulfide scintillation counter.

c. Tritium

Tritium grab samples are obtained from the three gaseous release points at the specified frequencies listed in Table 4 using an ice bath condensation collection method. The collected sample is then analyzed using a liquid scintillation counter. Given the tritium concentration, process flow rate, and time period for which the sample is obtained, the tritium activity released to the environment can be determined. Due to the frequency of sampling, it is assumed that the tritium is released to the environment at a constant rate within the time period for which the sample is obtained.

Annual Radioactive Effluent Release Report

d. Carbon-14

The bounding annual dose from C-14 was calculated using guidance from Regulatory Guide 1.21, Revision 2, NUREG-0016, and the methodology in Regulatory Guide 1.109. The results of this calculation are listed in Table 13. The C-14 source term of 11 curies was taken from the site calculation PR(C)-359-3A, Gaseous Releases per NUREG-0016 Revision 1. Carbon-14 does not have dose factors associated with standing on contaminated ground; therefore, no ground plane dose was calculated. There is no milk pathway within five miles of River Bend Station so this pathway is not evaluated. RBS does not take credit for decay in the X/Q. This calculation assumes the inhalation, meat and vegetation pathways are at the site boundary in the sector with the highest X/Q. The dose from liquid effluents is not calculated as the dose contribution from C-14 is considered to be insignificant as indicated in Regulatory Guide 1.21, Revision 2. According to EPRI 1021106, Estimation of Carbon-14 in Nuclear Power Plant Gaseous Effluents, 95% of the carbon released is in the form of carbon dioxide and this contributes the highest dose to man. The ingestion pathway, specifically vegetation, is the most likely route of intake for man. An assumption has been made for gaseous releases that plants obtain all of their C-14 from carbon dioxide.

e. Nickel-63

No Nickel-63 was quantified in 2018.

f. Gaseous Effluent Summary Information

Gaseous effluent summary information is located in Table 1, Table 2, and Table 3. It should be noted that an entry of "0.00E+00" Curie (Ci) or microcurie/second (uCi/sec) in this section indicates that the concentration of the particular radionuclide was below the Lower Limit of Detection (LLD) as listed in Table 4. Also, any nuclide not appearing in the tables was < LLD for all four quarters.

2. Liquid Effluents

- a. Representative grab samples are obtained from the appropriate sample recovery tank and analyzed prior to release of the tank in accordance with the frequencies listed in Table 8. Analysis for gamma emitting nuclides (including dissolved and entrained noble gases) is performed using a high purity germanium detector coupled to a computerized pulse height analyzer. Tritium concentration is determined using a liquid scintillation counter. Strontium-89 and Strontium-90 are quantitatively analyzed by scintillation techniques (Cherenkov counting). Iron-55 is counted with a liquid scintillation counter after digestion of the iron. Gross alpha analysis is performed using a zinc sulfide scintillation counter. The activity of each nuclide released to the environment is determined from the nuclide specific concentration and total tank volume released.

- b. Liquid effluent summation information is located in Table 5 and Table 6. It should be noted that an entry of "0.00E+00" Ci or uCi/ml in this section indicates that the concentration of the particular radionuclide was below the Lower Limit of Detection (LLD) as listed in Table 8. Also, any nuclide not appearing in the tables was < LLD for all four quarters.

3. Estimate of Total Error

a. Liquid

The maximum error associated with sample collection, laboratory analysis, and discharge volume is collectively estimated to be:

Fission and Activation Products	± 14.2%
Tritium	± 14.2%
Dissolved and Entrained Noble Gases	± 14.2%
Gross Alpha Radioactivity	± 14.2%

b. Gaseous

The maximum error (not including sample line loss) associated with sample flow, process flow, sample collection, monitor accuracy and laboratory analysis are collectively estimated to be:

Noble Gases	± 37.0%
Iodines	± 18.6%
Particulate	± 18.6%
Tritium	± 18.2%

c. Determination of Total Error

The total error (i.e., collective error due to sample collection, laboratory analysis, sample flow, process flow, monitor accuracy, etc.) is calculated using the following equation:

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

Where:

E_T = total error

$E_1 \dots E_n$ = individual errors due to sample collection, laboratory analysis, sample flow, process flow, monitor accuracy, etc.

Annual Radioactive Effluent Release Report**2.4 Batch Releases:****2.4.1 Liquid**

Batch releases and receiving stream flow from River Bend Station during the reporting period of January 1, 2018, through December 31, 2018 are shown in Table 7.

The Mississippi River stream flow is obtained by averaging data from the U. S. Army Corp of Engineers website using flow gauge data at Tarbert Landing.

2.4.2 Gaseous

There were no routine batch releases of gaseous effluents from River Bend Station during the reporting period of January 1, 2018, through December 31, 2018.

2.5 Abnormal Releases

There were no abnormal releases in 2018.

2.6 Major Changes to Radioactive Liquid, Gaseous, and Solid Waste Treatment Systems

Engineering performed a review of the Asset Suite database to evaluate non-administrative design changes completed or partially completed during 2018 involving the subject systems (i.e. changes classified as evaluations or nuclear changes). These design changes were then reviewed to determine if there have been any major changes to the subject systems. The review was based on a major change being defined as a modification which affected the method of processing or the effluent from the system. Also, to be a "major change" the change must have affected the Updated Safety Analysis Report (USAR).

The Engineering Changes (EC's) to liquid, solid or gaseous radwaste systems implemented during this time period were:

EC-78823 Radwaste Building Scaffold over LWS-TK1D

This EC evaluates installation of temporary shadow shielding installed on scaffolding over LWS-TK1D, Waste Collector Tank 1D. This change has no direct interface with radwaste components and does not impact any method of radwaste processing or system effluent.

EC-77758 Radwaste Building Scaffold over LWS-TK2A, 2B and 2C

This EC evaluates installation of temporary shadow shielding installed on scaffolding over LWS-TK2A, B and C, Floor Drain Collector Tank 2A, B, and C. This change has no direct interface with radwaste components and does not impact any method of radwaste processing or system effluent.

Annual Radioactive Effluent Release Report**EC-76726 Provide a Method for Standby Cooling Tower Basin Periodic Blowdown to the Radwaste Discharge Line when Co60 is Detected**

This Temporary Modification EC was installed 4/28/2018 and provides a temporary blow-down path for the Standby Cooling Tower (SBCT) to the CWS blow-down line as recommended by the I.E. Bulletin 90-10 Evaluation in CR-RBS-2017-1030 CA-4. The purpose of this temporary blow-down path is to enable an alternate method for discharging water inventory of the Standby Cooling Tower. It is needed to maintain SBCT level within its operating parameters until bulk Co-60 nuclide levels in the SBCT basin are reduced sufficiently. The SBCT level fluctuates due to inputs from rainwater, Standby Service Water (SSW) pump operation, and other factors. The normal method of discharging SBCT wastewater to the Flume is no longer viable until Co-60 effluent in the upper SBCT basin is within acceptable levels as determined by site management and the action plan developed by CR-RBS-2017-1030 is complete. When this discharge pathway is in use, other LWS discharges are suspended.

It should be noted that the Co-60 amounts and chemical concentrations are determined and verified to be less than allowable limits by initial sampling and analysis prior to discharge from the SBCT and from periodic sampling in accordance with Chemistry procedure COP-0813 to meet UFSAR and 10CFR20 requirements.

As a result of CR-RBS-2017-1030 an IEB 80-10 Evaluation was performed as required by EN-CY-108 Section 5.5(c). The evaluation concluded that none of the radiological dose limits detailed in 10 CFR 20.1301, 10 CFR 20.1302, 10 CFR 50, Appendix I or 40 CFR 190 would be exceeded. Any release would require an abnormal release permit to ensure that the conclusions developed by the evaluation remain valid and the results must be provided as part of the Annual Radiological Effluent Release Report.

The introduction of Co-60 to the normal and standby service water systems is considered a one-time event with plant and public radiological impacts of the magnitude of the original evaluated system contamination. There is no adverse impact created by the introduction of Co-60 into the SBCT. While this IEB 80-10 Evaluation concluded that none of the above radioactive dose limits would be exceeded, the Evaluation also recommended not sending radiologically contaminated water to the Waste Water Treatment Plant (WWTP) or to the CWS flume. This TMOD EC provides an acceptable alternate pathway which temporarily discharges the SBCT effluent to the CWS blowdown pit (instead of sending it to the CWS flume) where it is further diluted and therefore meets the requirements and methods of performing and or controlling the design function of radioactive effluent discharge as described in the UFSAR.

This change is not considered as a major change as there is no impact on the Liquid Radwaste system that affects the method of processing or system effluent.

Annual Radioactive Effluent Release Report**EC-70436 – Emergency TMOD: Install a Temporary Gag Device onto N64-AOVF032A in Order to Assure the Valve Remains Open during Offgas System Operation**

The purpose of this Emergency TMOD EC is to temporarily gag OPEN N64-AOVF032A, OFG SYS CLR CONDENSER A INLET ISOL VLV. The associated ASCO solenoid valve, N64-SOVF032A, is leaking air (CR-RBS-2017-02567). The solenoid valve energizes and ports air normally when signaled to CLOSE the AOV. The defective solenoid is apparently intermittently porting air to the AOV, causing erratic operation of the AOV and leading to Operations concern that the valve would close inadvertently and stall OFFGAS flow, requiring a plant shutdown.

N64-AOVF032A valve is the Offgas Cooler Condenser Inlet Isolation valve. During normal Offgas operation the AOV is throttled open to port process air from the holdup line to the associated cooler condenser, N64-CNDB010A, to further chill the process air to drive out moisture to improve charcoal adsorber efficiency downstream.

This Emergency TMOD EC was installed at-risk without paperwork on 11/15/2017 per WO 00469930 with preparation of the Emergency TMOD EC to follow. This EC was not documented on the 2017 Major Changes to Radioactive Liquid, Gaseous, and Solid Waste Treatment Systems, LO-RLO-2018-00003 CA-3, as the EC installation sign-off was not completed until 1/16/2018. This Emergency TMOD was removed 2/6/2018.

This change is not considered to be a major change as there is no impact on the system that affects the method of processing or system effluent.

EC 58815 – Replace Obsolete Offgas Dryer Heater Temperature Controller N64-TICR032B

This EC replaces the original obsolete LFE Corporation model 227 temperature controller with an equivalent SOLO Temperature Controller Model SL4896-CRE. The replacement controller critical characteristics are acceptable and provide the same level of process control as the original temperature controller.

This change is not considered as a major change as there is no impact on the system that affects the method of processing or system effluent.

EC 58771 – Add Removable Spool Piece to Pipe OFG-002-234-4 for Cleaning of Offgas Dryer N64-DRY030C

This Engineering Change (EC) has been generated to add a removable spool piece to pipe OFG-002-234-4 for cleaning of Off-gas Desiccant Dryer Skid "C" (N64-DRYD030C).

Dryer Vessels (N64-DRYD030A, B, C, and D), two on each dryer train, are ASME VIII pressure vessels, 36 ½" OD filled with 900 lb of desiccant, each of which reduces the dew point of the gas stream to -90°F. At the bottom of the vessel, a perforated plate and screen prevents the desiccant from settling at the inlet port and obstructing gas flow.

Annual Radioactive Effluent Release Report

This change is not considered a major change as providing a spool piece to enable access for cleaning does not change the design or operating parameters of the Dryers or the Offgas system and there is no change to system effluent.

EC-53367 – Liquid Radwaste Piping Replacement

River Bend Station (RBS) Condition Report CR-RBS-2000-2033 identified leakage on 2" diameter Liquid Waste System (LWS) discharge line LWS-002-615-4, leading to elevated levels of radioactive material in the soil adjacent to the buried portion of piping. This line functions in parallel with a 3" diameter Service Water Piping (SWP) line, SWP-003-1043-4. Line SWP-003-1043-4 was dedicated to the LWS by M86-0156 in order to increase the discharge capacity to the Circulating Water System (CWS).

This EC removes a portion of discharge line LWS-002-615-4, and all of lines LWS-003-1000-4 and LWS-002-640-4 from 2" valve LWS-AOV257 to the CWS blowdown pit. The segment of line SWP-003-1043-4 routed inside the plant is also removed by this modification. Line LWS-002-640-4 and the buried segment of SWP-003-1043-4 are retired-in-place by filling the lines with a flowable grout and installing blind flanges on the ends. The existing lines are replaced by approximately 100 feet of 2" diameter piping and approximately 1000 feet of 4" diameter piping. The new LWS piping utilizes the existing LWS/SWP pipe routing and existing pipe supports, where possible, for the portion of piping inside the piping tunnels.

A new engineered trench configuration is installed for the exterior portion of piping in the site yard, from the Turbine Building (TB) to the CWS blowdown pit. Stainless steel pipe is used for the in-plant piping and heat fusion joined High Density Polyethylene (HDPE) pipe is used for the exterior piping that is routed inside the concrete trench. Flanges are installed at the stainless steel/HDPE piping interface. Inside the CWS blowdown pit, the new 4" diameter LWS line connects to line CWS-020-35-4 via new 4" diameter CWS valve and line. The new 4" diameter CWS valve and line is installed by performing a 'hot tap' on line CWS-020-35-4.

Two (2) new, 6" diameter wall penetrations are installed to route the 4" diameter HDPE piping. The first new penetration is installed at El. 93' on the south wall of the Turbine Building, near existing penetrations for lines LWS-002-615-4 and SWP-003-1043-4. The second penetration is installed at El. 90.67' on the west wall of the CWS Blowdown Pit, approximately 27'-9" from the south edge.

There is no impact to the method of liquid waste processing or system effluent as a result of this change.

Annual Radioactive Effluent Release Report**EC-41004 Provide Temporary Equipment and Process Details to Pump, Store, and Discharge Ground Water from Well #MW-125 to the Temporary Blowdown Line Previously Installed in TMOD EC 35300**

The purpose of this Temporary Modification (TMOD) was to provide a temporary above-ground path for groundwater discharges from well MW-125 in the Unit 2 hole to the temporary blowdown piping via valve TMOD EC 35300-V6, which discharges to the blowdown pit via 4 inch HDPE (High Density Polyethylene) pipe installed by TMOD EC 35300. TMOD EC-41004 was installed on 8/2/2013 and determined not to constitute a major change as reported in the 2013 Major Changes to Radioactive Liquid, Gaseous, and Solid Waste Treatment Systems, LO-RLO-2014-00005 CA-2. This TMOD was removed 3/29/2018.

EC-35300 Add Temporary Above-Ground LWS Blowdown Line including Changes to Support EC-41004 and EC-47012

A temporary modification (TMOD) has been installed per EC-35300 to allow the LWS to discharge processed liquid radwaste to the CWS blowdown pit. EC-35300 disconnected lines LWS-002-615-4 and SWP-003-1043-4 from the LWS and placed the lines out-of-service. Installation of EC-53367 requires the disconnection of temporary modification EC-35300 from the LWS. This TMOD was installed 5/20/2012 and determined not to constitute a major change as reported in the 2012 Major Changes to Radioactive Liquid, Gaseous, and Solid Waste Treatment Systems, LO-RLO-2013-00006 CA-2. This TMOD was removed 3/19/2018.

No EC was identified as being completed during this time period that modified any radioactive waste system major component such that the processing method or effluent was changed. Also no changes were identified affecting the method of processing solid, liquid or gaseous waste or the isotopic composition or the quantity of liquid, solid, or gaseous waste as described in the USAR.

In conclusion, no design changes were completed during the specified time period that constituted a major change to either the liquid, solid or gaseous radwaste treatment systems.

2.7 Land Use Census Changes

The Land Use Census for 2018 was conducted as required by the Technical Requirements Manual (TRM) (TR 3.12.2). The results of the Land Use Census will be included in the Annual Radiological Environmental Operating Report pursuant to Technical Specification 5.6.2.

A garden census is not conducted pursuant to the note in the TRM 3.12.2 that allows the sampling of broadleaf vegetation in the highest calculated average ground-level D/Q sector near site boundary in lieu of the garden census.

The milk animal census identified no milk animals within 8 km (5 miles) of River Bend site. This information was verified by the County Agents from West Feliciana, East Feliciana and Pointe Coupee parishes.

Annual Radioactive Effluent Release Report

One resident census change was noted in Sector A that changed the nearest resident in Sector A from 1.9 km to 1.7 km.

No locations were identified this period that would yield a calculated dose or dose commitment greater than those currently calculated in Requirement TSR 3.11.2.3.1.

The County Agents confirmed that there was no commercial harvesting of crawfish within the five-mile radius downstream of RBS. RBS conservatively uses the invertebrate pathway although not required by NUREG-0133 liquid dose factor methodology for fresh water nuclear power plants.

2.8 Effluent Monitor Instrument Inoperability**2.8.1 Radioactive Liquid Effluent Monitoring Instrumentation Operability**

The minimum number of channels required to be OPERABLE as described in Table 3.3.11.2-1 of Technical Requirement 3.3.11.2 were, if inoperable at any time in the period January 1, 2018, through December 31, 2018, restored to operable status within the required time.

2.8.2 Radioactive Gaseous Effluent Monitoring Instrumentation Operability

The minimum number of channels required to be OPERABLE as described in Table 3.3.11.3-1 of Technical Requirement 3.3.11.3 were, if inoperable at any time in the period January 1, 2018, through December 31, 2018, restored to operable status within the required time.

2.9 Offsite Dose Calculation Manual Changes

There were no changes to the Offsite Dose Calculation Manual in 2018.

2.10 Radiological Environmental Monitoring Program Changes

There were no changes to the Radiological Environmental Monitoring Program during the reporting period January 1, 2018, through December 31, 2018.

2.11 Process Control Program (PCP) Changes

There were no changes to the Process Control Program (PCP) in 2018.

2.12 NON-REMP Groundwater Monitoring Results (NEI 07-07)

Ground water samples were taken in support of the Groundwater Protection Initiative (GPI). These samples are not part of the Radiological Environmental Monitoring Program. The sample results for 2018 are located in Table 17, Table 18, and Table 19.

River Bend Station made no NEI 07-07 voluntary notifications in 2018.

2.13 **Outside Tanks**

The maximum quantity of radioactive material, excluding tritium and dissolved or entrained noble gases, contained in any unprotected outdoor tank during the period of January 1, 2018, through December 31, 2018 was less than or equal to the 10 curie limit as required by Technical Specification 5.5.8.b.

3.0 GASEOUS EFFLUENTS

3.1 Gas Effluent and Waste Disposal Report

Table 1, Gaseous Effluents-Summation of All Releases

A. Fission & Activation Gases	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
1. Total Release	Ci	2.26E+02	8.71E+01	1.66E+02	4.82E+02	9.61E+02
2. Average release rate for the period	μCi/sec	2.91E+01	1.11E+01	2.09E+01	6.06E+01	3.05E+01

B. Iodine	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
1. Total Iodine – 131	Ci	1.11E-02	2.40E-02	2.36E-02	5.04E-02	1.09E-01
2. Average release rate for the period	μCi/sec	1.43E-03	3.05E-03	2.97E-03	6.34E-03	3.46E-03

C. Particulates	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
1. Particulates with half-lives > 8 days	Ci	4.12E-04	4.62E-04	6.28E-04	6.98E-04	2.20E-03
2. Average release rate for the period	μCi/sec	5.30E-05	5.87E-05	7.90E-05	8.78E-05	6.97E-05

D. Tritium	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
1. Total Release	Ci	2.93E+00	3.85E+00	8.34E+00	3.04E+00	1.82E+01
2. Average release rate for the period	μCi/sec	3.77E-01	4.90E-01	1.05E+00	3.83E-01	5.76E-01

E. Gross Alpha	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2. Average release rate for the period	μCi/sec	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

F. Carbon-14	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
1. Total Release	Ci	2.71E+00	2.74E+00	2.77E+00	2.77E+00	1.1E+01
2. Average release rate for the period	μCi/sec	3.49E-01	3.48E-01	3.48E-01	3.48E-01	3.49E-01

% of limit is located in the Radiological Impact to Man Table

Annual Radioactive Effluent Release Report

Table 2, Gaseous Effluents – Ground Level Release - Continuous Mode

Radionuclide Released	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Fission Gases						
Xe-131m	Ci	0.00E+00	0.00E+00	0.00E+00	1.45E+00	1.45E+00
Xe-133	Ci	1.32E+01	2.77E+00	3.19E+00	1.67E+01	3.59E+01
Xe-135	Ci	4.89E+00	6.42E+00	1.28E+01	4.17E+01	6.58E+01
Xe-135m	Ci	8.55E+00	7.75E+00	1.26E+01	1.21E+01	4.10E+01
Xe-138	Ci	0.00E+00	0.00E+00	0.00E+00	8.60E-01	8.60E-01
Total for Period	Ci	2.67E+01	1.69E+01	2.85E+01	7.29E+01	1.45E+02
Iodines						
I-131	Ci	1.26E-04	1.88E-04	2.67E-04	2.32E-04	8.14E-04
I-133	Ci	5.46E-05	8.57E-05	8.18E-05	7.41E-05	2.96E-04
Total for Period	Ci	1.81E-04	2.73E-04	3.49E-04	3.06E-04	1.11E-03
Particulates						
Cr-51	Ci	0.00E+00	0.00E+00	4.14E-06	0.00E+00	4.14E-06
Co-60	Ci	4.19E-06	2.19E-06	1.18E-06	1.67E-06	9.23E-06
Ce-141	Ci	3.92E-07	0.00E+00	0.00E+00	0.00E+00	3.92E-07
Total for Period	Ci	4.58E-06	2.19E-06	5.32E-06	1.67E-06	1.38E-05
Tritium						
H-3	Ci	5.77E-01	1.79E+00	7.17E+00	1.42E+00	1.10E+01

Annual Radioactive Effluent Release Report

Table 3, Gaseous Effluents – Mixed Mode Release – Continuous Mode

Radionuclide Released	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Fission Gases						
Ar-41	Ci	1.45E+00	3.27E-02	1.72E-02	0.00E+00	1.50E+00
Kr-83m	Ci	0.00E+00	1.12E+00	0.00E+00	0.00E+00	1.12E+00
Kr-85m	Ci	3.27E+01	1.10E+01	9.75E+00	1.41E+00	5.49E+01
Kr-87	Ci	3.02E+00	0.00E+00	1.98E+00	6.34E-01	5.63E+00
Kr-88	Ci	2.91E+01	0.00E+00	1.22E+01	2.06E+00	4.33E+01
Xe-131m	Ci	0.00E+00	0.00E+00	0.00E+00	1.65E-04	1.65E-04
Xe-133	Ci	6.14E+01	5.67E+00	1.03E+01	2.48E+02	3.25E+02
Xe-133m	Ci	0.00E+00	0.00E+00	0.00E+00	3.92E+00	3.92E+00
Xe-135	Ci	2.70E+01	2.87E+01	5.30E+01	9.98E+01	2.09E+02
Xe-135m	Ci	1.64E+01	1.41E+01	3.65E+01	3.12E+01	9.82E+01
Xe-137	Ci	5.70E+00	0.00E+00	0.00E+00	4.90E+00	1.06E+01
Xe-138	Ci	2.28E+01	9.56E+00	1.37E+01	1.71E+01	6.32E+01
Total for Period	Ci	2.00E+02	7.02E+01	1.38E+02	4.09E+02	8.16E+02
Iodines						
I-131	Ci	1.73E-03	3.66E-03	4.11E-03	7.42E-03	1.69E-02
I-133	Ci	9.17E-03	2.00E-02	1.91E-02	4.27E-02	9.10E-02
Total for Period	Ci	1.09E-02	2.37E-02	2.32E-02	5.01E-02	1.08E-01
Particulates						
Mn-54	Ci	4.64E-06	0.00E+00	0.00E+00	0.00E+00	4.64E-06
Co-58	Ci	1.57E-06	0.00E+00	0.00E+00	1.96E-06	3.53E-06
Co-60	Ci	2.71E-05	1.53E-05	2.18E-06	8.82E-06	5.34E-05
Zn-65	Ci	1.48E-06	0.00E+00	0.00E+00	0.00E+00	1.48E-06
Sr-89	Ci	1.97E-04	2.82E-04	3.49E-04	4.01E-04	1.23E-03
Sr-90	Ci	2.74E-06	0.00E+00	2.05E-06	0.00E+00	4.79E-06
Nb-95	Ci	0.00E+00	0.00E+00	1.14E-06	0.00E+00	1.14E-06
Ru-103	Ci	5.83E-07	0.00E+00	0.00E+00	0.00E+00	5.83E-07
Ag-110m	Ci	3.34E-06	0.00E+00	2.46E-06	1.94E-05	2.52E-05
Cs-134	Ci	1.54E-06	0.00E+00	3.13E-06	0.00E+00	4.67E-06
Cs-136	Ci	8.73E-07	0.00E+00	0.00E+00	0.00E+00	8.73E-07
Cs-137	Ci	2.86E-06	0.00E+00	1.56E-06	0.00E+00	4.42E-06
Ba-140	Ci	1.64E-04	1.62E-04	2.61E-04	2.65E-04	8.51E-04
Total for Period	Ci	4.08E-04	4.59E-04	6.23E-04	6.96E-04	2.19E-03
Tritium						
H-3	Ci	2.35E+00	2.07E+00	1.17E+00	1.62E+00	7.21E+00

Annual Radioactive Effluent Release Report

Table 4, Radioactive Gaseous Waste Sampling and Analysis Program

Gaseous Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) uC/ml
Main Plant Exhaust Duct	M Grab Sample	M	Principle Gamma Emitters	1.00E-04
			H-3	1.00E-06
Fuel Building Ventilation Exhaust Duct	M Grab Sample	M	Principle Gamma Emitters	1.00E-04
			H-3	1.00E-06
Radwaste Building Ventilation Exhaust Duct	M Grab Sample	M	Principle Gamma Emitters	1.00E-04
			H-3	1.00E-06
All Release Types as listed above	Continuous	W Charcoal Sample	I-131	1.00E-12
			I-133	1.00E-10
	Continuous	W Particulate Sample	Principle Gamma Emitters (I-131, Others)	1.00E-11
	Continuous	M Composite Particulate Sample	Gross Alpha	1.00E-11
	Continuous	Q Composite Particulate Sample	Sr-89, Sr-90	1.00E-11
	Continuous	Noble Gas Monitor	Noble Gases Gross Beta or Gamma	1.00E-6

W = At least once per 7 days

M = At least once per 31 days

Q = At least once per 92 days

4.0 LIQUID EFFLUENTS

4.1 Liquid Effluent and Waste Disposal Report

Table 5, Liquid Effluents-Summation of All Releases

A. Fission & Activation Products	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
1. Total Release (not including tritium, gases or alpha)	Ci	2.48E-03	3.59E-03	2.30E-03	7.77E-04	9.14E-03
2. Average diluted concentration during period	μCi/mL	2.72E-09	2.67E-09	1.62E-09	5.54E-09	1.80E-09
B. Tritium						
1. Total Release	Ci	1.04E+01	1.41E+01	2.46E+01	1.19E+01	6.10E+01
2. Average diluted concentration during period.	μCi/mL	1.14E-05	1.05E-05	1.72E-05	8.50E-05	1.20E-05
C. Dissolved & Entrained Gases						
1. Total Release	Ci	5.66E-02	7.69E-02	3.40E-01	1.26E-01	5.99E-01
2. Average diluted concentration during period	μCi/mL	6.21E-08	5.73E-08	2.39E-07	8.97E-08	1.18E-07
D. Gross Alpha Activity						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
E. Volume Of Waste Released (prior to dilution)						
	Liters	1.65E+06	2.87E+06	4.97E+06	2.05E+06	1.15E+07
F. Volume Of Dilution Water Used During Period						
	Liters	9.12E+08	1.34E+09	1.42E+09	1.40E+09	5.08E+09

% of limit is located in the Radiological Impact to Man Table

Annual Radioactive Effluent Release Report

Table 6, Liquid Effluents – Batch Release

Radionuclide Released	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Fission and Activation Products						
Cr-51	Ci	1.30E-05	0.00E+00	0.00E+00	1.65E-05	2.95E-05
Mn-54	Ci	2.13E-04	1.11E-04	3.61E-05	0.00E+00	3.60E-04
Co-57	Ci	0.00E+00	1.03E-06	0.00E+00	0.00E+00	1.03E-06
Co-58	Ci	1.40E-06	0.00E+00	4.16E-06	0.00E+00	5.56E-06
Co-60	Ci	2.03E-03	2.86E-03	1.87E-03	7.12E-04	7.48E-03
Ni-65	Ci	0.00E+00	1.55E-05	0.00E+00	0.00E+00	1.55E-05
Zn-65	Ci	3.89E-05	1.93E-05	4.30E-06	0.00E+00	6.25E-05
Br-82	Ci	0.00E+00	9.12E-07	0.00E+00	0.00E+00	9.12E-07
Rb-88	Ci	4.19E-05	1.90E-04	1.56E-04	0.00E+00	3.88E-04
Sr-91	Ci	0.00E+00	9.63E-06	0.00E+00	0.00E+00	9.63E-06
Zr-95	Ci	2.64E-06	0.00E+00	0.00E+00	0.00E+00	2.64E-06
Nb-97	Ci	0.00E+00	2.39E-06	0.00E+00	0.00E+00	2.39E-06
Ru-103	Ci	0.00E+00	0.00E+00	1.18E-06	0.00E+00	1.18E-06
Ag-110m	Ci	0.00E+00	4.46E-06	3.66E-06	0.00E+00	8.12E-06
Rh-105	Ci	0.00E+00	0.00E+00	5.83E-06	8.69E-06	1.45E-05
Sb-122	Ci	0.00E+00	4.74E-06	0.00E+00	0.00E+00	4.74E-06
I-131	Ci	9.05E-06	9.72E-06	1.27E-04	3.79E-05	1.84E-04
I-133	Ci	0.00E+00	0.00E+00	2.27E-05	1.63E-06	2.43E-05
Cs-134	Ci	2.68E-05	7.53E-06	1.31E-06	0.00E+00	3.57E-05
Cs-137	Ci	3.26E-05	8.36E-06	0.00E+00	0.00E+00	4.10E-05
Cs-138	Ci	0.00E+00	2.34E-05	0.00E+00	0.00E+00	2.34E-05
Ba-139	Ci	0.00E+00	0.00E+00	5.22E-06	0.00E+00	5.22E-06
Ba-140	Ci	0.00E+00	4.36E-06	0.00E+00	0.00E+00	4.36E-06
Ba-142	Ci	0.00E+00	2.54E-04	5.45E-05	0.00E+00	3.08E-04
La-140	Ci	5.47E-05	2.63E-05	8.54E-06	0.00E+00	8.95E-05
Ce-141	Ci	1.53E-05	0.00E+00	0.00E+00	0.00E+00	1.53E-05
Ce-144	Ci	0.00E+00	2.64E-05	0.00E+00	0.00E+00	2.64E-05
W-187	Ci	0.00E+00	4.94E-06	0.00E+00	0.00E+00	4.94E-06
Total for Period	Ci	2.48E-03	3.59E-03	2.30E-03	7.77E-04	9.14E-03
Tritium						
H-3	Ci	1.04E+01	1.41E+01	2.46E+01	1.19E+01	6.10E+01
Total for Period	Ci	1.04E+01	1.41E+01	2.46E+01	1.19E+01	6.10E+01

Table 6, Liquid Effluents – Batch Release

Radionuclide Released	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Dissolved and Entrained Gases						
Kr-85m	Ci	0.00E+00	9.28E-06	0.00E+00	0.00E+00	9.28E-06
Kr-85	Ci	0.00E+00	2.48E-04	0.00E+00	0.00E+00	2.48E-04
Kr-87	Ci	0.00E+00	2.07E-05	0.00E+00	0.00E+00	2.07E-05
Kr-88	Ci	1.78E-05	1.15E-04	1.06E-04	0.00E+00	2.39E-04
Xe-131m	Ci	0.00E+00	0.00E+00	4.80E-04	9.35E-04	1.42E-03
Xe-133m	Ci	1.33E-03	1.55E-03	9.32E-03	2.66E-03	1.49E-02
Xe-133	Ci	2.90E-02	4.06E-02	2.03E-01	6.58E-02	3.38E-01
Xe-135	Ci	2.63E-02	3.44E-02	1.27E-01	5.64E-02	2.44E-01
Total for Period	Ci	5.66E-02	7.69E-02	3.40E-01	1.26E-01	5.99E-01

Table 7, Supplemental Information for Liquid Effluents – Batch Mode

Report for 2018	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Year
Number of releases		29	45	80	34	188
Total Release Time	minutes	8.76E+03	1.50E+04	2.63E+04	1.12E+04	6.12E+04
Maximum Release Time	minutes	3.64E+02	1.09E+03	1.32E+03	9.13E+02	1.32E+03
Average Release Time	minutes	3.02E+02	3.32E+02	3.29E+02	3.29E+02	3.25E+02
Minimum Release Time	minutes	1.30E+02	2.65E+02	2.36E+02	2.57E+02	1.30E+02

	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Average Mississippi River stream flow during periods of release into a flowing stream	ft ³ /sec	723,166	768,136	421,963	752,061

Table 8, Radioactive Liquid Waste Sampling and Analysis Program

Liquid Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) uC/ml
Batch Waste Release (Liquid Radwaste Recovery Sample Tanks)	P Each Batch	P Each Batch	Principle Gamma Emitters; except Ce-144	5.00E-07 5.00E-06
			I-131	1.00E-06
	P Each Batch / M	M	Dissolved and Entrained Gases (Gamma Emitters)	1.00E-05
	P Each Batch	M Composite	H-3	1.00E-05
			Gross Alpha	1.00E-07
	P Each Batch	Q Composite	Sr-89, Sr-90	5.00E-8
			Fe-55	1.00E-06

P = Prior to each radioactive release

M = At least once per 31 days

Q = At least once per 92 days

5.0 SOLID WASTE SUMMARY

5.1 Solid Waste Shipped Offsite for Burial or Disposal (Not Irradiated Fuel)

5.1.1 Types of Waste

Table 9, Types of Solid Waste Summary			
Types of Waste	Total Quantity (m ³)	Total Activity (Ci)	Est. Total Error (%)
a. Spent resins, filter sludges, evaporator bottoms, etc.	9.33E+01	9.24E+01	25
b. Dry compressible waste, contaminated equip, etc.	7.15E+02	1.67E+01	25
c. Irradiated components, control rods, etc.	0.00E+00	0.00E+00	25
d. Other (Water, EHC, Waste Oil, etc.)	2.79E+01	3.55E-01	25

5.1.2 Estimate of major nuclide composition (by waste type) only >1% ^[Note 1] are reported.

Table 10, Major Nuclides			
Major Nuclide Composition	Isotope	%	Curies
a. Resins, filters, evaporator bottoms, etc.	C-14	7.3	6.74E+00
	Mn-54	2.64	2.44E+00
	Fe-55	26.31	2.43E+01
	Co-60	51.76	4.78E+01
	Ni-63	2.17	2.00E+00
	Zn-65	3.85	3.56E+00
	Cs-134	1.44	1.33E+00
	Cs-137	2.83	2.61E+00
b. Dry compressible waste, contaminated equip, etc.	Mn-54	3.2	5.37E-01
	Fe-55	53.74	9.0E+00
	Co-60	36.91	6.18E+00
	Ni-63	1.87	3.13E-01
	Zn-65	1.58	2.65E-01
c. Irradiated components, control rods, etc.	N/A	N/A	N/A

Annual Radioactive Effluent Release Report

Table 10, Major Nuclides

Major Nuclide Composition	Isotope	%	Curies
d. Other (Water, EHC, Waste Oil, Etc.)	Cr-51	1.23	4.36E-03
	Mn-54	4.4	1.56E-02
	Fe-55	48.21	1.71E-01
	Co-60	42.15	1.50E-01
	Zn-65	1.03	3.67E-03

[Note 1] – “Major” radionuclide is equivalent to a “principle” radionuclide, i.e. greater than 1 percent of total activity.

5.1.3 Solid Waste Disposition

Table 11, Solid Waste Disposition (Specify Site or Unit)

Number of Shipments	Mode of Transportation	Destination
4	Truck	Energy Solutions, LLC (Gallaher) – Oak Ridge, TN
35	Truck	Energy Solutions (Bear Creek) - Oak Ridge, TN

Table 12, Irradiated Fuel Shipments Disposition

No Irradiated Fuel Shipments for 2018		
Number of Shipments	Mode of Transportation	Destination
N/A	N/A	N/A

Annual Radioactive Effluent Release Report

6.0 RADIOLOGICAL IMPACT TO MAN

6.1 10CFR Part50, Appendix I Evaluation

Table 13, Dose Assessment

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
Liquid Effluent Dose Limit, Total Body	1.5 mrem	1.5 mrem	1.5 mrem	1.5 mrem	3 mrem
Total Body Dose	5.60E-05	2.96E-05	2.67E-05	4.03E-06	1.26E-04
% of Limit	3.73E-03	1.97E-03	1.78E-03	2.69E-04	4.19E-03
Liquid Effluent Dose Limit, Any Organ	5 mrem	5 mrem	5 mrem	5 mrem	10 mrem
Maximum Organ Dose	2.19E-04	1.62E-04	1.17E-04	9.83E-04	5.41E-04
% of Limit	4.38E-03	3.24E-03	2.35E-03	1.97E-04	5.41E-03
Gaseous Effluent Dose Limit, Gamma Air	5 mrad	5 mrad	5 mrad	5 mrad	10 mrad
Gamma Air Dose	1.48E-01	7.42E-02	1.50E-01	2.42E-01	6.13E-01
% of Limit	2.95E+00	1.48E+00	3.00E+00	4.83E+00	6.13E+00
Gaseous Effluent Dose Limit, Beta Air	10 mrad	10 mrad	10 mrad	10 mrad	20 mrad
Beta Air Dose	9.65E-02	4.89E-02	9.12E-02	2.53E-01	4.89E-01
% of Limit	9.60E-01	4.90E-01	9.10E-01	2.53E+00	2.45E+00
Gaseous Effluent Organ Dose Limit (Iodine, Tritium, Particulates with > 8 day half-life)	7.5 mrem	7.5 mrem	7.5 mrem	7.5 mrem	15 mrem
Gaseous Effluent Organ Dose (Iodine, Tritium, Particulates with > 8 day half-life)	8.13E-02	1.65E-01	2.13E-01	3.08E-01	7.67E-01
% of Limit	1.08E+00	2.20E+00	2.84E+00	4.10E+00	5.11E+00

Table 13, Dose Assessment (continued)					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
Gaseous Effluent Organ Dose Limit (Carbon-14 – Bounding Calculation)	7.5 mrem	7.5 mrem	7.5 mrem	7.5 mrem	15 mrem
Gaseous Effluent Organ Dose (Carbon-14 – Bounding Calculation)	1.16E+00	1.17E+00	1.18E+00	1.18E+00	4.70E+00
% of Limit	1.55E+01	1.56E+01	1.58E+01	1.58E+01	3.13E+01

6.2 Dose to Members of the Public Inside the Site Boundary

The maximally exposed member of the public was calculated to be member of the West Feliciana Parish Sheriff's Office (WFPSO) that opened a substation in a facility within the site boundary beginning in 2018. The office is estimated to be occupied during normal work hours for 2000 hours per year. It should be noted that the liquid effluent pathway dose was not considered since the individual would not engage in activities that would allow exposure to this pathway.

Location	Annual Critical Organ Dose (mrem)	Annual Total Body Dose (mrem)	Annual Skin Dose (mrem)	Annual Duration Factor
Alligator Bayou	4.90E-05	8.13E-06	5.67E-07	4.57E-03
Deer Hunters	2.23E-03	6.12E-04	4.84E-05	2.92E-02
Onsite RV Park	5.20E-03	1.43E-03	1.13E-04	6.82E-02
WFPSO Building	1.74E-02	4.78E-03	3.78E-04	2.28E-01

6.3 40CFR Part 190 Evaluation for an Individual in the Unrestricted Area

An assessment (see Table 14) was made of radiation doses to the likely most-exposed member of the public from River Bend and other nearby uranium fuel cycle sources (none within five miles). 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 total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrem.

Annual Radioactive Effluent Release Report

Table 14, EPA 40 CFR PART 190 Evaluation

	Total Body	Thyroid	Any Other Organ
Dose Limit	25 mrem	75 mrem	25 mrem
Dose	2.15E+00	2.28E+00	6.36E+00
% of Limit	8.60E+00	3.04E+00	2.54E+01

Liquid dose, gaseous dose including a bounding calculation of C-14 dose, direct shine, ISFSI and any other nuclear power related facility within 5 miles of the station are considered when calculating dose compliance with 40 CFR 190.

Annual Radioactive Effluent Release Report

7.0 METEOROLOGICAL DATA

Cumulative joint frequency distributions and annual average data for continuous releases are listed below. The meteorological recovery for 2018 was 96.4%.

7.1 Joint Frequency Distributions

All Stability Classes

Period of Record: 01/01/2018 - 12/31/2018

Elevation: Primary Sensors – 30 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	102	46	63	101	117	201	76	0	0	0	706
NNE	66	46	73	118	140	116	6	0	0	0	565
NE	73	44	61	142	136	76	3	0	0	0	535
ENE	93	62	56	106	48	37	0	0	0	0	402
E	48	68	62	84	48	24	0	0	0	0	334
ESE	46	58	70	125	79	53	2	0	0	0	433
SE	50	63	110	220	202	188	39	2	0	0	874
SSE	14	47	63	168	157	274	143	5	0	0	871
S	14	25	56	119	122	166	80	0	0	0	582
SSW	10	19	43	87	56	73	25	0	0	0	313
SW	9	38	48	50	46	60	10	0	0	0	261
WSW	17	43	25	46	61	76	6	0	0	0	274
W	30	57	26	63	86	113	10	0	0	0	385
WNW	76	56	42	56	85	93	24	0	0	0	432
NW	99	71	36	58	72	115	76	1	0	0	528
NNW	107	58	34	73	82	129	68	0	0	0	551
Total	854	801	868	1616	1537	1794	568	8	0	0	8046

Number of Calms: 398

Number of Invalid Hours: 316

Number of Valid Hours: 8444

Total Hours for the Period: 8760

Annual Radioactive Effluent Release Report

Stability Class A

Period of Record: 01/01/2018 - 12/31/2018

Elevation: Primary Sensors – 30 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	0	0	0	5	7	59	27	0	0	0	98
NNE	0	0	0	3	31	44	4	0	0	0	82
NE	0	0	1	4	31	26	2	0	0	0	64
ENE	0	0	1	7	13	10	0	0	0	0	31
E	0	0	0	9	14	16	0	0	0	0	39
ESE	0	0	0	10	21	15	1	0	0	0	47
SE	0	0	1	4	42	55	8	0	0	0	110
SSE	0	1	0	3	14	56	48	0	0	0	122
S	0	0	0	5	5	45	36	0	0	0	91
SSW	0	0	0	2	6	13	12	0	0	0	33
SW	0	0	1	2	3	18	3	0	0	0	27
WSW	0	0	0	4	17	41	4	0	0	0	66
W	0	1	2	2	28	82	9	0	0	0	124
WNW	0	0	0	2	19	52	16	0	0	0	89
NW	0	0	0	4	13	25	27	0	0	0	69
NNW	0	0	0	4	8	23	29	0	0	0	64
Total	0	2	6	70	272	580	226	0	0	0	1156

Number of Calms: 0

Number of Valid Hours: 1156

Total Hours for the Period: 1156

Annual Radioactive Effluent Release Report

Stability Class B

Period of Record: 01/01/2018 - 12/31/2018

Elevation: Primary Sensors – 30 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	0	0	0	1	8	10	5	0	0	0	24
NNE	0	0	0	2	6	3	0	0	0	0	11
NE	0	0	1	7	13	4	0	0	0	0	25
ENE	0	0	0	4	2	1	0	0	0	0	7
E	0	0	0	5	4	0	0	0	0	0	9
ESE	0	0	0	4	3	0	0	0	0	0	7
SE	0	0	0	2	16	8	2	0	0	0	28
SSE	0	0	0	3	8	34	12	1	0	0	58
S	0	0	1	3	7	24	15	0	0	0	50
SSW	0	0	1	2	6	14	6	0	0	0	29
SW	0	0	0	1	9	7	2	0	0	0	19
WSW	1	0	0	1	15	13	0	0	0	0	30
W	0	0	0	4	12	12	0	0	0	0	28
WNW	0	0	0	4	22	14	2	0	0	0	42
NW	0	0	0	1	10	6	9	0	0	0	26
NNW	0	0	0	4	5	5	11	0	0	0	25
Total	1	0	3	48	146	155	64	1	0	0	418

Number of Calms: 0

Number of Valid Hours: 418

Total Hours for the Period: 418

Annual Radioactive Effluent Release Report

Stability Class C

Period of Record: 01/01/2018 - 12/31/2018

Elevation: Primary Sensors – 30 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	0	1	0	12	16	20	3	0	0	0	52
NNE	0	0	1	7	17	14	1	0	0	0	40
NE	0	0	0	8	10	3	1	0	0	0	22
ENE	0	0	1	8	7	0	0	0	0	0	16
E	0	0	3	11	4	0	0	0	0	0	18
ESE	0	1	1	7	4	4	0	0	0	0	17
SE	0	0	1	20	14	18	2	0	0	0	55
SSE	0	0	0	11	18	33	26	2	0	0	90
S	0	0	0	6	24	24	9	0	0	0	63
SSW	0	0	1	3	10	15	4	0	0	0	33
SW	0	0	1	7	18	14	4	0	0	0	44
WSW	0	0	1	10	15	13	0	0	0	0	39
W	0	0	0	11	22	15	0	0	0	0	48
WNW	0	0	0	13	18	9	2	0	0	0	42
NW	0	0	1	6	6	16	9	0	0	0	38
NNW	0	0	0	8	15	20	5	0	0	0	48
Total	0	2	11	148	218	218	66	2	0	0	665

Number of Calms: 2

Number of Valid Hours: 667

Total Hours for the Period: 667

Annual Radioactive Effluent Release Report

Stability Class D

Period of Record: 01/01/2018 - 12/31/2018

Elevation: Primary Sensors – 30 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	0	5	10	38	51	92	33	0	0	0	229
NNE	1	4	17	44	66	34	1	0	0	0	167
NE	3	5	13	44	55	24	0	0	0	0	144
ENE	2	7	8	27	5	12	0	0	0	0	61
E	1	3	14	26	13	6	0	0	0	0	63
ESE	1	4	14	33	22	15	0	0	0	0	89
SE	1	9	19	58	58	42	19	2	0	0	208
SSE	0	6	7	30	42	71	50	2	0	0	208
S	0	4	3	26	25	42	16	0	0	0	116
SSW	0	4	5	27	22	22	2	0	0	0	82
SW	0	2	11	17	10	16	1	0	0	0	57
WSW	0	4	3	13	8	8	2	0	0	0	38
W	0	5	8	31	20	3	1	0	0	0	68
WNW	1	0	18	24	20	7	2	0	0	0	72
NW	0	0	7	25	30	46	22	0	0	0	130
NNW	2	2	7	22	34	76	22	0	0	0	165
Total	12	64	164	485	481	516	171	4	0	0	1897

Number of Calms: 2

Number of Valid Hours: 1899

Total Hours for the Period: 1899

Annual Radioactive Effluent Release Report

Stability Class E

Period of Record: 01/01/2018 - 12/31/2018

Elevation: Primary Sensors – 30 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	7	12	23	34	34	20	8	0	0	0	138
NNE	5	19	32	61	18	21	0	0	0	0	156
NE	7	18	35	68	27	19	0	0	0	0	174
ENE	12	19	29	49	19	14	0	0	0	0	142
E	9	21	24	29	13	2	0	0	0	0	98
ESE	20	31	42	59	29	19	1	0	0	0	201
SE	32	32	66	115	67	65	8	0	0	0	385
SSE	6	21	39	99	69	77	7	0	0	0	318
S	2	11	39	65	58	30	4	0	0	0	209
SSW	3	12	28	49	11	9	1	0	0	0	113
SW	6	23	26	20	5	5	0	0	0	0	85
WSW	3	21	19	16	6	1	0	0	0	0	66
W	7	19	10	13	4	1	0	0	0	0	54
WNW	10	12	11	13	5	10	2	0	0	0	63
NW	6	14	13	18	7	22	9	1	0	0	90
NNW	8	12	12	31	19	5	1	0	0	0	88
Total	143	297	448	739	391	320	41	1	0	0	2380

Number of Calms: 32

Number of Valid Hours: 2412

Total Hours for the Period: 2412

Annual Radioactive Effluent Release Report

Stability Class F

Period of Record: 01/01/2018 - 12/31/2018

Elevation: Primary Sensors – 30 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	18	11	23	8	0	0	0	0	0	0	60
NNE	19	16	22	1	2	0	0	0	0	0	60
NE	19	14	10	10	0	0	0	0	0	0	53
ENE	16	8	10	10	2	0	0	0	0	0	46
E	12	14	13	3	0	0	0	0	0	0	42
ESE	10	15	9	12	0	0	0	0	0	0	46
SE	13	16	22	20	5	0	0	0	0	0	76
SSE	6	14	15	22	5	3	0	0	0	0	65
S	10	10	9	13	2	1	0	0	0	0	45
SSW	5	2	7	4	1	0	0	0	0	0	19
SW	2	11	9	3	1	0	0	0	0	0	26
WSW	9	9	1	2	0	0	0	0	0	0	21
W	8	21	5	2	0	0	0	0	0	0	36
WNW	25	15	8	0	1	1	0	0	0	0	50
NW	32	25	13	3	5	0	0	0	0	0	78
NNW	18	15	7	4	0	0	0	0	0	0	44
Total	222	216	183	117	24	5	0	0	0	0	767

Number of Calms: 126

Number of Valid Hours: 893

Total Hours for the Period: 893

Annual Radioactive Effluent Release Report

Stability Class G

Period of Record: 01/01/2018 - 12/31/2018

Elevation: Primary Sensors – 30 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	77	17	7	3	1	0	0	0	0	0	105
NNE	41	7	1	0	0	0	0	0	0	0	49
NE	44	7	1	1	0	0	0	0	0	0	53
ENE	63	28	7	1	0	0	0	0	0	0	99
E	26	30	8	1	0	0	0	0	0	0	65
ESE	15	7	4	0	0	0	0	0	0	0	26
SE	4	6	1	1	0	0	0	0	0	0	12
SSE	2	5	2	0	1	0	0	0	0	0	10
S	2	0	4	1	1	0	0	0	0	0	8
SSW	2	1	1	0	0	0	0	0	0	0	4
SW	1	2	0	0	0	0	0	0	0	0	3
WSW	4	9	1	0	0	0	0	0	0	0	14
W	15	11	1	0	0	0	0	0	0	0	27
WNW	40	29	5	0	0	0	0	0	0	0	74
NW	61	32	2	1	1	0	0	0	0	0	97
NNW	79	29	8	0	1	0	0	0	0	0	117
Total	476	220	53	9	5	0	0	0	0	0	763

Number of Calms: 236

Number of Valid Hours: 999

Total Hours for the Period: 999

Annual Radioactive Effluent Release Report

All Stability Classes

Period of Record: 01/01/2018 - 12/31/2018

Elevation: Primary Sensors – 150 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	0	2	11	28	44	158	273	19	0	0	535
NNE	1	4	9	27	56	260	236	14	0	0	607
NE	0	5	8	31	89	203	241	9	1	0	587
ENE	1	3	11	40	90	151	156	26	0	0	478
E	4	4	11	49	65	110	148	13	1	0	405
ESE	2	6	8	32	64	241	536	119	12	0	1020
SE	1	2	9	34	73	233	302	43	10	0	707
SSE	1	5	5	38	68	197	248	62	2	0	626
S	1	4	10	34	90	214	201	37	2	0	593
SSW	2	2	10	38	64	190	173	22	0	0	501
SW	0	5	8	44	52	164	89	13	0	0	375
WSW	0	1	8	31	75	167	100	12	1	0	395
W	1	2	6	41	64	229	120	5	0	0	468
WNW	0	0	9	22	53	148	106	23	2	0	363
NW	1	8	7	22	60	100	160	26	2	0	386
NNW	0	1	3	27	30	141	178	22	0	0	402
Total	15	54	133	538	1037	2906	3267	465	33	0	8448

Number of Calms: 1

Number of Invalid Hours: 311

Number of Valid Hours: 8449

Total Hours for the Period: 8760

Annual Radioactive Effluent Release Report

Stability Class A

Period of Record: 01/01/2018 - 12/31/2018

Elevation: Primary Sensors – 150 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	0	0	0	0	2	16	54	3	0	0	75
NNE	0	0	0	0	5	38	36	5	0	0	84
NE	0	0	0	1	4	35	32	3	0	0	75
ENE	0	0	0	2	4	21	26	1	0	0	54
E	0	0	0	2	3	12	30	2	0	0	49
ESE	0	0	0	1	5	29	57	13	0	0	105
SE	0	0	0	0	4	25	40	4	0	0	73
SSE	0	0	1	1	3	17	48	21	0	0	91
S	0	0	1	1	4	14	35	13	0	0	68
SSW	0	0	0	1	3	9	14	9	0	0	36
SW	0	0	0	1	2	10	21	3	0	0	37
WSW	0	0	0	0	9	34	27	3	0	0	73
W	0	0	0	1	7	73	75	3	0	0	159
WNW	0	0	0	1	2	27	26	9	2	0	67
NW	0	0	0	1	4	10	38	8	0	0	61
NNW	0	0	0	1	4	11	32	1	0	0	49
Total	0	0	2	14	65	381	591	101	2	0	1156

Number of Calms: 0

Number of Valid Hours: 1156

Total Hours for the Period: 1156

Annual Radioactive Effluent Release Report

Stability Class B

Period of Record: 01/01/2018 - 12/31/2018

Elevation: Primary Sensors – 150 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	0	0	0	0	3	3	8	0	0	0	14
NNE	0	0	0	0	2	12	3	1	0	0	18
NE	0	0	0	2	3	19	4	0	0	0	28
ENE	0	0	0	1	2	6	2	0	0	0	11
E	0	0	0	0	4	2	1	0	0	0	7
ESE	0	0	0	0	2	8	12	2	0	0	24
SE	0	0	0	0	2	11	13	4	0	0	30
SSE	0	0	0	0	5	16	15	4	1	0	41
S	0	0	0	0	5	13	10	6	0	0	34
SSW	0	0	0	0	2	11	14	5	0	0	32
SW	0	0	0	1	4	11	10	1	0	0	27
WSW	0	0	0	1	5	22	5	1	0	0	34
W	0	0	0	2	4	36	9	0	0	0	51
WNW	0	0	0	0	1	15	7	1	0	0	24
NW	0	0	0	1	5	4	10	0	0	0	20
NNW	0	0	0	1	1	7	10	4	0	0	23
Total	0	0	0	9	50	196	133	29	1	0	418

Number of Calms: 0

Number of Valid Hours: 418

Total Hours for the Period: 418

Annual Radioactive Effluent Release Report

Stability Class C

Period of Record: 01/01/2018 - 12/31/2018

Elevation: Primary Sensors – 150 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	0	0	1	6	3	13	21	1	0	0	45
NNE	0	0	0	2	4	19	18	1	0	0	44
NE	0	0	0	2	7	8	6	1	0	0	24
ENE	0	0	1	3	11	6	4	2	0	0	27
E	0	0	0	3	4	5	4	0	0	0	16
ESE	0	0	1	2	2	18	14	8	0	0	45
SE	0	0	1	3	8	21	22	6	0	0	61
SSE	0	0	0	2	2	15	23	10	1	0	53
S	0	0	0	1	7	20	15	3	1	0	47
SSW	0	0	1	5	10	11	19	3	0	0	49
SW	0	0	0	5	5	15	13	3	0	0	41
WSW	0	0	0	4	10	14	15	2	0	0	45
W	0	0	0	2	17	22	13	0	0	0	54
WNW	0	0	0	4	10	16	9	1	0	0	40
NW	0	0	0	3	4	6	23	2	0	0	38
NNW	0	0	1	3	4	17	14	0	0	0	39
Total	0	0	6	50	108	226	233	43	2	0	668

Number of Calms: 0

Number of Valid Hours: 668

Total Hours for the Period: 668

Annual Radioactive Effluent Release Report

Stability Class D

Period of Record: 01/01/2018 - 12/31/2018

Elevation: Primary Sensors – 150 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	0	0	4	6	16	48	117	9	0	0	200
NNE	0	1	1	9	20	63	92	4	0	0	190
NE	0	1	5	12	31	51	64	3	1	0	168
ENE	1	1	2	6	19	37	36	4	0	0	106
E	0	4	2	12	12	10	40	5	0	0	85
ESE	0	1	1	3	11	40	92	35	3	0	186
SE	0	0	2	8	9	35	50	16	9	0	129
SSE	0	1	0	7	7	19	50	22	0	0	106
S	0	1	5	6	15	30	41	11	1	0	110
SSW	1	0	2	6	7	30	41	3	0	0	90
SW	0	2	1	11	9	14	20	6	0	0	63
WSW	0	0	1	7	16	15	23	6	1	0	69
W	0	0	0	13	13	30	11	2	0	0	69
WNW	0	0	1	6	14	22	30	7	0	0	80
NW	0	1	2	6	16	19	49	9	1	0	103
NNW	0	0	1	5	5	42	76	16	0	0	145
Total	2	13	30	123	220	505	832	158	16	0	1899

Number of Calms: 0

Number of Valid Hours: 1899

Total Hours for the Period: 1899

Annual Radioactive Effluent Release Report

Stability Class E

Period of Record: 01/01/2018 - 12/31/2018

Elevation: Primary Sensors – 150 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	0	1	4	4	8	33	51	6	0	0	107
NNE	0	2	0	8	12	69	72	3	0	0	166
NE	0	2	1	5	22	51	96	2	0	0	179
ENE	0	0	1	10	33	57	52	18	0	0	171
E	2	0	2	10	22	35	57	6	1	0	135
ESE	0	1	3	10	26	89	238	54	9	0	430
SE	0	2	1	8	28	79	118	12	1	0	249
SSE	0	2	0	6	15	66	93	5	0	0	187
S	0	1	1	6	21	71	84	4	0	0	188
SSW	1	1	3	12	18	81	74	2	0	0	192
SW	0	0	1	4	11	61	18	0	0	0	95
WSW	0	1	1	6	7	45	24	0	0	0	84
W	0	2	2	5	11	24	8	0	0	0	52
WNW	0	0	4	2	7	19	20	5	0	0	57
NW	0	3	1	5	7	9	21	7	1	0	54
NNW	0	1	1	10	6	24	23	1	0	0	66
Total	3	19	26	111	254	813	1049	125	12	0	2412

Number of Calms: 0

Number of Valid Hours: 2412

Total Hours for the Period: 2412

Annual Radioactive Effluent Release Report

Stability Class F

Period of Record: 01/01/2018 - 12/31/2018

Elevation: Primary Sensors – 150 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	0	1	1	6	4	16	6	0	0	0	34
NNE	0	0	2	3	8	29	11	0	0	0	53
NE	0	1	1	3	9	23	25	0	0	0	62
ENE	0	1	2	8	12	12	18	1	0	0	54
E	1	0	4	11	15	17	12	0	0	0	60
ESE	0	1	1	6	12	30	81	7	0	0	138
SE	0	0	3	7	14	34	32	1	0	0	91
SSE	1	0	1	14	20	25	12	0	0	0	73
S	0	2	1	10	12	30	13	0	0	0	68
SSW	0	1	0	4	8	22	5	0	0	0	40
SW	0	2	5	13	11	15	6	0	0	0	52
WSW	0	0	1	4	16	14	4	0	0	0	39
W	1	0	1	3	5	16	3	0	0	0	29
WNW	0	0	2	4	3	12	6	0	0	0	27
NW	0	0	3	2	8	19	8	0	0	0	40
NNW	0	0	0	6	3	15	10	0	0	0	34
Total	3	9	28	104	160	329	252	9	0	0	894

Number of Calms: 0

Number of Valid Hours: 894

Total Hours for the Period: 894

Annual Radioactive Effluent Release Report

Stability Class G

Period of Record: 01/01/2018 - 12/31/2018

Elevation: Primary Sensors – 150 Foot

Wind Direction	Wind Speed (meters/second)										Total
	0.22-0.50	0.51-0.75	0.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	>10.0	
N	0	0	1	6	8	29	16	0	0	0	60
NNE	1	1	6	5	5	30	4	0	0	0	52
NE	0	1	1	6	13	16	14	0	0	0	51
ENE	0	1	5	10	9	12	18	0	0	0	55
E	1	0	3	11	5	29	4	0	0	0	53
ESE	2	3	2	10	6	27	42	0	0	0	92
SE	1	0	2	8	8	28	27	0	0	0	74
SSE	0	2	3	8	16	39	7	0	0	0	75
S	1	0	2	10	26	36	3	0	0	0	78
SSW	0	0	4	10	16	26	6	0	0	0	62
SW	0	1	1	9	10	38	1	0	0	0	60
WSW	0	0	5	9	12	23	2	0	0	0	51
W	0	0	3	15	7	28	1	0	0	0	54
WNW	0	0	2	5	16	37	8	0	0	0	68
NW	1	4	1	4	16	33	11	0	0	0	70
NNW	0	0	0	1	7	25	13	0	0	0	46
Total	7	13	41	127	180	456	177	0	0	0	1001

Number of Calms: 1

Number of Valid Hours: 1002

Total Hours for the Period: 1002

Annual Radioactive Effluent Release Report

7.2 Stability Class

Table 15, Classification of Atmospheric Stability

Stability Condition	Pasquill Categories	Hours (Percentage)
Extremely Unstable	A	13.69
Moderately Stable	B	4.95
Slightly Unstable	C	7.90
Neutral	D	22.49
Slightly Stable	E	28.56
Moderately Stable	F	10.58
Extremely Stable	G	11.83

Table 16, Atmospheric Dispersion and Deposition Rates for the Maximum Individual Dose Calculations

Analysis	Location (meters)	Ground Level Releases	Mixed Mode Releases
Gamma air dose (3) and Beta Air Dose	994 m WNW (Containment)	CHI/Q - 421.0	CHI/Q - 33.1
Maximum Receptor (4)	994 m WNW	CHI/Q - 421.0	CHI/Q - 33.1
Resident		D/Q - 50.3	D/Q - 18.0
Garden			
Meat animal			
Immersion			
Milk animal (5)	7,000 m WNW	CHI/Q - 3.58 D/Q - 0.38	CHI/Q - .870 D/Q - .223
Other on-site Receptors	115 m ENE	CHI/Q - 5977.0 D/Q - 529.7	CHI/Q - 407.5 D/Q - 46.9
	275 m N	CHI/Q - 1644.0 D/Q - 345.6	CHI/Q - 169.1 D/Q - 68.4
	2500 SW	CHI/Q - 34.45 D/Q - 3.35	CHI/Q - 4.65 D/Q - 1.40

Notes:(1) All CHI/Q = 10^{-7} sec/m³(2) All D/Q = 10^{-9} m⁻²

(3) Maximum offsite location (property boundary) with highest CHI/Q (unoccupied).

(4) Maximum hypothetical occupied offsite location with highest CHI/Q and D/Q.

(5) No milk animal within 5 miles radius, hypothetical location in worst sector.

(6) Other onsite receptors

(7) Revisions to X/Q and D/Q can be performed using NUREG/CR-2919, XOQDOQ, Computer Program for the Meteorological Evaluation of Routine Effluent Releases at Nuclear Power Stations

Annual Radioactive Effluent Release Report

Attachment 1

Page 1 of 29

Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-205	02/01/18	pCi/L	< 1.3E+00	< 1.5E+00	< 3.2E+00	< 1.4E+00	< 2.7E+00	< 1.6E+00	< 2.7E+00	< 8.8E+00	< 1.4E+00	< 1.4E+00	< 1.4E+01	< 4.6E+00
MW-104	02/06/18	pCi/L	< 2.2E+00	< 2.6E+00	< 6.0E+00	< 2.1E+00	< 4.7E+00	< 2.5E+00	< 4.5E+00	< 1.3E+01	< 2.6E+00	< 2.4E+00	< 2.2E+01	< 7.4E+00
MW-104	02/06/18	pCi/L	< 2.0E+00	< 2.3E+00	< 5.0E+00	< 2.3E+00	< 3.8E+00	< 2.6E+00	< 3.9E+00	< 1.1E+01	< 2.3E+00	< 2.0E+00	< 2.1E+01	< 5.8E+00
MW-106	02/06/18	pCi/L	< 2.3E+00	< 2.7E+00	< 6.7E+00	< 2.6E+00	< 5.6E+00	< 2.8E+00	< 5.3E+00	< 1.5E+01	< 3.0E+00	< 3.0E+00	< 2.7E+01	< 8.5E+00
MW-110	02/06/18	pCi/L	< 2.7E+00	< 2.9E+00	< 7.7E+00	< 3.0E+00	< 6.4E+00	< 3.0E+00	< 4.4E+00	< 1.1E+01	< 2.8E+00	< 3.0E+00	< 2.2E+01	< 9.2E+00
MW-112	02/06/18	pCi/L	< 3.0E+00	< 3.3E+00	< 7.9E+00	< 2.9E+00	< 6.2E+00	< 3.1E+00	< 6.0E+00	< 1.2E+01	< 3.2E+00	< 3.0E+00	< 2.4E+01	< 8.8E+00
MW-114	02/06/18	pCi/L	< 3.1E+00	< 3.2E+00	< 7.1E+00	< 2.9E+00	< 6.1E+00	< 3.6E+00	< 6.3E+00	< 1.4E+01	< 3.2E+00	< 3.2E+00	< 2.7E+01	< 7.5E+00
MW-116	02/06/18	pCi/L	< 2.5E+00	< 3.8E+00	< 7.2E+00	< 3.1E+00	< 6.2E+00	< 3.7E+00	< 6.0E+00	< 1.3E+01	< 3.1E+00	< 3.6E+00	< 2.5E+01	< 9.2E+00
MW-116	02/06/18	pCi/L	< 3.7E+00	< 4.2E+00	< 8.8E+00	< 4.4E+00	< 7.3E+00	< 4.5E+00	< 7.6E+00	< 1.5E+01	< 3.9E+00	< 3.8E+00	< 3.0E+01	< 1.1E+01
MW-118	02/06/18	pCi/L	< 3.4E+00	< 3.7E+00	< 7.8E+00	< 2.9E+00	< 5.8E+00	< 3.7E+00	< 6.0E+00	< 1.3E+01	< 3.2E+00	< 3.4E+00	< 2.6E+01	< 7.0E+00
MW-124	02/06/18	pCi/L	< 2.8E+00	< 3.3E+00	< 6.4E+00	< 3.3E+00	< 5.9E+00	< 3.3E+00	< 4.7E+00	< 1.1E+01	< 3.3E+00	< 3.1E+00	< 2.5E+01	< 7.4E+00
MW-137	02/06/18	pCi/L	< 2.8E+00	< 3.3E+00	< 6.6E+00	< 2.6E+00	< 5.1E+00	< 3.2E+00	< 5.6E+00	< 1.2E+01	< 2.7E+00	< 2.6E+00	< 2.5E+01	< 7.5E+00
MW-137	02/06/18	pCi/L	< 3.6E+00	< 3.4E+00	< 8.3E+00	< 3.5E+00	< 6.2E+00	< 4.1E+00	< 6.2E+00	< 1.4E+01	< 3.7E+00	< 3.4E+00	< 2.8E+01	< 8.5E+00
MW-139	02/06/18	pCi/L	< 3.4E+00	< 3.7E+00	< 9.3E+00	< 4.3E+00	< 6.5E+00	< 3.7E+00	< 6.1E+00	< 1.4E+01	< 4.1E+00	< 3.7E+00	< 2.8E+01	< 1.3E+01
MW-141	02/06/18	pCi/L	< 2.8E+00	< 3.0E+00	< 5.8E+00	< 2.2E+00	< 5.0E+00	< 3.2E+00	< 4.5E+00	< 1.2E+01	< 3.0E+00	< 2.7E+00	< 2.4E+01	< 7.1E+00
MW-153	02/06/18	pCi/L	< 3.4E+00	< 4.5E+00	< 9.3E+00	< 3.6E+00	< 5.7E+00	< 4.4E+00	< 7.6E+00	< 1.5E+01	< 4.3E+00	< 4.0E+00	< 3.0E+01	< 8.1E+00
MW-161	02/06/18	pCi/L	< 2.5E+00	< 2.9E+00	< 6.5E+00	< 3.1E+00	< 4.8E+00	< 3.3E+00	< 5.9E+00	< 1.2E+01	< 3.0E+00	< 2.9E+00	< 2.4E+01	< 7.2E+00

Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-178	02/06/18	pCi/L	< 3.6E+00	< 3.7E+00	< 9.4E+00	< 3.4E+00	< 7.6E+00	< 3.4E+00	< 7.1E+00	< 1.5E+01	< 3.7E+00	< 3.9E+00	< 3.0E+01	< 9.6E+00
MW-179	02/06/18	pCi/L	< 2.6E+00	< 3.0E+00	< 6.7E+00	< 2.7E+00	< 6.0E+00	< 3.1E+00	< 5.3E+00	< 1.1E+01	< 2.9E+00	< 2.7E+00	< 2.3E+01	< 6.4E+00
MW-186	02/06/18	pCi/L	< 2.1E+00	< 2.3E+00	< 5.2E+00	< 2.4E+00	< 4.2E+00	< 2.4E+00	< 4.0E+00	< 1.2E+01	< 2.2E+00	< 2.1E+00	< 2.1E+01	< 7.2E+00
MW-187	02/06/18	pCi/L	< 2.3E+00	< 2.8E+00	< 6.0E+00	< 2.4E+00	< 5.1E+00	< 3.1E+00	< 4.8E+00	< 1.4E+01	< 2.7E+00	< 2.5E+00	< 2.6E+01	< 7.5E+00
MW-05	02/07/18	pCi/L	< 2.6E+00	< 3.0E+00	< 7.4E+00	< 3.1E+00	< 5.8E+00	< 3.0E+00	< 5.2E+00	< 1.4E+01	< 2.8E+00	< 2.6E+00	< 2.7E+01	< 9.4E+00
MW-06	02/07/18	pCi/L	< 3.1E+00	< 3.2E+00	< 7.2E+00	< 2.6E+00	< 6.4E+00	< 3.6E+00	< 5.5E+00	< 1.5E+01	< 2.8E+00	< 3.1E+00	< 2.8E+01	< 9.7E+00
MW-06	02/07/18	pCi/L	< 3.1E+00	< 3.3E+00	< 7.2E+00	< 3.5E+00	< 6.3E+00	< 3.4E+00	< 5.8E+00	< 1.5E+01	< 3.3E+00	< 3.2E+00	< 2.8E+01	< 8.2E+00
MW-08	02/07/18	pCi/L	< 2.3E+00	< 2.5E+00	< 5.7E+00	< 2.1E+00	< 4.2E+00	< 2.6E+00	< 4.4E+00	< 1.3E+01	< 2.5E+00	< 2.2E+00	< 2.1E+01	< 6.8E+00
MW-103	02/07/18	pCi/L	< 3.9E+00	< 4.6E+00	< 8.9E+00	< 3.7E+00	< 7.0E+00	< 4.0E+00	< 8.3E+00	< 1.4E+01	< 4.3E+00	< 4.2E+00	< 3.2E+01	< 8.3E+00
MW-107	02/07/18	pCi/L	< 2.4E+00	< 2.6E+00	< 5.5E+00	< 2.1E+00	< 4.2E+00	< 2.5E+00	< 4.2E+00	< 1.2E+01	< 2.4E+00	< 2.4E+00	< 2.2E+01	< 7.3E+00
MW-108	02/07/18	pCi/L	< 2.1E+00	< 2.2E+00	< 6.0E+00	< 2.1E+00	< 4.3E+00	< 2.8E+00	< 4.3E+00	< 1.4E+01	< 2.4E+00	< 2.1E+00	< 2.3E+01	< 7.4E+00
MW-111	02/07/18	pCi/L	< 2.4E+00	< 2.6E+00	< 6.1E+00	< 2.7E+00	< 4.7E+00	< 2.6E+00	< 4.8E+00	< 1.2E+01	< 2.4E+00	< 2.3E+00	< 2.1E+01	< 6.7E+00
MW-120	02/07/18	pCi/L	< 2.2E+00	< 2.3E+00	< 6.3E+00	< 2.6E+00	< 4.7E+00	< 2.6E+00	< 4.2E+00	< 1.3E+01	< 2.6E+00	< 2.4E+00	< 2.3E+01	< 8.9E+00
MW-120	02/07/18	pCi/L	< 2.5E+00	< 2.8E+00	< 6.4E+00	< 2.3E+00	< 5.3E+00	< 3.2E+00	< 5.6E+00	< 1.5E+01	< 2.8E+00	< 2.9E+00	< 2.7E+01	< 8.2E+00
MW-122R	02/07/18	pCi/L	< 2.2E+00	< 2.4E+00	< 5.0E+00	< 2.7E+00	< 4.6E+00	< 2.5E+00	< 4.6E+00	< 1.2E+01	< 2.4E+00	< 2.3E+00	< 2.2E+01	< 7.2E+00
MW-125	02/07/18	pCi/L	< 4.1E+00	< 4.6E+00	< 9.6E+00	< 4.2E+00	< 7.1E+00	< 4.6E+00	< 8.2E+00	< 1.5E+01	< 5.4E+00	< 4.5E+00	< 3.5E+01	< 8.9E+00
MW-14	02/07/18	pCi/L	< 1.9E+00	< 2.1E+00	< 5.2E+00	< 2.3E+00	< 4.1E+00	< 2.4E+00	< 4.1E+00	< 1.2E+01	< 2.2E+00	< 2.1E+00	< 1.9E+01	< 7.8E+00

Annual Radioactive Effluent Release Report

Attachment 1

Page 3 of 29

Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-151	02/07/18	pCi/L	< 2.3E+00	< 2.5E+00	< 5.2E+00	< 2.2E+00	< 4.6E+00	< 2.7E+00	< 4.1E+00	< 1.4E+01	< 2.4E+00	< 2.0E+00	< 2.5E+01	< 7.8E+00
MW-155	02/07/18	pCi/L	< 4.2E+00	< 4.0E+00	< 9.5E+00	< 4.8E+00	< 7.1E+00	< 4.7E+00	< 8.4E+00	< 1.4E+01	< 4.3E+00	< 4.6E+00	< 3.2E+01	< 8.2E+00
MW-155	02/07/18	pCi/L	< 3.3E+00	< 4.0E+00	< 8.4E+00	< 3.9E+00	< 6.9E+00	< 3.6E+00	< 6.5E+00	< 1.3E+01	< 3.5E+00	< 3.8E+00	< 2.5E+01	< 8.0E+00
MW-156	02/07/18	pCi/L	< 4.3E+00	< 3.9E+00	< 1.0E+01	< 3.8E+00	< 8.5E+00	< 4.6E+00	< 7.2E+00	< 1.5E+01	< 4.4E+00	< 4.5E+00	< 2.5E+01	< 9.1E+00
MW-157	02/07/18	pCi/L	< 3.8E+00	< 4.1E+00	< 8.6E+00	< 4.2E+00	< 7.3E+00	< 4.5E+00	< 8.2E+00	< 1.5E+01	< 4.3E+00	< 4.0E+00	< 3.1E+01	< 9.7E+00
MW-165	02/07/18	pCi/L	< 2.6E+00	< 2.8E+00	< 7.4E+00	< 3.1E+00	< 6.9E+00	< 3.2E+00	< 6.0E+00	< 1.3E+01	< 2.7E+00	< 2.8E+00	< 2.5E+01	< 8.9E+00
MW-170	02/07/18	pCi/L	< 2.9E+00	< 3.2E+00	< 7.1E+00	< 3.0E+00	< 5.1E+00	< 3.4E+00	< 5.4E+00	< 1.5E+01	< 3.0E+00	< 2.8E+00	< 2.6E+01	< 1.0E+01
MW-180	02/07/18	pCi/L	< 2.3E+00	< 2.6E+00	< 6.0E+00	< 2.1E+00	< 4.8E+00	< 2.7E+00	< 4.5E+00	< 1.5E+01	< 2.5E+00	< 2.4E+00	< 2.4E+01	< 6.7E+00
MW-207	02/07/18	pCi/L	< 3.5E+00	< 3.9E+00	< 9.7E+00	< 4.4E+00	< 7.4E+00	< 4.4E+00	< 7.5E+00	< 1.4E+01	< 4.5E+00	< 3.2E+00	< 2.4E+01	< 1.0E+01
MW-209	02/07/18	pCi/L	< 2.8E+00	< 2.9E+00	< 6.4E+00	< 2.7E+00	< 6.0E+00	< 3.0E+00	< 5.3E+00	< 1.2E+01	< 3.0E+00	< 3.0E+00	< 2.4E+01	< 6.3E+00
MW-211	02/07/18	pCi/L	< 3.6E+00	< 4.2E+00	< 9.1E+00	< 3.5E+00	< 7.1E+00	< 4.2E+00	< 7.1E+00	< 1.3E+01	< 4.4E+00	< 4.1E+00	< 2.7E+01	< 9.1E+00
MW-213	02/07/18	pCi/L	< 4.1E+00	< 3.3E+00	< 8.2E+00	< 4.8E+00	< 6.8E+00	< 4.3E+00	< 8.0E+00	< 1.5E+01	< 4.4E+00	< 4.1E+00	< 3.2E+01	< 9.6E+00
MW-217	02/07/18	pCi/L	< 3.4E+00	< 3.8E+00	< 8.9E+00	< 3.7E+00	< 7.3E+00	< 4.3E+00	< 7.1E+00	< 1.4E+01	< 4.0E+00	< 4.0E+00	< 2.9E+01	< 7.8E+00
PZ-01	02/07/18	pCi/L	< 3.2E+00	< 4.2E+00	< 9.3E+00	< 3.9E+00	< 7.5E+00	< 4.0E+00	< 7.6E+00	< 1.4E+01	< 3.8E+00	< 3.5E+00	< 2.6E+01	< 7.6E+00
SW-101	02/07/18	pCi/L	< 2.4E+00	< 2.5E+00	< 6.1E+00	< 2.4E+00	< 4.3E+00	< 2.7E+00	< 4.6E+00	< 1.4E+01	< 2.4E+00	< 2.2E+00	< 2.4E+01	< 7.7E+00
MW-100	02/08/18	pCi/L	< 2.8E+00	< 3.3E+00	< 7.4E+00	< 2.8E+00	< 6.5E+00	< 3.6E+00	< 6.0E+00	< 1.3E+01	< 3.3E+00	< 3.1E+00	< 2.7E+01	< 8.8E+00
MW-126	02/08/18	pCi/L	< 2.2E+00	< 2.6E+00	< 6.0E+00	< 2.3E+00	< 5.0E+00	< 2.7E+00	< 4.9E+00	< 1.3E+01	< 2.6E+00	< 2.4E+00	< 2.2E+01	< 7.5E+00

Annual Radioactive Effluent Release Report

Attachment 1

Page 4 of 29

Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-128	02/08/18	pCi/L	< 2.5E+00	< 2.8E+00	< 6.6E+00	< 2.6E+00	< 5.4E+00	< 3.1E+00	< 5.2E+00	< 1.3E+01	< 2.7E+00	< 2.5E+00	< 2.4E+01	< 8.7E+00
MW-128	02/08/18	pCi/L	< 2.2E+00	< 2.5E+00	< 5.9E+00	< 2.5E+00	< 4.9E+00	< 2.7E+00	< 4.7E+00	< 1.3E+01	< 2.7E+00	< 2.5E+00	< 2.4E+01	< 7.1E+00
MW-130	02/08/18	pCi/L	< 2.5E+00	< 2.8E+00	< 6.4E+00	< 3.1E+00	< 5.4E+00	< 3.2E+00	< 5.3E+00	< 1.5E+01	< 2.7E+00	< 3.0E+00	< 2.5E+01	< 8.0E+00
MW-130	02/08/18	pCi/L	< 2.3E+00	< 2.9E+00	< 6.4E+00	< 2.6E+00	< 4.5E+00	< 2.9E+00	< 4.9E+00	< 1.5E+01	< 2.5E+00	< 2.4E+00	< 2.6E+01	< 8.0E+00
MW-131	02/08/18	pCi/L	< 2.4E+00	< 2.8E+00	< 6.2E+00	< 2.4E+00	< 5.3E+00	< 3.0E+00	< 4.6E+00	< 1.3E+01	< 2.7E+00	< 2.5E+00	< 2.4E+01	< 7.7E+00
MW-132	02/08/18	pCi/L	< 2.0E+00	< 2.1E+00	< 4.7E+00	< 1.8E+00	< 3.7E+00	< 2.3E+00	< 3.9E+00	< 1.1E+01	< 2.1E+00	< 2.1E+00	< 1.9E+01	< 6.0E+00
MW-134	02/08/18	pCi/L	< 3.0E+00	< 3.4E+00	< 7.2E+00	< 3.4E+00	< 6.2E+00	< 3.5E+00	< 6.0E+00	< 1.4E+01	< 3.5E+00	< 3.4E+00	< 2.5E+01	< 9.3E+00
MW-142	02/08/18	pCi/L	< 3.0E+00	< 3.1E+00	< 7.0E+00	< 2.5E+00	< 6.0E+00	< 3.0E+00	< 6.0E+00	< 1.2E+01	< 3.1E+00	< 3.1E+00	< 2.5E+01	< 7.7E+00
MW-144	02/08/18	pCi/L	< 3.1E+00	< 3.5E+00	< 7.9E+00	< 3.5E+00	< 6.6E+00	< 3.3E+00	< 6.1E+00	< 9.6E+00	< 3.5E+00	< 3.0E+00	< 2.3E+01	< 7.8E+00
MW-146	02/08/18	pCi/L	< 2.9E+00	< 2.8E+00	< 6.0E+00	< 2.9E+00	< 6.4E+00	< 3.4E+00	< 5.7E+00	< 9.9E+00	< 3.1E+00	< 3.1E+00	< 2.1E+01	< 7.3E+00
MW-147	02/08/18	pCi/L	< 4.4E+00	< 5.1E+00	< 1.0E+01	< 5.5E+00	< 8.5E+00	< 5.2E+00	< 7.6E+00	< 1.5E+01	< 4.7E+00	< 4.2E+00	< 3.1E+01	< 1.0E+01
MW-148	02/08/18	pCi/L	< 2.9E+00	< 2.9E+00	< 7.4E+00	< 3.2E+00	< 5.8E+00	< 3.3E+00	< 5.2E+00	< 1.4E+01	< 2.8E+00	< 3.2E+00	< 2.5E+01	< 8.6E+00
MW-158	02/08/18	pCi/L	< 2.9E+00	< 2.9E+00	< 6.3E+00	< 2.5E+00	< 6.0E+00	< 3.4E+00	< 5.4E+00	< 1.0E+01	< 3.2E+00	< 3.3E+00	< 2.1E+01	< 5.8E+00
MW-159	02/08/18	pCi/L	< 4.0E+00	< 5.1E+00	< 1.0E+01	< 5.2E+00	< 8.0E+00	< 5.1E+00	< 9.3E+00	< 1.5E+01	< 5.0E+00	< 4.7E+00	< 3.4E+01	< 1.2E+01
MW-162	02/08/18	pCi/L	< 2.7E+00	< 3.6E+00	< 7.3E+00	< 3.0E+00	< 6.2E+00	< 3.3E+00	< 6.4E+00	< 1.5E+01	< 3.3E+00	< 3.0E+00	< 2.9E+01	< 1.0E+01
MW-164	02/08/18	pCi/L	< 2.4E+00	< 2.5E+00	< 6.6E+00	< 3.1E+00	< 5.4E+00	< 2.7E+00	< 4.5E+00	< 1.1E+01	< 2.9E+00	< 2.5E+00	< 2.2E+01	< 7.6E+00
MW-167	02/08/18	pCi/L	< 2.6E+00	< 2.8E+00	< 6.4E+00	< 2.6E+00	< 5.3E+00	< 2.9E+00	< 5.1E+00	< 1.2E+01	< 2.9E+00	< 2.6E+00	< 2.4E+01	< 8.2E+00

Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-169	02/08/18	pCi/L	< 3.6E+00	< 5.2E+00	< 1.2E+01	< 5.3E+00	< 8.6E+00	< 5.0E+00	< 6.9E+00	< 1.5E+01	< 5.2E+00	< 4.9E+00	< 3.0E+01	< 1.1E+01
MW-172	02/08/18	pCi/L	< 2.5E+00	< 2.9E+00	< 6.3E+00	< 2.7E+00	< 4.7E+00	< 2.9E+00	< 5.0E+00	< 1.2E+01	< 2.9E+00	< 2.7E+00	< 2.3E+01	< 6.8E+00
MW-174	02/08/18	pCi/L	< 3.0E+00	< 3.0E+00	< 6.9E+00	< 2.6E+00	< 5.9E+00	< 3.4E+00	< 5.2E+00	< 1.4E+01	< 3.0E+00	< 3.0E+00	< 2.4E+01	< 8.2E+00
MW-182	02/08/18	pCi/L	< 2.7E+00	< 3.0E+00	< 7.6E+00	< 3.0E+00	< 5.6E+00	< 3.0E+00	< 5.7E+00	< 1.5E+01	< 2.8E+00	< 2.9E+00	< 2.6E+01	< 9.2E+00
MW-185	02/08/18	pCi/L	< 3.4E+00	< 3.4E+00	< 8.3E+00	< 4.1E+00	< 6.6E+00	< 4.1E+00	< 6.0E+00	< 1.4E+01	< 3.0E+00	< 3.4E+00	< 2.8E+01	< 9.4E+00
MW-188	02/08/18	pCi/L	< 2.9E+00	< 3.2E+00	< 5.9E+00	< 2.9E+00	< 6.1E+00	< 3.4E+00	< 5.7E+00	< 1.4E+01	< 3.3E+00	< 3.2E+00	< 2.6E+01	< 7.7E+00
MW-205	02/08/18	pCi/L	< 3.3E+00	< 3.6E+00	< 7.3E+00	< 3.5E+00	< 6.9E+00	< 3.9E+00	< 6.1E+00	< 1.1E+01	< 4.2E+00	< 4.0E+00	< 2.5E+01	< 7.7E+00
MW-215	02/08/18	pCi/L	< 3.9E+00	< 4.0E+00	< 8.1E+00	< 3.6E+00	< 8.0E+00	< 4.2E+00	< 7.3E+00	< 1.4E+01	< 3.8E+00	< 4.0E+00	< 2.8E+01	< 7.3E+00
MW-219	02/08/18	pCi/L	< 3.1E+00	< 3.6E+00	< 7.5E+00	< 3.3E+00	< 6.8E+00	< 3.6E+00	< 6.5E+00	< 1.2E+01	< 3.4E+00	< 3.4E+00	< 2.6E+01	< 7.8E+00
PZ-03	02/08/18	pCi/L	< 2.8E+00	< 3.4E+00	< 7.1E+00	< 3.2E+00	< 6.2E+00	< 3.5E+00	< 6.4E+00	< 1.5E+01	< 3.2E+00	< 3.0E+00	< 2.9E+01	< 8.0E+00
SW-102	02/08/18	pCi/L	< 2.4E+00	< 2.8E+00	< 5.9E+00	< 2.4E+00	< 5.4E+00	< 3.0E+00	< 5.1E+00	< 1.4E+01	< 2.7E+00	< 2.7E+00	< 2.5E+01	< 6.9E+00
SW-103	02/08/18	pCi/L	< 2.2E+00	< 2.6E+00	< 6.9E+00	< 2.6E+00	< 5.0E+00	< 2.9E+00	< 4.8E+00	< 1.4E+01	< 2.6E+00	< 2.6E+00	< 2.4E+01	< 9.0E+00
SW-104	02/08/18	pCi/L	< 2.4E+00	< 2.3E+00	< 5.8E+00	< 2.3E+00	< 4.4E+00	< 2.7E+00	< 4.6E+00	< 1.3E+01	< 2.7E+00	< 2.4E+00	< 2.2E+01	< 7.3E+00
MW-201	02/20/18	pCi/L	< 6.3E+00	< 6.7E+00	< 1.5E+01	< 7.1E+00	< 1.3E+01	< 7.6E+00	< 1.2E+01	< 1.2E+01	< 7.7E+00	< 7.6E+00	< 2.9E+01	< 7.7E+00
MW-203	02/20/18	pCi/L	< 6.4E+00	< 6.7E+00	< 1.4E+01	< 5.9E+00	< 1.7E+01	< 7.3E+00	< 1.1E+01	< 1.2E+01	< 8.1E+00	< 7.2E+00	< 3.4E+01	< 9.6E+00
MW-221	02/21/18	pCi/L	< 6.9E+00	< 7.0E+00	< 8.2E+00	< 7.9E+00	< 1.3E+01	< 7.8E+00	< 1.1E+01	< 1.0E+01	< 7.1E+00	< 6.9E+00	< 3.3E+01	< 9.5E+00
MW-223	02/22/18	pCi/L	< 3.8E+00	< 3.2E+00	< 8.1E+00	< 4.9E+00	< 7.7E+00	< 4.9E+00	< 6.1E+00	< 1.1E+01	< 3.7E+00	< 3.3E+00	< 2.2E+01	< 7.9E+00

Annual Radioactive Effluent Release Report

Attachment 1

Page 6 of 29

Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-225	04/11/18	pCi/L	< 4.5E+00	< 4.7E+00	< 8.4E+00	< 2.5E+00	< 9.1E+00	< 4.7E+00	< 8.9E+00	< 1.3E+01	< 4.7E+00	< 4.7E+00	< 2.6E+01	< 9.4E+00
MW-227	04/11/18	pCi/L	< 4.5E+00	< 5.6E+00	< 1.1E+01	< 5.9E+00	< 1.1E+01	< 5.5E+00	< 9.4E+00	< 1.4E+01	< 5.3E+00	< 4.9E+00	< 3.1E+01	< 1.1E+01
MW-229	04/11/18	pCi/L	< 4.8E+00	< 5.0E+00	< 1.1E+01	< 5.1E+00	< 9.0E+00	< 5.5E+00	< 7.4E+00	< 1.1E+01	< 4.3E+00	< 3.8E+00	< 3.0E+01	< 1.1E+01
MW-233	04/11/18	pCi/L	< 5.1E+00	< 4.0E+00	< 1.1E+01	< 5.7E+00	< 8.4E+00	< 5.6E+00	< 8.4E+00	< 1.4E+01	< 4.4E+00	< 5.6E+00	< 2.9E+01	< 1.0E+01
MW-235	04/11/18	pCi/L	< 5.2E+00	< 5.6E+00	< 1.1E+01	< 4.7E+00	< 1.1E+01	< 6.3E+00	< 8.8E+00	< 1.4E+01	< 6.0E+00	< 5.2E+00	< 3.4E+01	< 1.3E+01
MW-231	05/01/18	pCi/L	< 6.2E+00	< 6.1E+00	< 1.2E+01	< 7.1E+00	< 1.3E+01	< 5.9E+00	< 1.2E+01	< 1.1E+01	< 6.6E+00	< 6.6E+00	< 3.4E+01	< 1.1E+01
MW-155	05/10/18	pCi/L	< 1.2E+00	< 1.3E+00	< 3.0E+00	< 1.1E+00	< 2.2E+00	< 1.4E+00	< 2.4E+00	< 8.2E+00	< 1.3E+00	< 1.2E+00	< 1.3E+01	< 4.2E+00
MW-155	05/10/18	pCi/L	< 1.3E+00	< 1.5E+00	< 3.6E+00	< 1.5E+00	< 2.9E+00	< 1.6E+00	< 2.8E+00	< 8.1E+00	< 1.5E+00	< 1.3E+00	< 1.4E+01	< 5.4E+00
MW-169	05/10/18	pCi/L	< 1.5E+00	< 1.7E+00	< 3.9E+00	< 1.3E+00	< 3.0E+00	< 1.8E+00	< 3.1E+00	< 9.8E+00	< 1.6E+00	< 1.5E+00	< 1.8E+01	< 5.5E+00
MW-211	05/10/18	pCi/L	< 1.4E+00	< 1.5E+00	< 3.6E+00	< 1.4E+00	< 2.9E+00	< 1.6E+00	< 2.7E+00	< 8.8E+00	< 1.5E+00	< 1.4E+00	< 1.5E+01	< 4.6E+00
MW-215	05/10/18	pCi/L	< 1.6E+00	< 1.8E+00	< 4.3E+00	< 1.7E+00	< 3.2E+00	< 2.0E+00	< 3.3E+00	< 1.1E+01	< 1.8E+00	< 1.7E+00	< 1.7E+01	< 6.1E+00
MW-229	05/10/18	pCi/L	< 1.3E+00	< 1.5E+00	< 3.8E+00	< 1.6E+00	< 2.8E+00	< 1.7E+00	< 2.7E+00	< 9.2E+00	< 1.5E+00	< 1.4E+00	< 1.5E+01	< 5.2E+00
MW-142	05/15/18	pCi/L	< 3.2E+00	< 3.5E+00	< 8.0E+00	< 3.2E+00	< 6.4E+00	< 3.7E+00	< 6.3E+00	< 1.3E+01	< 3.4E+00	< 3.5E+00	< 2.6E+01	< 7.8E+00
MW-144	05/15/18	pCi/L	< 1.8E+00	< 2.0E+00	< 4.8E+00	< 2.0E+00	< 3.8E+00	< 2.1E+00	< 3.7E+00	< 1.1E+01	< 1.9E+00	< 1.8E+00	< 2.0E+01	< 7.5E+00
MW-146	05/15/18	pCi/L	< 1.8E+00	< 2.1E+00	< 5.1E+00	< 2.1E+00	< 3.9E+00	< 2.2E+00	< 3.9E+00	< 1.2E+01	< 2.0E+00	< 1.9E+00	< 2.0E+01	< 7.3E+00
MW-147	05/15/18	pCi/L	< 1.6E+00	< 1.9E+00	< 4.2E+00	< 1.6E+00	< 3.4E+00	< 1.9E+00	< 3.2E+00	< 1.0E+01	< 1.9E+00	< 1.7E+00	< 1.8E+01	< 6.1E+00
MW-148	05/15/18	pCi/L	< 3.5E+00	< 3.3E+00	< 8.4E+00	< 3.6E+00	< 6.9E+00	< 3.5E+00	< 6.6E+00	< 1.5E+01	< 3.7E+00	< 3.7E+00	< 2.9E+01	< 9.0E+00

Annual Radioactive Effluent Release Report

Attachment 1

Page 7 of 29

Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-151	05/15/18	pCi/L	< 3.0E+00	< 3.4E+00	< 8.0E+00	< 3.4E+00	< 5.9E+00	< 3.3E+00	< 5.9E+00	< 1.3E+01	< 3.0E+00	< 3.0E+00	< 2.4E+01	< 8.9E+00
MW-158	05/15/18	pCi/L	< 2.0E+00	< 2.2E+00	< 5.1E+00	< 2.0E+00	< 4.2E+00	< 2.5E+00	< 4.0E+00	< 1.4E+01	< 2.2E+00	< 2.1E+00	< 2.4E+01	< 7.7E+00
MW-159	05/15/18	pCi/L	< 2.0E+00	< 2.3E+00	< 5.2E+00	< 2.2E+00	< 4.4E+00	< 2.3E+00	< 4.3E+00	< 1.3E+01	< 2.2E+00	< 2.1E+00	< 2.2E+01	< 7.6E+00
MW-159	05/15/18	pCi/L	< 1.7E+00	< 1.8E+00	< 4.5E+00	< 1.6E+00	< 3.6E+00	< 1.9E+00	< 3.2E+00	< 1.2E+01	< 1.9E+00	< 1.7E+00	< 2.1E+01	< 6.1E+00
MW-162	05/15/18	pCi/L	< 4.2E+00	< 4.7E+00	< 9.7E+00	< 4.5E+00	< 9.2E+00	< 4.4E+00	< 8.6E+00	< 1.4E+01	< 4.7E+00	< 4.0E+00	< 3.0E+01	< 1.2E+01
MW-164	05/15/18	pCi/L	< 3.8E+00	< 4.5E+00	< 1.1E+01	< 4.7E+00	< 7.2E+00	< 4.4E+00	< 7.3E+00	< 1.4E+01	< 4.3E+00	< 4.0E+00	< 3.0E+01	< 1.1E+01
MW-165	05/15/18	pCi/L	< 3.4E+00	< 3.5E+00	< 8.8E+00	< 4.1E+00	< 7.7E+00	< 3.8E+00	< 7.7E+00	< 1.3E+01	< 4.1E+00	< 4.2E+00	< 2.9E+01	< 9.6E+00
MW-178	05/15/18	pCi/L	< 2.1E+00	< 2.8E+00	< 6.6E+00	< 2.7E+00	< 4.9E+00	< 2.7E+00	< 4.9E+00	< 1.3E+01	< 2.6E+00	< 2.6E+00	< 2.5E+01	< 8.7E+00
MW-179	05/15/18	pCi/L	< 1.5E+00	< 1.7E+00	< 3.9E+00	< 1.6E+00	< 3.2E+00	< 1.9E+00	< 3.3E+00	< 7.8E+00	< 1.7E+00	< 1.7E+00	< 1.5E+01	< 5.0E+00
MW-186	05/15/18	pCi/L	< 3.8E+00	< 4.1E+00	< 1.0E+01	< 3.9E+00	< 9.2E+00	< 3.8E+00	< 8.6E+00	< 1.4E+01	< 4.4E+00	< 4.0E+00	< 2.8E+01	< 1.2E+01
MW-187	05/15/18	pCi/L	< 3.6E+00	< 4.5E+00	< 8.9E+00	< 4.1E+00	< 8.3E+00	< 5.0E+00	< 6.7E+00	< 1.4E+01	< 4.6E+00	< 4.5E+00	< 3.4E+01	< 9.0E+00
MW-201	05/15/18	pCi/L	< 2.3E+00	< 2.8E+00	< 6.4E+00	< 2.6E+00	< 4.9E+00	< 3.0E+00	< 4.8E+00	< 1.4E+01	< 2.3E+00	< 2.3E+00	< 2.4E+01	< 8.9E+00
MW-203	05/15/18	pCi/L	< 1.4E+00	< 1.5E+00	< 3.7E+00	< 1.5E+00	< 2.7E+00	< 1.5E+00	< 2.7E+00	< 5.9E+00	< 1.5E+00	< 1.4E+00	< 1.3E+01	< 4.3E+00
MW-110	05/16/18	pCi/L	< 2.7E+00	< 3.2E+00	< 7.2E+00	< 2.8E+00	< 5.9E+00	< 2.8E+00	< 5.1E+00	< 1.4E+01	< 2.9E+00	< 2.9E+00	< 2.6E+01	< 8.8E+00
MW-112	05/16/18	pCi/L	< 2.5E+00	< 2.7E+00	< 5.4E+00	< 2.4E+00	< 5.3E+00	< 2.9E+00	< 4.8E+00	< 1.5E+01	< 2.6E+00	< 2.4E+00	< 2.4E+01	< 7.4E+00
MW-112	05/16/18	pCi/L	< 2.2E+00	< 2.4E+00	< 6.2E+00	< 2.4E+00	< 4.6E+00	< 2.6E+00	< 4.8E+00	< 1.5E+01	< 2.6E+00	< 2.1E+00	< 2.6E+01	< 8.4E+00
MW-114	05/16/18	pCi/L	< 1.9E+00	< 2.1E+00	< 5.0E+00	< 2.0E+00	< 3.6E+00	< 2.2E+00	< 3.9E+00	< 1.3E+01	< 2.0E+00	< 2.0E+00	< 2.3E+01	< 7.7E+00

Annual Radioactive Effluent Release Report

Attachment 1

Page 8 of 29

Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-116	05/16/18	pCi/L	< 1.7E+00	< 1.8E+00	< 4.1E+00	< 1.8E+00	< 3.3E+00	< 1.9E+00	< 3.3E+00	< 8.2E+00	< 1.8E+00	< 1.7E+00	< 1.6E+01	< 4.9E+00
MW-124	05/16/18	pCi/L	< 2.3E+00	< 2.7E+00	< 5.9E+00	< 2.7E+00	< 4.7E+00	< 2.6E+00	< 4.3E+00	< 1.3E+01	< 2.4E+00	< 2.4E+00	< 2.4E+01	< 7.8E+00
MW-125	05/16/18	pCi/L	< 1.7E+00	< 2.1E+00	< 4.5E+00	< 1.8E+00	< 3.6E+00	< 2.4E+00	< 3.7E+00	< 1.4E+01	< 1.9E+00	< 2.0E+00	< 2.3E+01	< 7.3E+00
MW-137	05/16/18	pCi/L	< 1.7E+00	< 2.0E+00	< 4.2E+00	< 1.9E+00	< 3.4E+00	< 2.2E+00	< 3.7E+00	< 1.4E+01	< 2.0E+00	< 1.9E+00	< 2.1E+01	< 6.3E+00
MW-139	05/16/18	pCi/L	< 2.2E+00	< 2.5E+00	< 5.7E+00	< 2.4E+00	< 4.2E+00	< 2.8E+00	< 4.5E+00	< 1.5E+01	< 2.5E+00	< 2.0E+00	< 2.5E+01	< 9.2E+00
MW-141	05/16/18	pCi/L	< 2.0E+00	< 2.3E+00	< 5.9E+00	< 2.2E+00	< 4.3E+00	< 2.3E+00	< 4.1E+00	< 1.2E+01	< 2.0E+00	< 2.1E+00	< 2.3E+01	< 7.9E+00
MW-156	05/16/18	pCi/L	< 2.3E+00	< 2.5E+00	< 6.1E+00	< 2.5E+00	< 4.9E+00	< 2.7E+00	< 4.2E+00	< 1.1E+01	< 2.4E+00	< 2.2E+00	< 2.1E+01	< 8.1E+00
MW-157	05/16/18	pCi/L	< 2.2E+00	< 2.7E+00	< 5.5E+00	< 2.4E+00	< 4.5E+00	< 2.7E+00	< 4.5E+00	< 1.3E+01	< 2.5E+00	< 2.4E+00	< 2.3E+01	< 6.7E+00
MW-161	05/16/18	pCi/L	< 2.2E+00	< 2.5E+00	< 6.0E+00	< 2.1E+00	< 4.4E+00	< 2.7E+00	< 4.6E+00	< 1.5E+01	< 2.5E+00	< 2.1E+00	< 2.5E+01	< 8.4E+00
MW-205	05/16/18	pCi/L	< 2.3E+00	< 2.7E+00	< 6.9E+00	< 2.4E+00	< 5.7E+00	< 2.9E+00	< 5.2E+00	< 1.4E+01	< 2.7E+00	< 2.6E+00	< 2.7E+01	< 1.0E+01
MW-207	05/16/18	pCi/L	< 1.9E+00	< 2.1E+00	< 4.8E+00	< 1.9E+00	< 3.5E+00	< 2.3E+00	< 3.8E+00	< 1.2E+01	< 2.0E+00	< 1.7E+00	< 2.0E+01	< 7.0E+00
MW-213	05/16/18	pCi/L	< 2.1E+00	< 2.4E+00	< 6.1E+00	< 2.0E+00	< 4.1E+00	< 2.4E+00	< 4.4E+00	< 1.3E+01	< 2.1E+00	< 2.1E+00	< 2.3E+01	< 9.3E+00
MW-217	05/16/18	pCi/L	< 2.1E+00	< 2.4E+00	< 5.4E+00	< 2.1E+00	< 4.3E+00	< 2.5E+00	< 4.2E+00	< 1.3E+01	< 2.3E+00	< 2.0E+00	< 2.1E+01	< 7.6E+00
MW-219	05/16/18	pCi/L	< 2.1E+00	< 2.4E+00	< 5.9E+00	< 2.2E+00	< 4.2E+00	< 2.7E+00	< 4.5E+00	< 1.5E+01	< 2.4E+00	< 2.0E+00	< 2.5E+01	< 8.1E+00
MW-223	05/16/18	pCi/L	< 1.8E+00	< 2.1E+00	< 5.1E+00	< 2.0E+00	< 3.7E+00	< 2.2E+00	< 3.8E+00	< 1.4E+01	< 1.9E+00	< 1.9E+00	< 2.2E+01	< 6.5E+00
MW-225	05/16/18	pCi/L	< 2.0E+00	< 2.7E+00	< 5.3E+00	< 2.2E+00	< 4.5E+00	< 2.4E+00	< 4.1E+00	< 1.2E+01	< 2.3E+00	< 2.4E+00	< 2.0E+01	< 6.7E+00
MW-225	05/16/18	pCi/L	< 1.8E+00	< 2.0E+00	< 4.5E+00	< 1.7E+00	< 3.6E+00	< 2.2E+00	< 3.6E+00	< 1.5E+01	< 1.9E+00	< 1.8E+00	< 2.2E+01	< 6.8E+00

Annual Radioactive Effluent Release Report

Attachment 1

Page 9 of 29

Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-227	05/16/18	pCi/L	< 2.1E+00	< 2.5E+00	< 5.4E+00	< 2.1E+00	< 4.5E+00	< 2.5E+00	< 4.4E+00	< 1.5E+01	< 2.3E+00	< 2.1E+00	< 2.6E+01	< 6.8E+00
MW-231	05/16/18	pCi/L	< 1.3E+00	< 1.4E+00	< 2.8E+00	< 1.3E+00	< 2.3E+00	< 1.4E+00	< 2.5E+00	< 5.3E+00	< 1.4E+00	< 1.4E+00	< 1.1E+01	< 3.0E+00
MW-233	05/16/18	pCi/L	< 1.6E+00	< 1.9E+00	< 4.1E+00	< 1.7E+00	< 3.3E+00	< 2.0E+00	< 3.4E+00	< 1.1E+01	< 1.8E+00	< 1.7E+00	< 1.8E+01	< 4.9E+00
MW-235	05/16/18	pCi/L	< 1.8E+00	< 2.0E+00	< 4.9E+00	< 1.9E+00	< 3.9E+00	< 2.2E+00	< 3.9E+00	< 1.4E+01	< 2.1E+00	< 1.9E+00	< 2.3E+01	< 7.5E+00
PZ-01	05/16/18	pCi/L	< 1.8E+00	< 2.0E+00	< 4.4E+00	< 1.8E+00	< 3.6E+00	< 2.1E+00	< 3.4E+00	< 1.0E+01	< 1.9E+00	< 1.8E+00	< 1.9E+01	< 6.4E+00
MW-100	05/17/18	pCi/L	< 3.7E+00	< 4.1E+00	< 6.6E+00	< 5.0E+00	< 7.5E+00	< 4.1E+00	< 6.7E+00	< 1.4E+01	< 3.8E+00	< 4.0E+00	< 3.3E+01	< 5.1E+00
MW-106	05/17/18	pCi/L	< 3.5E+00	< 4.3E+00	< 9.4E+00	< 4.1E+00	< 7.5E+00	< 5.1E+00	< 8.2E+00	< 1.4E+01	< 5.1E+00	< 4.8E+00	< 2.9E+01	< 7.9E+00
MW-106	05/17/18	pCi/L	< 3.9E+00	< 4.1E+00	< 9.9E+00	< 3.3E+00	< 8.7E+00	< 3.7E+00	< 7.1E+00	< 1.3E+01	< 5.0E+00	< 3.7E+00	< 2.4E+01	< 9.5E+00
MW-118	05/17/18	pCi/L	< 2.5E+00	< 2.6E+00	< 6.5E+00	< 2.6E+00	< 4.9E+00	< 2.7E+00	< 4.8E+00	< 1.5E+01	< 2.7E+00	< 2.4E+00	< 2.7E+01	< 9.2E+00
MW-120	05/17/18	pCi/L	< 4.0E+00	< 5.0E+00	< 1.0E+01	< 5.4E+00	< 8.2E+00	< 5.8E+00	< 7.6E+00	< 1.4E+01	< 5.5E+00	< 5.5E+00	< 2.7E+01	< 1.0E+01
MW-122R	05/17/18	pCi/L	< 3.8E+00	< 4.6E+00	< 8.9E+00	< 5.8E+00	< 1.1E+01	< 4.5E+00	< 9.0E+00	< 1.3E+01	< 4.1E+00	< 3.9E+00	< 3.3E+01	< 1.2E+01
MW-126	05/17/18	pCi/L	< 4.3E+00	< 4.7E+00	< 1.1E+01	< 4.7E+00	< 1.0E+01	< 4.6E+00	< 8.6E+00	< 1.3E+01	< 5.0E+00	< 4.6E+00	< 3.1E+01	< 1.1E+01
MW-126	05/17/18	pCi/L	< 4.6E+00	< 5.0E+00	< 1.0E+01	< 5.9E+00	< 7.4E+00	< 4.9E+00	< 1.1E+01	< 1.3E+01	< 5.1E+00	< 5.0E+00	< 3.0E+01	< 1.1E+01
MW-128	05/17/18	pCi/L	< 4.2E+00	< 4.5E+00	< 1.0E+01	< 4.2E+00	< 1.0E+01	< 4.7E+00	< 8.0E+00	< 1.3E+01	< 4.8E+00	< 4.7E+00	< 3.2E+01	< 1.0E+01
MW-130	05/17/18	pCi/L	< 4.8E+00	< 4.8E+00	< 9.9E+00	< 5.3E+00	< 9.9E+00	< 5.5E+00	< 9.2E+00	< 1.4E+01	< 6.3E+00	< 4.4E+00	< 3.1E+01	< 1.0E+01
MW-131	05/17/18	pCi/L	< 4.1E+00	< 4.8E+00	< 1.0E+01	< 3.7E+00	< 7.1E+00	< 3.9E+00	< 8.5E+00	< 1.4E+01	< 4.2E+00	< 4.0E+00	< 2.9E+01	< 1.1E+01
MW-132	05/17/18	pCi/L	< 4.7E+00	< 4.7E+00	< 1.1E+01	< 4.8E+00	< 9.4E+00	< 4.8E+00	< 8.8E+00	< 1.4E+01	< 5.0E+00	< 5.2E+00	< 3.2E+01	< 9.8E+00

Annual Radioactive Effluent Release Report

Attachment 1

Page 10 of 29

Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-134	05/17/18	pCi/L	< 4.9E+00	< 5.3E+00	< 9.9E+00	< 5.1E+00	< 9.6E+00	< 5.2E+00	< 8.9E+00	< 1.4E+01	< 4.8E+00	< 4.7E+00	< 3.2E+01	< 9.8E+00
MW-153	05/17/18	pCi/L	< 2.2E+00	< 2.2E+00	< 5.6E+00	< 2.5E+00	< 4.9E+00	< 2.6E+00	< 4.4E+00	< 1.5E+01	< 2.4E+00	< 2.2E+00	< 2.4E+01	< 8.8E+00
MW-167	05/17/18	pCi/L	< 5.3E+00	< 4.2E+00	< 1.2E+01	< 5.5E+00	< 1.2E+01	< 5.9E+00	< 1.0E+01	< 1.4E+01	< 5.2E+00	< 6.0E+00	< 3.6E+01	< 1.0E+01
MW-170	05/17/18	pCi/L	< 3.9E+00	< 4.6E+00	< 1.1E+01	< 4.5E+00	< 8.1E+00	< 4.3E+00	< 8.9E+00	< 1.5E+01	< 5.1E+00	< 4.9E+00	< 2.9E+01	< 1.0E+01
MW172	05/17/18	pCi/L	< 4.8E+00	< 5.6E+00	< 1.1E+01	< 5.1E+00	< 1.1E+01	< 5.2E+00	< 8.8E+00	< 1.3E+01	< 4.7E+00	< 4.6E+00	< 3.4E+01	< 8.7E+00
MW-174	05/17/18	pCi/L	< 4.4E+00	< 5.0E+00	< 9.6E+00	< 5.5E+00	< 8.8E+00	< 4.7E+00	< 9.1E+00	< 1.5E+01	< 5.3E+00	< 4.9E+00	< 3.3E+01	< 1.1E+01
MW-180	05/17/18	pCi/L	< 3.1E+00	< 4.8E+00	< 7.5E+00	< 5.1E+00	< 8.3E+00	< 4.7E+00	< 7.6E+00	< 1.5E+01	< 4.7E+00	< 5.0E+00	< 2.9E+01	< 1.0E+01
MW-182	05/17/18	pCi/L	< 4.8E+00	< 4.4E+00	< 1.0E+01	< 5.0E+00	< 9.0E+00	< 4.9E+00	< 8.2E+00	< 1.3E+01	< 4.8E+00	< 4.3E+00	< 3.3E+01	< 7.0E+00
MW-185	05/17/18	pCi/L	< 3.5E+00	< 4.0E+00	< 7.9E+00	< 4.1E+00	< 7.5E+00	< 3.6E+00	< 6.5E+00	< 9.7E+00	< 4.1E+00	< 3.9E+00	< 2.5E+01	< 7.8E+00
MW-188	05/17/18	pCi/L	< 4.4E+00	< 4.4E+00	< 9.7E+00	< 2.6E+00	< 9.1E+00	< 4.7E+00	< 8.5E+00	< 1.3E+01	< 3.5E+00	< 4.4E+00	< 2.9E+01	< 8.2E+00
MW-209	05/17/18	pCi/L	< 2.0E+00	< 2.5E+00	< 5.5E+00	< 2.0E+00	< 4.2E+00	< 2.5E+00	< 4.2E+00	< 1.4E+01	< 2.1E+00	< 2.1E+00	< 2.3E+01	< 8.6E+00
MW-221	05/17/18	pCi/L	< 2.1E+00	< 2.5E+00	< 5.9E+00	< 2.3E+00	< 4.4E+00	< 2.5E+00	< 4.5E+00	< 1.2E+01	< 2.3E+00	< 2.0E+00	< 2.3E+01	< 8.8E+00
PZ-03	05/17/18	pCi/L	< 5.2E+00	< 6.0E+00	< 1.1E+01	< 6.6E+00	< 1.1E+01	< 4.8E+00	< 8.6E+00	< 1.4E+01	< 5.4E+00	< 5.1E+00	< 2.9E+01	< 1.2E+01
SW-101	05/17/18	pCi/L	< 4.6E+00	< 5.5E+00	< 1.1E+01	< 5.1E+00	< 1.1E+01	< 6.5E+00	< 9.1E+00	< 1.4E+01	< 5.9E+00	< 5.1E+00	< 3.4E+01	< 1.4E+01
SW-102	05/17/18	pCi/L	< 4.4E+00	< 4.9E+00	< 1.1E+01	< 6.6E+00	< 9.6E+00	< 6.1E+00	< 9.0E+00	< 1.4E+01	< 5.6E+00	< 5.4E+00	< 3.4E+01	< 1.4E+01
SW-103	05/17/18	pCi/L	< 5.3E+00	< 5.6E+00	< 9.9E+00	< 5.2E+00	< 8.6E+00	< 5.7E+00	< 9.0E+00	< 1.5E+01	< 5.7E+00	< 4.3E+00	< 3.3E+01	< 1.2E+01
SW-104	05/17/18	pCi/L	< 4.3E+00	< 5.0E+00	< 9.3E+00	< 4.6E+00	< 9.5E+00	< 4.5E+00	< 8.0E+00	< 1.4E+01	< 4.7E+00	< 4.3E+00	< 3.0E+01	< 9.4E+00

Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-124	08/21/18	pCi/L	< 3.5E+00	< 3.3E+00	< 9.9E+00	< 4.2E+00	< 9.4E+00	< 4.9E+00	< 8.3E+00	< 1.5E+01	< 3.7E+00	< 4.3E+00	< 2.6E+01	< 1.0E+01
MW-125	08/21/18	pCi/L	< 1.6E+00	< 1.9E+00	< 4.2E+00	< 1.8E+00	< 3.7E+00	< 2.0E+00	< 3.4E+00	< 7.2E+00	< 2.0E+00	< 1.8E+00	< 1.5E+01	< 4.6E+00
MW-142	08/21/18	pCi/L	< 6.6E+00	< 6.2E+00	< 1.7E+01	< 7.2E+00	< 1.4E+01	< 6.0E+00	< 1.2E+01	< 1.4E+01	< 8.2E+00	< 7.9E+00	< 3.6E+01	< 6.3E+00
MW-144	08/21/18	pCi/L	< 4.8E+00	< 5.3E+00	< 1.2E+01	< 4.4E+00	< 1.1E+01	< 5.9E+00	< 9.8E+00	< 1.5E+01	< 5.1E+00	< 5.3E+00	< 3.2E+01	< 1.3E+01
MW-146	08/21/18	pCi/L	< 1.9E+00	< 2.1E+00	< 4.6E+00	< 2.0E+00	< 3.7E+00	< 2.2E+00	< 3.6E+00	< 8.1E+00	< 2.1E+00	< 1.9E+00	< 1.6E+01	< 5.8E+00
MW-147	08/21/18	pCi/L	< 3.4E+00	< 4.0E+00	< 8.9E+00	< 4.7E+00	< 8.6E+00	< 4.2E+00	< 7.5E+00	< 1.2E+01	< 4.2E+00	< 4.1E+00	< 2.7E+01	< 6.9E+00
MW-148	08/21/18	pCi/L	< 6.5E+00	< 6.2E+00	< 1.3E+01	< 7.3E+00	< 1.3E+01	< 6.3E+00	< 1.0E+01	< 1.2E+01	< 7.8E+00	< 5.7E+00	< 3.7E+01	< 9.0E+00
MW-151	08/21/18	pCi/L	< 6.6E+00	< 6.2E+00	< 1.3E+01	< 5.6E+00	< 9.5E+00	< 6.8E+00	< 1.2E+01	< 1.4E+01	< 6.9E+00	< 5.6E+00	< 3.1E+01	< 1.2E+01
MW-155	08/21/18	pCi/L	< 3.9E+00	< 4.0E+00	< 8.4E+00	< 3.8E+00	< 7.7E+00	< 4.8E+00	< 8.5E+00	< 1.4E+01	< 5.1E+00	< 4.9E+00	< 3.0E+01	< 8.6E+00
MW-156	08/21/18	pCi/L	< 1.7E+00	< 1.8E+00	< 4.4E+00	< 1.8E+00	< 3.5E+00	< 2.1E+00	< 3.6E+00	< 7.4E+00	< 1.9E+00	< 1.9E+00	< 1.6E+01	< 5.5E+00
MW-157	08/21/18	pCi/L	< 1.8E+00	< 1.9E+00	< 4.3E+00	< 1.8E+00	< 3.4E+00	< 2.1E+00	< 3.6E+00	< 7.7E+00	< 1.9E+00	< 1.8E+00	< 1.5E+01	< 4.8E+00
MW-158	08/21/18	pCi/L	< 4.5E+00	< 5.5E+00	< 1.0E+01	< 5.4E+00	< 1.0E+01	< 4.6E+00	< 7.9E+00	< 1.5E+01	< 4.8E+00	< 5.1E+00	< 3.2E+01	< 1.2E+01
MW-159	08/21/18	pCi/L	< 4.3E+00	< 4.3E+00	< 1.0E+01	< 4.4E+00	< 8.3E+00	< 4.6E+00	< 7.6E+00	< 1.5E+01	< 4.8E+00	< 4.4E+00	< 2.7E+01	< 1.1E+01
MW-159	08/21/18	pCi/L	< 4.7E+00	< 4.8E+00	< 9.9E+00	< 4.3E+00	< 9.8E+00	< 5.6E+00	< 9.1E+00	< 1.5E+01	< 4.8E+00	< 5.3E+00	< 3.2E+01	< 1.1E+01
MW-162	08/21/18	pCi/L	< 5.2E+00	< 6.0E+00	< 1.0E+01	< 6.2E+00	< 1.0E+01	< 6.3E+00	< 1.2E+01	< 1.0E+01	< 5.8E+00	< 4.7E+00	< 2.8E+01	< 1.0E+01
MW-164	08/21/18	pCi/L	< 6.6E+00	< 7.3E+00	< 1.7E+01	< 7.4E+00	< 1.3E+01	< 8.0E+00	< 1.1E+01	< 1.3E+01	< 7.4E+00	< 7.3E+00	< 4.3E+01	< 9.3E+00
MW-165	08/21/18	pCi/L	< 5.6E+00	< 5.9E+00	< 1.0E+01	< 5.9E+00	< 1.1E+01	< 6.1E+00	< 8.8E+00	< 1.1E+01	< 6.2E+00	< 5.7E+00	< 3.2E+01	< 9.9E+00

Annual Radioactive Effluent Release Report

Attachment 1

Page 12 of 29

Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-169	08/21/18	pCi/L	< 6.4E+00	< 6.8E+00	< 1.3E+01	< 6.5E+00	< 1.3E+01	< 6.8E+00	< 7.9E+00	< 1.3E+01	< 6.8E+00	< 7.0E+00	< 3.2E+01	< 1.4E+01
MW-178	08/21/18	pCi/L	< 4.0E+00	< 6.2E+00	< 1.0E+01	< 4.8E+00	< 7.5E+00	< 6.2E+00	< 1.1E+01	< 1.5E+01	< 5.7E+00	< 5.5E+00	< 3.1E+01	< 1.3E+01
MW-179	08/21/18	pCi/L	< 4.3E+00	< 4.8E+00	< 8.5E+00	< 4.4E+00	< 8.7E+00	< 5.3E+00	< 8.1E+00	< 1.4E+01	< 4.8E+00	< 5.3E+00	< 3.3E+01	< 8.1E+00
MW-186	08/21/18	pCi/L	< 5.0E+00	< 6.0E+00	< 1.3E+01	< 4.8E+00	< 1.0E+01	< 5.8E+00	< 1.0E+01	< 1.2E+01	< 6.3E+00	< 4.8E+00	< 2.8E+01	< 1.1E+01
MW-187	08/21/18	pCi/L	< 5.3E+00	< 5.6E+00	< 1.3E+01	< 5.9E+00	< 1.3E+01	< 6.8E+00	< 1.2E+01	< 1.2E+01	< 7.1E+00	< 6.2E+00	< 2.9E+01	< 9.9E+00
MW-201	08/21/18	pCi/L	< 7.0E+00	< 6.0E+00	< 1.4E+01	< 5.4E+00	< 1.5E+01	< 7.0E+00	< 1.2E+01	< 1.4E+01	< 8.2E+00	< 5.9E+00	< 3.5E+01	< 8.9E+00
MW-203	08/21/18	pCi/L	< 6.2E+00	< 7.4E+00	< 1.3E+01	< 5.2E+00	< 1.2E+01	< 6.3E+00	< 1.1E+01	< 1.4E+01	< 6.8E+00	< 6.1E+00	< 3.7E+01	< 9.3E+00
MW-215	08/21/18	pCi/L	< 5.6E+00	< 5.8E+00	< 1.3E+01	< 7.9E+00	< 1.0E+01	< 6.9E+00	< 1.3E+01	< 1.3E+01	< 7.8E+00	< 7.5E+00	< 4.1E+01	< 1.5E+01
MW-217	08/21/18	pCi/L	< 5.1E+00	< 4.6E+00	< 1.1E+01	< 5.7E+00	< 1.1E+01	< 5.6E+00	< 7.6E+00	< 1.1E+01	< 6.4E+00	< 5.7E+00	< 2.8E+01	< 6.2E+00
MW-100	08/22/18	pCi/L	< 6.5E+00	< 6.3E+00	< 1.6E+01	< 5.3E+00	< 1.6E+01	< 7.6E+00	< 1.1E+01	< 1.4E+01	< 7.7E+00	< 6.9E+00	< 3.7E+01	< 1.2E+01
MW-110	08/22/18	pCi/L	< 1.8E+00	< 2.1E+00	< 4.8E+00	< 1.9E+00	< 3.8E+00	< 2.2E+00	< 3.6E+00	< 9.3E+00	< 2.1E+00	< 2.0E+00	< 1.8E+01	< 5.6E+00
MW-112	08/22/18	pCi/L	< 5.1E+00	< 5.4E+00	< 1.3E+01	< 5.3E+00	< 1.2E+01	< 6.1E+00	< 9.8E+00	< 1.5E+01	< 6.2E+00	< 5.4E+00	< 3.3E+01	< 1.2E+01
MW-114	08/22/18	pCi/L	< 1.8E+00	< 2.0E+00	< 4.8E+00	< 2.0E+00	< 3.7E+00	< 2.0E+00	< 3.6E+00	< 9.8E+00	< 2.1E+00	< 1.9E+00	< 1.8E+01	< 6.1E+00
MW-116	08/22/18	pCi/L	< 2.0E+00	< 2.1E+00	< 4.8E+00	< 2.3E+00	< 4.2E+00	< 2.4E+00	< 3.9E+00	< 8.9E+00	< 2.3E+00	< 2.3E+00	< 1.7E+01	< 6.0E+00
MW-118	08/22/18	pCi/L	< 4.6E+00	< 4.8E+00	< 1.0E+01	< 4.9E+00	< 9.8E+00	< 4.7E+00	< 8.6E+00	< 1.3E+01	< 5.1E+00	< 4.5E+00	< 3.3E+01	< 1.1E+01
MW-137	08/22/18	pCi/L	< 4.4E+00	< 4.5E+00	< 1.0E+01	< 4.9E+00	< 8.6E+00	< 4.9E+00	< 8.1E+00	< 1.3E+01	< 4.5E+00	< 4.7E+00	< 3.1E+01	< 8.1E+00
MW-139	08/22/18	pCi/L	< 4.7E+00	< 4.3E+00	< 9.9E+00	< 4.4E+00	< 1.0E+01	< 4.5E+00	< 8.9E+00	< 1.2E+01	< 4.8E+00	< 4.6E+00	< 2.9E+01	< 1.0E+01

Annual Radioactive Effluent Release Report

Attachment 1

Page 13 of 29

Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-141	08/22/18	pCi/L	< 4.8E+00	< 5.3E+00	< 9.1E+00	< 4.0E+00	< 9.1E+00	< 5.2E+00	< 8.9E+00	< 1.4E+01	< 4.8E+00	< 5.2E+00	< 3.3E+01	< 8.7E+00
MW-153	08/22/18	pCi/L	< 5.1E+00	< 5.5E+00	< 9.2E+00	< 3.9E+00	< 9.1E+00	< 5.2E+00	< 9.2E+00	< 1.5E+01	< 5.5E+00	< 4.9E+00	< 3.3E+01	< 9.7E+00
MW-153	08/22/18	pCi/L	< 1.8E+00	< 2.1E+00	< 4.9E+00	< 1.9E+00	< 3.8E+00	< 2.2E+00	< 3.5E+00	< 9.2E+00	< 2.0E+00	< 1.9E+00	< 1.8E+01	< 5.7E+00
MW-161	08/22/18	pCi/L	< 1.8E+00	< 1.8E+00	< 4.5E+00	< 1.8E+00	< 3.7E+00	< 2.1E+00	< 3.5E+00	< 8.9E+00	< 1.9E+00	< 1.9E+00	< 1.6E+01	< 4.9E+00
MW-170	08/22/18	pCi/L	< 7.2E+00	< 6.5E+00	< 8.6E+00	< 4.8E+00	< 1.5E+01	< 7.1E+00	< 1.3E+01	< 1.3E+01	< 7.2E+00	< 6.1E+00	< 4.1E+01	< 1.1E+01
MW-182	08/22/18	pCi/L	< 6.2E+00	< 4.9E+00	< 1.2E+01	< 4.0E+00	< 1.2E+01	< 7.0E+00	< 1.1E+01	< 1.1E+01	< 6.2E+00	< 7.1E+00	< 2.9E+01	< 1.0E+01
MW-188	08/22/18	pCi/L	< 6.2E+00	< 5.4E+00	< 1.3E+01	< 6.0E+00	< 1.3E+01	< 6.2E+00	< 1.0E+01	< 8.9E+00	< 7.0E+00	< 4.8E+00	< 3.3E+01	< 9.3E+00
MW-205	08/22/18	pCi/L	< 7.0E+00	< 6.8E+00	< 1.5E+01	< 5.7E+00	< 1.4E+01	< 8.7E+00	< 1.2E+01	< 1.4E+01	< 7.7E+00	< 7.1E+00	< 3.5E+01	< 1.3E+01
MW-207	08/22/18	pCi/L	< 6.2E+00	< 6.4E+00	< 1.1E+01	< 8.0E+00	< 1.2E+01	< 7.3E+00	< 1.1E+01	< 1.4E+01	< 6.9E+00	< 7.7E+00	< 3.3E+01	< 1.1E+01
MW-209	08/22/18	pCi/L	< 6.8E+00	< 7.5E+00	< 1.5E+01	< 7.8E+00	< 1.6E+01	< 8.5E+00	< 1.4E+01	< 1.4E+01	< 8.5E+00	< 8.9E+00	< 3.9E+01	< 1.2E+01
MW-211	08/22/18	pCi/L	< 7.0E+00	< 9.1E+00	< 1.8E+01	< 6.6E+00	< 1.6E+01	< 8.3E+00	< 1.2E+01	< 1.3E+01	< 7.5E+00	< 7.3E+00	< 3.8E+01	< 7.7E+00
MW-211	08/22/18	pCi/L	< 6.3E+00	< 6.9E+00	< 1.4E+01	< 5.9E+00	< 1.4E+01	< 6.5E+00	< 1.2E+01	< 1.2E+01	< 8.6E+00	< 5.6E+00	< 3.2E+01	< 1.3E+01
MW-213	08/22/18	pCi/L	< 5.5E+00	< 6.8E+00	< 1.6E+01	< 7.6E+00	< 1.4E+01	< 6.9E+00	< 1.0E+01	< 1.0E+01	< 6.3E+00	< 6.4E+00	< 3.0E+01	< 1.2E+01
MW-213	08/22/18	pCi/L	< 5.9E+00	< 6.8E+00	< 1.6E+01	< 7.8E+00	< 1.3E+01	< 6.1E+00	< 1.0E+01	< 1.2E+01	< 6.8E+00	< 7.0E+00	< 3.1E+01	< 9.2E+00
MW-221	08/22/18	pCi/L	< 6.4E+00	< 7.2E+00	< 1.5E+01	< 1.0E+01	< 1.7E+01	< 7.8E+00	< 1.2E+01	< 1.4E+01	< 5.6E+00	< 8.7E+00	< 2.9E+01	< 1.4E+01
MW-227	08/22/18	pCi/L	< 6.5E+00	< 6.8E+00	< 1.5E+01	< 7.7E+00	< 1.2E+01	< 6.7E+00	< 9.6E+00	< 1.1E+01	< 6.6E+00	< 7.3E+00	< 3.2E+01	< 1.5E+01
MW-229	08/22/18	pCi/L	< 6.9E+00	< 7.0E+00	< 1.5E+01	< 5.9E+00	< 1.6E+01	< 6.0E+00	< 1.1E+01	< 1.3E+01	< 7.2E+00	< 6.7E+00	< 3.8E+01	< 9.6E+00

Annual Radioactive Effluent Release Report

Attachment 1

Page 14 of 29

Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-229	08/22/18	pCi/L	< 6.4E+00	< 8.3E+00	< 2.0E+01	< 8.6E+00	< 1.7E+01	< 8.4E+00	< 1.3E+01	< 1.4E+01	< 8.1E+00	< 7.6E+00	< 4.5E+01	< 1.4E+01
MW-231	08/22/18	pCi/L	< 6.7E+00	< 6.7E+00	< 1.3E+01	< 8.8E+00	< 1.6E+01	< 6.7E+00	< 1.2E+01	< 1.4E+01	< 7.6E+00	< 6.2E+00	< 3.8E+01	< 1.3E+01
PZ-01	08/22/18	pCi/L	< 2.1E+00	< 2.4E+00	< 5.3E+00	< 1.9E+00	< 4.4E+00	< 2.3E+00	< 4.1E+00	< 1.0E+01	< 2.2E+00	< 2.0E+00	< 1.9E+01	< 7.3E+00
MW-219	08/23/18	pCi/L	< 8.2E+00	< 6.9E+00	< 1.6E+01	< 8.5E+00	< 1.4E+01	< 7.9E+00	< 1.5E+01	< 1.4E+01	< 8.1E+00	< 7.5E+00	< 2.9E+01	< 1.5E+01
MW-223	08/23/18	pCi/L	< 8.5E+00	< 8.2E+00	< 1.5E+01	< 9.3E+00	< 2.0E+01	< 8.0E+00	< 1.1E+01	< 1.3E+01	< 8.2E+00	< 7.9E+00	< 3.6E+01	< 1.1E+01
MW-225	08/23/18	pCi/L	< 7.2E+00	< 6.5E+00	< 1.5E+01	< 8.6E+00	< 1.6E+01	< 8.6E+00	< 1.2E+01	< 1.4E+01	< 7.7E+00	< 6.6E+00	< 4.2E+01	< 1.2E+01
MW-233	08/23/18	pCi/L	< 7.1E+00	< 8.6E+00	< 1.8E+01	< 7.0E+00	< 1.4E+01	< 7.7E+00	< 1.2E+01	< 1.4E+01	< 5.8E+00	< 8.5E+00	< 3.3E+01	< 9.2E+00
MW-235	08/23/18	pCi/L	< 7.9E+00	< 5.8E+00	< 1.4E+01	< 7.5E+00	< 1.8E+01	< 7.3E+00	< 1.1E+01	< 1.5E+01	< 8.6E+00	< 8.8E+00	< 3.8E+01	< 1.2E+01
SW-103	08/23/18	pCi/L	< 6.3E+00	< 7.3E+00	< 1.6E+01	< 7.5E+00	< 1.5E+01	< 5.8E+00	< 1.4E+01	< 1.5E+01	< 8.0E+00	< 7.3E+00	< 3.3E+01	< 8.5E+00
MW-148	09/10/18	pCi/L	< 6.3E+00	< 5.2E+00	< 1.3E+01	< 6.7E+00	< 1.3E+01	< 6.3E+00	< 1.2E+01	< 1.4E+01	< 6.6E+00	< 6.1E+00	< 2.8E+01	< 9.2E+00
MW-112	11/06/18	pCi/L	< 2.4E+00	< 2.7E+00	< 5.8E+00	< 3.1E+00	< 5.3E+00	< 2.6E+00	< 4.3E+00	< 5.8E+00	< 2.8E+00	< 2.7E+00	< 1.4E+01	< 4.7E+00
MW-114	11/06/18	pCi/L	< 6.2E+00	< 6.9E+00	< 1.2E+01	< 6.0E+00	< 1.2E+01	< 6.5E+00	< 1.2E+01	< 1.4E+01	< 6.3E+00	< 7.2E+00	< 3.0E+01	< 1.5E+01
MW-116	11/06/18	pCi/L	< 5.6E+00	< 5.5E+00	< 1.2E+01	< 7.3E+00	< 1.1E+01	< 5.8E+00	< 1.3E+01	< 1.4E+01	< 5.8E+00	< 6.6E+00	< 3.6E+01	< 1.2E+01
MW-118	11/06/18	pCi/L	< 4.9E+00	< 4.8E+00	< 1.5E+01	< 6.2E+00	< 1.3E+01	< 5.7E+00	< 1.1E+01	< 1.3E+01	< 6.0E+00	< 5.4E+00	< 3.4E+01	< 1.0E+01
MW-139	11/06/18	pCi/L	< 5.3E+00	< 5.9E+00	< 1.2E+01	< 4.5E+00	< 1.2E+01	< 5.4E+00	< 1.0E+01	< 1.3E+01	< 6.2E+00	< 5.2E+00	< 3.2E+01	< 1.0E+01
MW-141	11/06/18	pCi/L	< 2.3E+00	< 2.4E+00	< 4.8E+00	< 2.6E+00	< 4.9E+00	< 2.5E+00	< 4.5E+00	< 5.7E+00	< 2.5E+00	< 2.5E+00	< 1.5E+01	< 4.6E+00
MW-142	11/06/18	pCi/L	< 1.9E+00	< 1.8E+00	< 4.0E+00	< 2.2E+00	< 3.7E+00	< 2.0E+00	< 3.8E+00	< 4.6E+00	< 2.1E+00	< 2.0E+00	< 1.2E+01	< 4.2E+00

Annual Radioactive Effluent Release Report

Attachment 1

Page 15 of 29

Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-144	11/06/18	pCi/L	< 5.6E+00	< 6.2E+00	< 1.1E+01	< 5.9E+00	< 1.0E+01	< 5.4E+00	< 9.9E+00	< 1.2E+01	< 6.5E+00	< 5.8E+00	< 3.0E+01	< 8.9E+00
MW-146	11/06/18	pCi/L	< 3.2E+00	< 3.5E+00	< 7.0E+00	< 4.6E+00	< 7.8E+00	< 3.7E+00	< 6.2E+00	< 9.1E+00	< 4.1E+00	< 3.4E+00	< 2.2E+01	< 8.1E+00
MW-147	11/06/18	pCi/L	< 3.2E+00	< 3.3E+00	< 7.1E+00	< 2.6E+00	< 6.8E+00	< 4.0E+00	< 5.6E+00	< 8.9E+00	< 3.4E+00	< 3.2E+00	< 1.9E+01	< 6.5E+00
MW-148	11/06/18	pCi/L	< 2.7E+00	< 2.8E+00	< 6.3E+00	< 2.9E+00	< 5.8E+00	< 2.9E+00	< 4.8E+00	< 7.1E+00	< 3.1E+00	< 2.6E+00	< 1.7E+01	< 5.8E+00
MW-158	11/06/18	pCi/L	< 3.1E+00	< 3.5E+00	< 6.8E+00	< 3.3E+00	< 7.9E+00	< 3.8E+00	< 5.8E+00	< 9.1E+00	< 3.7E+00	< 3.2E+00	< 2.0E+01	< 5.8E+00
MW-159	11/06/18	pCi/L	< 2.7E+00	< 2.9E+00	< 5.7E+00	< 2.8E+00	< 5.4E+00	< 3.6E+00	< 5.1E+00	< 7.1E+00	< 3.0E+00	< 2.8E+00	< 1.8E+01	< 6.3E+00
MW-159	11/06/18	pCi/L	< 2.9E+00	< 3.3E+00	< 8.2E+00	< 4.8E+00	< 6.4E+00	< 3.4E+00	< 5.3E+00	< 7.4E+00	< 3.4E+00	< 3.1E+00	< 2.1E+01	< 6.6E+00
MW-161	11/06/18	pCi/L	< 3.9E+00	< 3.6E+00	< 7.4E+00	< 4.4E+00	< 8.9E+00	< 5.5E+00	< 7.5E+00	< 1.1E+01	< 4.9E+00	< 4.7E+00	< 2.6E+01	< 7.1E+00
MW-162	11/06/18	pCi/L	< 3.7E+00	< 3.1E+00	< 7.9E+00	< 4.5E+00	< 7.4E+00	< 3.3E+00	< 6.0E+00	< 7.9E+00	< 3.6E+00	< 3.0E+00	< 2.0E+01	< 6.1E+00
MW-178	11/06/18	pCi/L	< 3.1E+00	< 3.4E+00	< 6.7E+00	< 4.1E+00	< 7.1E+00	< 3.7E+00	< 6.2E+00	< 7.4E+00	< 3.8E+00	< 3.9E+00	< 1.9E+01	< 7.1E+00
MW-179	11/06/18	pCi/L	< 2.8E+00	< 2.8E+00	< 6.4E+00	< 2.7E+00	< 6.5E+00	< 3.4E+00	< 6.4E+00	< 7.6E+00	< 3.5E+00	< 3.3E+00	< 1.7E+01	< 6.5E+00
MW-179	11/06/18	pCi/L	< 2.2E+00	< 2.4E+00	< 4.6E+00	< 2.2E+00	< 4.3E+00	< 2.3E+00	< 4.1E+00	< 5.6E+00	< 2.6E+00	< 2.2E+00	< 1.4E+01	< 4.2E+00
MW-201	11/06/18	pCi/L	< 2.9E+00	< 3.3E+00	< 6.2E+00	< 3.2E+00	< 6.1E+00	< 3.1E+00	< 5.4E+00	< 7.6E+00	< 3.3E+00	< 3.1E+00	< 1.6E+01	< 6.1E+00
MW-203	11/06/18	pCi/L	< 3.5E+00	< 4.0E+00	< 8.8E+00	< 3.6E+00	< 7.9E+00	< 4.3E+00	< 7.0E+00	< 1.1E+01	< 4.4E+00	< 4.0E+00	< 2.3E+01	< 9.2E+00
MW-05	11/07/18	pCi/L	< 4.5E+00	< 4.7E+00	< 9.8E+00	< 5.2E+00	< 9.2E+00	< 4.9E+00	< 9.3E+00	< 1.2E+01	< 5.5E+00	< 4.8E+00	< 2.7E+01	< 9.6E+00
MW-100	11/07/18	pCi/L	< 1.9E+00	< 2.2E+00	< 4.9E+00	< 2.3E+00	< 4.6E+00	< 2.2E+00	< 3.6E+00	< 8.3E+00	< 2.2E+00	< 2.2E+00	< 1.7E+01	< 5.3E+00
MW-110	11/07/18	pCi/L	< 6.3E+00	< 6.5E+00	< 1.2E+01	< 6.3E+00	< 1.3E+01	< 6.7E+00	< 1.0E+01	< 1.1E+01	< 6.1E+00	< 6.3E+00	< 3.2E+01	< 1.1E+01

Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-124	11/07/18	pCi/L	< 5.1E+00	< 5.3E+00	< 1.1E+01	< 5.7E+00	< 1.1E+01	< 5.3E+00	< 1.0E+01	< 1.1E+01	< 6.4E+00	< 5.3E+00	< 2.9E+01	< 9.5E+00
MW-124	11/07/18	pCi/L	< 4.7E+00	< 4.5E+00	< 9.4E+00	< 4.8E+00	< 9.8E+00	< 7.7E+00	< 8.7E+00	< 1.1E+01	< 5.8E+00	< 5.1E+00	< 2.4E+01	< 9.4E+00
MW-125	11/07/18	pCi/L	< 4.6E+00	< 6.7E+00	< 1.5E+01	< 9.0E+00	< 1.3E+01	< 7.6E+00	< 1.2E+01	< 1.3E+01	< 9.1E+00	< 6.9E+00	< 3.4E+01	< 1.2E+01
MW-126	11/07/18	pCi/L	< 5.7E+00	< 4.7E+00	< 1.0E+01	< 6.0E+00	< 9.4E+00	< 5.4E+00	< 9.6E+00	< 1.2E+01	< 5.3E+00	< 5.3E+00	< 3.2E+01	< 9.1E+00
MW-126	11/07/18	pCi/L	< 6.2E+00	< 6.6E+00	< 1.3E+01	< 7.4E+00	< 1.8E+01	< 1.1E+01	< 1.1E+01	< 1.4E+01	< 7.8E+00	< 6.8E+00	< 4.0E+01	< 1.4E+01
MW-137	11/07/18	pCi/L	< 5.7E+00	< 6.3E+00	< 1.2E+01	< 6.3E+00	< 1.1E+01	< 5.9E+00	< 9.4E+00	< 1.4E+01	< 7.3E+00	< 5.7E+00	< 3.6E+01	< 1.4E+01
MW-151	11/07/18	pCi/L	< 2.0E+00	< 2.2E+00	< 4.6E+00	< 2.0E+00	< 4.4E+00	< 2.4E+00	< 4.1E+00	< 8.4E+00	< 2.1E+00	< 2.1E+00	< 1.7E+01	< 5.0E+00
MW-153	11/07/18	pCi/L	< 5.4E+00	< 5.5E+00	< 1.1E+01	< 6.6E+00	< 9.5E+00	< 5.6E+00	< 9.0E+00	< 1.1E+01	< 6.4E+00	< 5.2E+00	< 3.0E+01	< 6.0E+00
MW-155	11/07/18	pCi/L	< 4.5E+00	< 4.8E+00	< 1.2E+01	< 5.7E+00	< 9.3E+00	< 5.7E+00	< 9.3E+00	< 1.0E+01	< 4.4E+00	< 5.4E+00	< 2.7E+01	< 9.3E+00
MW-156	11/07/18	pCi/L	< 6.3E+00	< 6.6E+00	< 1.1E+01	< 5.9E+00	< 1.1E+01	< 7.2E+00	< 9.9E+00	< 1.2E+01	< 6.6E+00	< 6.1E+00	< 3.4E+01	< 1.0E+01
MW-157	11/07/18	pCi/L	< 6.0E+00	< 6.4E+00	< 1.4E+01	< 6.4E+00	< 1.4E+01	< 5.6E+00	< 8.3E+00	< 1.3E+01	< 6.3E+00	< 5.0E+00	< 3.6E+01	< 1.2E+01
MW-164	11/07/18	pCi/L	< 3.7E+00	< 3.6E+00	< 8.4E+00	< 3.8E+00	< 7.5E+00	< 3.8E+00	< 6.7E+00	< 1.1E+01	< 3.7E+00	< 3.7E+00	< 2.4E+01	< 7.2E+00
MW-165	11/07/18	pCi/L	< 2.7E+00	< 3.0E+00	< 6.1E+00	< 3.1E+00	< 6.2E+00	< 3.4E+00	< 5.4E+00	< 9.8E+00	< 3.1E+00	< 3.0E+00	< 2.1E+01	< 6.8E+00
MW-172	11/07/18	pCi/L	< 2.0E+00	< 2.2E+00	< 5.0E+00	< 2.0E+00	< 4.2E+00	< 2.4E+00	< 4.1E+00	< 8.1E+00	< 2.3E+00	< 2.2E+00	< 1.6E+01	< 5.9E+00
MW-180	11/07/18	pCi/L	< 3.1E+00	< 3.1E+00	< 7.6E+00	< 3.4E+00	< 6.0E+00	< 3.2E+00	< 5.2E+00	< 1.1E+01	< 3.4E+00	< 3.1E+00	< 2.1E+01	< 7.9E+00
MW-182	11/07/18	pCi/L	< 4.1E+00	< 4.3E+00	< 9.8E+00	< 4.4E+00	< 9.1E+00	< 4.8E+00	< 6.9E+00	< 1.4E+01	< 4.3E+00	< 4.2E+00	< 2.9E+01	< 1.2E+01
MW-186	11/07/18	pCi/L	< 4.8E+00	< 5.8E+00	< 1.3E+01	< 5.9E+00	< 1.0E+01	< 5.9E+00	< 8.1E+00	< 1.5E+01	< 5.0E+00	< 5.2E+00	< 3.5E+01	< 1.1E+01

Annual Radioactive Effluent Release Report

Attachment 1

Page 17 of 29

Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-187	11/07/18	pCi/L	< 4.5E+00	< 4.9E+00	< 8.1E+00	< 3.6E+00	< 1.1E+01	< 5.1E+00	< 7.9E+00	< 1.3E+01	< 4.9E+00	< 4.5E+00	< 2.5E+01	< 1.4E+01
MW-211	11/07/18	pCi/L	< 1.9E+00	< 2.1E+00	< 4.6E+00	< 1.9E+00	< 3.8E+00	< 2.5E+00	< 3.8E+00	< 7.1E+00	< 2.1E+00	< 1.8E+00	< 1.5E+01	< 5.3E+00
MW-225	11/07/18	pCi/L	< 3.7E+00	< 3.7E+00	< 9.3E+00	< 3.9E+00	< 8.4E+00	< 4.9E+00	< 7.2E+00	< 9.1E+00	< 4.7E+00	< 4.4E+00	< 2.5E+01	< 7.5E+00
MW-233	11/07/18	pCi/L	< 4.2E+00	< 4.7E+00	< 1.2E+01	< 5.1E+00	< 1.1E+01	< 4.9E+00	< 8.9E+00	< 1.1E+01	< 4.9E+00	< 5.0E+00	< 2.5E+01	< 9.5E+00
PZ-01	11/07/18	pCi/L	< 2.7E+00	< 2.7E+00	< 6.3E+00	< 3.2E+00	< 5.6E+00	< 3.2E+00	< 4.7E+00	< 6.6E+00	< 3.2E+00	< 3.0E+00	< 1.6E+01	< 5.6E+00
PZ-03	11/07/18	pCi/L	< 5.1E+00	< 4.9E+00	< 1.3E+01	< 5.7E+00	< 1.3E+01	< 5.8E+00	< 7.1E+00	< 1.1E+01	< 5.0E+00	< 4.7E+00	< 3.0E+01	< 9.9E+00
MW-04	11/08/18	pCi/L	< 5.5E+00	< 5.1E+00	< 1.1E+01	< 7.6E+00	< 9.7E+00	< 7.0E+00	< 1.0E+01	< 1.2E+01	< 6.6E+00	< 6.9E+00	< 3.2E+01	< 1.1E+01
MW-08	11/08/18	pCi/L	< 3.8E+00	< 3.6E+00	< 7.5E+00	< 4.4E+00	< 6.5E+00	< 3.9E+00	< 5.8E+00	< 7.4E+00	< 3.9E+00	< 3.6E+00	< 1.9E+01	< 6.3E+00
MW-103	11/08/18	pCi/L	< 2.9E+00	< 3.1E+00	< 7.0E+00	< 2.7E+00	< 6.3E+00	< 3.5E+00	< 5.5E+00	< 9.4E+00	< 3.3E+00	< 3.1E+00	< 2.0E+01	< 6.6E+00
MW-104	11/08/18	pCi/L	< 2.9E+00	< 3.2E+00	< 7.4E+00	< 2.9E+00	< 6.5E+00	< 3.3E+00	< 5.3E+00	< 1.2E+01	< 3.3E+00	< 3.1E+00	< 2.5E+01	< 8.2E+00
MW-106	11/08/18	pCi/L	< 3.3E+00	< 3.3E+00	< 7.7E+00	< 4.1E+00	< 7.5E+00	< 4.2E+00	< 6.3E+00	< 9.5E+00	< 3.4E+00	< 3.5E+00	< 2.3E+01	< 6.3E+00
MW-107	11/08/18	pCi/L	< 3.1E+00	< 3.3E+00	< 8.8E+00	< 4.1E+00	< 7.5E+00	< 4.3E+00	< 5.6E+00	< 1.2E+01	< 4.1E+00	< 3.7E+00	< 2.6E+01	< 9.2E+00
MW-108	11/08/18	pCi/L	< 3.0E+00	< 3.5E+00	< 7.5E+00	< 3.0E+00	< 6.9E+00	< 3.5E+00	< 6.0E+00	< 1.2E+01	< 3.5E+00	< 3.4E+00	< 2.6E+01	< 7.7E+00
MW-111	11/08/18	pCi/L	< 3.8E+00	< 4.0E+00	< 8.2E+00	< 4.1E+00	< 5.7E+00	< 3.8E+00	< 6.5E+00	< 1.2E+01	< 3.7E+00	< 3.5E+00	< 2.5E+01	< 7.6E+00
MW-120	11/08/18	pCi/L	< 6.8E+00	< 7.5E+00	< 1.3E+01	< 6.1E+00	< 1.6E+01	< 7.1E+00	< 1.2E+01	< 1.5E+01	< 7.4E+00	< 6.5E+00	< 3.6E+01	< 1.3E+01
MW-122R	11/08/18	pCi/L	< 6.6E+00	< 5.4E+00	< 1.2E+01	< 7.1E+00	< 1.5E+01	< 6.9E+00	< 1.2E+01	< 1.5E+01	< 6.5E+00	< 7.5E+00	< 3.5E+01	< 9.8E+00
MW-128	11/08/18	pCi/L	< 4.3E+00	< 4.7E+00	< 1.1E+01	< 4.7E+00	< 1.3E+01	< 5.5E+00	< 8.6E+00	< 1.4E+01	< 4.9E+00	< 4.4E+00	< 3.0E+01	< 8.9E+00

Annual Radioactive Effluent Release Report

Attachment 1

Page 18 of 29

Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-130	11/08/18	pCi/L	< 4.9E+00	< 4.8E+00	< 1.2E+01	< 6.2E+00	< 1.2E+01	< 6.1E+00	< 8.6E+00	< 1.0E+01	< 5.9E+00	< 5.3E+00	< 2.6E+01	< 9.9E+00
MW-131	11/08/18	pCi/L	< 2.6E+00	< 3.0E+00	< 6.8E+00	< 3.0E+00	< 5.7E+00	< 3.2E+00	< 5.1E+00	< 7.0E+00	< 3.2E+00	< 3.0E+00	< 1.8E+01	< 5.6E+00
MW-132	11/08/18	pCi/L	< 3.6E+00	< 3.8E+00	< 8.1E+00	< 4.3E+00	< 8.4E+00	< 4.4E+00	< 7.9E+00	< 1.1E+01	< 3.8E+00	< 3.8E+00	< 2.6E+01	< 8.6E+00
MW-134	11/08/18	pCi/L	< 4.1E+00	< 4.2E+00	< 1.1E+01	< 3.7E+00	< 7.7E+00	< 4.3E+00	< 7.2E+00	< 1.1E+01	< 4.4E+00	< 4.0E+00	< 3.0E+01	< 9.1E+00
MW-14	11/08/18	pCi/L	< 2.7E+00	< 2.5E+00	< 6.2E+00	< 2.8E+00	< 5.7E+00	< 3.1E+00	< 5.6E+00	< 7.9E+00	< 2.9E+00	< 2.9E+00	< 1.9E+01	< 6.3E+00
MW-167	11/08/18	pCi/L	< 4.4E+00	< 4.3E+00	< 8.6E+00	< 3.8E+00	< 8.7E+00	< 5.6E+00	< 7.9E+00	< 1.1E+01	< 4.4E+00	< 4.6E+00	< 2.3E+01	< 9.2E+00
MW-169	11/08/18	pCi/L	< 2.4E+00	< 2.6E+00	< 5.7E+00	< 2.4E+00	< 5.3E+00	< 2.9E+00	< 4.8E+00	< 9.0E+00	< 2.7E+00	< 2.5E+00	< 1.9E+01	< 6.0E+00
MW-170	11/08/18	pCi/L	< 3.1E+00	< 3.6E+00	< 7.3E+00	< 3.3E+00	< 7.0E+00	< 3.7E+00	< 6.3E+00	< 1.2E+01	< 3.4E+00	< 3.2E+00	< 2.5E+01	< 9.1E+00
MW-170	11/08/18	pCi/L	< 2.7E+00	< 2.7E+00	< 6.1E+00	< 2.8E+00	< 4.6E+00	< 2.9E+00	< 4.7E+00	< 9.3E+00	< 2.6E+00	< 2.6E+00	< 1.8E+01	< 6.9E+00
MW-174	11/08/18	pCi/L	< 4.6E+00	< 4.3E+00	< 1.1E+01	< 4.9E+00	< 1.1E+01	< 7.0E+00	< 9.4E+00	< 1.4E+01	< 5.7E+00	< 4.9E+00	< 3.3E+01	< 1.2E+01
MW-174	11/08/18	pCi/L	< 2.5E+00	< 2.5E+00	< 5.2E+00	< 2.9E+00	< 5.4E+00	< 2.8E+00	< 4.4E+00	< 7.8E+00	< 2.7E+00	< 2.4E+00	< 1.8E+01	< 4.7E+00
MW-18	11/08/18	pCi/L	< 2.4E+00	< 2.6E+00	< 5.5E+00	< 2.7E+00	< 5.6E+00	< 2.7E+00	< 4.4E+00	< 5.9E+00	< 2.7E+00	< 2.7E+00	< 1.5E+01	< 4.2E+00
MW-18	11/08/18	pCi/L	< 6.4E+00	< 5.4E+00	< 7.5E+00	< 4.3E+00	< 1.1E+01	< 6.1E+00	< 9.3E+00	< 1.1E+01	< 5.3E+00	< 6.0E+00	< 2.8E+01	< 8.3E+00
MW-185	11/08/18	pCi/L	< 6.0E+00	< 4.9E+00	< 1.3E+01	< 5.7E+00	< 1.1E+01	< 7.1E+00	< 1.1E+01	< 1.3E+01	< 6.3E+00	< 5.9E+00	< 3.3E+01	< 1.2E+01
MW-185	11/08/18	pCi/L	< 4.6E+00	< 5.9E+00	< 1.5E+01	< 6.4E+00	< 1.1E+01	< 6.4E+00	< 8.3E+00	< 9.3E+00	< 7.7E+00	< 5.5E+00	< 3.1E+01	< 1.2E+01
MW-188	11/08/18	pCi/L	< 2.8E+00	< 3.2E+00	< 6.5E+00	< 2.7E+00	< 5.9E+00	< 3.1E+00	< 4.7E+00	< 8.5E+00	< 3.3E+00	< 3.0E+00	< 1.9E+01	< 5.5E+00
MW-205	11/08/18	pCi/L	< 4.3E+00	< 4.5E+00	< 9.2E+00	< 4.7E+00	< 6.7E+00	< 4.5E+00	< 7.9E+00	< 1.4E+01	< 4.6E+00	< 4.4E+00	< 2.5E+01	< 1.1E+01

Groundwater Monitoring Well Sampling Results

Table 17, Gamma Isotopic Results

Station ID	Sample Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-207	11/08/18	pCi/L	< 5.2E+00	< 6.0E+00	< 1.5E+01	< 6.0E+00	< 1.2E+01	< 5.8E+00	< 8.5E+00	< 1.1E+01	< 5.5E+00	< 5.5E+00	< 2.7E+01	< 7.7E+00
MW-209	11/08/18	pCi/L	< 2.4E+00	< 2.4E+00	< 5.1E+00	< 2.4E+00	< 5.1E+00	< 2.5E+00	< 4.4E+00	< 5.7E+00	< 2.7E+00	< 2.4E+00	< 1.3E+01	< 4.7E+00
MW-213	11/08/18	pCi/L	< 4.8E+00	< 5.1E+00	< 1.1E+01	< 5.6E+00	< 1.1E+01	< 6.2E+00	< 1.0E+01	< 1.5E+01	< 5.9E+00	< 5.1E+00	< 3.4E+01	< 1.0E+01
MW-215	11/08/18	pCi/L	< 5.3E+00	< 4.9E+00	< 1.2E+01	< 7.6E+00	< 1.4E+01	< 7.7E+00	< 1.2E+01	< 1.3E+01	< 5.8E+00	< 6.1E+00	< 3.6E+01	< 1.2E+01
MW-217	11/08/18	pCi/L	< 6.7E+00	< 6.5E+00	< 1.4E+01	< 7.4E+00	< 1.6E+01	< 7.4E+00	< 1.1E+01	< 1.2E+01	< 7.1E+00	< 7.5E+00	< 3.2E+01	< 1.2E+01
MW-219	11/08/18	pCi/L	< 3.5E+00	< 4.1E+00	< 9.2E+00	< 4.4E+00	< 6.9E+00	< 4.1E+00	< 5.0E+00	< 1.1E+01	< 4.2E+00	< 4.0E+00	< 2.3E+01	< 9.9E+00
MW-221	11/08/18	pCi/L	< 2.1E+00	< 2.1E+00	< 4.3E+00	< 2.2E+00	< 4.1E+00	< 2.3E+00	< 3.9E+00	< 4.9E+00	< 2.3E+00	< 2.1E+00	< 1.2E+01	< 4.3E+00
MW-223	11/08/18	pCi/L	< 5.8E+00	< 5.3E+00	< 1.2E+01	< 5.8E+00	< 1.2E+01	< 5.9E+00	< 1.1E+01	< 1.1E+01	< 6.2E+00	< 5.5E+00	< 3.3E+01	< 1.2E+01
MW-227	11/08/18	pCi/L	< 5.3E+00	< 6.0E+00	< 1.3E+01	< 5.5E+00	< 1.2E+01	< 6.9E+00	< 1.2E+01	< 1.4E+01	< 6.6E+00	< 5.9E+00	< 3.5E+01	< 1.2E+01
MW-229	11/08/18	pCi/L	< 5.2E+00	< 4.5E+00	< 1.2E+01	< 7.7E+00	< 1.6E+01	< 6.8E+00	< 9.8E+00	< 1.1E+01	< 5.6E+00	< 5.8E+00	< 2.9E+01	< 6.7E+00
MW-231	11/08/18	pCi/L	< 2.7E+00	< 2.9E+00	< 6.4E+00	< 3.0E+00	< 6.0E+00	< 3.3E+00	< 5.9E+00	< 8.9E+00	< 3.1E+00	< 3.3E+00	< 2.1E+01	< 5.9E+00
MW-235	11/08/18	pCi/L	< 2.5E+00	< 2.8E+00	< 6.7E+00	< 2.7E+00	< 5.0E+00	< 3.0E+00	< 5.0E+00	< 9.3E+00	< 3.0E+00	< 2.5E+00	< 1.9E+01	< 6.4E+00
SW-104	11/08/18	pCi/L	< 2.6E+00	< 2.7E+00	< 6.1E+00	< 3.2E+00	< 5.2E+00	< 2.6E+00	< 4.7E+00	< 5.5E+00	< 2.8E+00	< 2.4E+00	< 1.4E+01	< 5.0E+00
T-14	11/08/18	pCi/L	< 2.5E+00	< 2.4E+00	< 5.7E+00	< 2.6E+00	< 5.4E+00	< 2.7E+00	< 4.3E+00	< 5.3E+00	< 2.8E+00	< 2.7E+00	< 1.4E+01	< 4.3E+00

Table 18, Hard to Detect Nuclides

Station ID	Sample Date	Units	FE-55	NI-63	SR-89	SR-90	CM-242	CM-243/244	PU-238
MW-158	02/08/18	pCi/L	< 1.1E+02	< 2.0E+01	< 9.3E+00	< 2.6E+00	< 2.9E-02	< 8.1E-02	< 1.3E-01

Groundwater Monitoring Well Sampling Results

Table 19, Tritium Analysis Results								
Station ID	Start Date	Units	H-3		Station ID	Start Date	Units	H-3
MW-104	02/06/18	pCi/L	< 6.9E+02		MW-185	05/17/18	pCi/L	< 6.8E+02
MW-104	02/06/18	pCi/L	< 6.9E+02		MW-188	05/17/18	pCi/L	< 6.6E+02
MW-106	02/06/18	pCi/L	< 6.9E+02		MW-209	05/17/18	pCi/L	< 5.9E+02
MW-110	02/06/18	pCi/L	6.10E+04		MW-221	05/17/18	pCi/L	< 6.1E+02
MW-112	02/06/18	pCi/L	5.80E+03		PZ-03	05/17/18	pCi/L	< 6.6E+02
MW-114	02/06/18	pCi/L	2.70E+03		SW-101	05/17/18	pCi/L	< 6.5E+02
MW-116	02/06/18	pCi/L	1.40E+04		SW-102	05/17/18	pCi/L	< 6.4E+02
MW-116	02/06/18	pCi/L	1.30E+04		SW-103	05/17/18	pCi/L	< 6.3E+02
MW-118	02/06/18	pCi/L	2.80E+03		SW-104	05/17/18	pCi/L	< 6.4E+02
MW-124	02/06/18	pCi/L	1.80E+04		MW-124	08/21/18	pCi/L	9.60E+04
MW-137	02/06/18	pCi/L	2.50E+04		MW-125	08/21/18	pCi/L	3.60E+05
MW-137	02/06/18	pCi/L	2.70E+04		MW-142	08/21/18	pCi/L	< 6.6E+02
MW-139	02/06/18	pCi/L	1.00E+03		MW-144	08/21/18	pCi/L	1.40E+03
MW-141	02/06/18	pCi/L	2.70E+03		MW-146	08/21/18	pCi/L	1.40E+05
MW-153	02/06/18	pCi/L	1.30E+03		MW-147	08/21/18	pCi/L	1.40E+04
MW-161	02/06/18	pCi/L	3.60E+03		MW-148	08/21/18	pCi/L	4.30E+03
MW-178	02/06/18	pCi/L	8.00E+03		MW-151	08/21/18	pCi/L	< 6.6E+02

Groundwater Monitoring Well Sampling Results

Table 19, Tritium Analysis Results								
Station ID	Start Date	Units	H-3		Station ID	Start Date	Units	H-3
MW-179	02/06/18	pCi/L	3.30E+05		MW-155	08/21/18	pCi/L	7.60E+04
MW-186	02/06/18	pCi/L	< 6.9E+02		MW-156	08/21/18	pCi/L	2.60E+03
MW-187	02/06/18	pCi/L	< 6.8E+02		MW-157	08/21/18	pCi/L	1.50E+05
MW-05	02/07/18	pCi/L	< 6.7E+02		MW-158	08/21/18	pCi/L	3.90E+05
MW-06	02/07/18	pCi/L	< 6.9E+02		MW-159	08/21/18	pCi/L	1.60E+03
MW-06	02/07/18	pCi/L	< 6.9E+02		MW-159	08/21/18	pCi/L	1.40E+03
MW-08	02/07/18	pCi/L	< 6.9E+02		MW-162	08/21/18	pCi/L	< 6.7E+02
MW-103	02/07/18	pCi/L	< 5.2E+02		MW-164	08/21/18	pCi/L	< 6.5E+02
MW-107	02/07/18	pCi/L	< 6.9E+02		MW-165	08/21/18	pCi/L	< 6.6E+02
MW-108	02/07/18	pCi/L	< 6.8E+02		MW-169	08/21/18	pCi/L	< 6.7E+02
MW-111	02/07/18	pCi/L	< 6.9E+02		MW-178	08/21/18	pCi/L	1.40E+04
MW-120	02/07/18	pCi/L	< 6.6E+02		MW-179	08/21/18	pCi/L	4.20E+05
MW-120	02/07/18	pCi/L	< 6.8E+02		MW-186	08/21/18	pCi/L	< 6.5E+02
MW-122R	02/07/18	pCi/L	< 6.9E+02		MW-187	08/21/18	pCi/L	< 6.7E+02
MW-125	02/07/18	pCi/L	3.10E+05		MW-201	08/21/18	pCi/L	< 6.8E+02
MW-14	02/07/18	pCi/L	< 6.4E+02		MW-203	08/21/18	pCi/L	< 6.8E+02
MW-151	02/07/18	pCi/L	< 6.6E+02		MW-215	08/21/18	pCi/L	< 6.9E+02

Groundwater Monitoring Well Sampling Results

Table 19, Tritium Analysis Results							
Station ID	Start Date	Units	H-3	Station ID	Start Date	Units	H-3
MW-155	02/07/18	pCi/L	1.90E+05	MW-217	08/21/18	pCi/L	< 6.7E+02
MW-155	02/07/18	pCi/L	2.00E+05	MW-100	08/22/18	pCi/L	< 6.7E+02
MW-156	02/07/18	pCi/L	2.30E+03	MW-110	08/22/18	pCi/L	5.00E+04
MW-157	02/07/18	pCi/L	1.30E+05	MW-112	08/22/18	pCi/L	7.30E+03
MW-165	02/07/18	pCi/L	< 7.0E+02	MW-114	08/22/18	pCi/L	2.40E+03
MW-170	02/07/18	pCi/L	< 6.9E+02	MW-116	08/22/18	pCi/L	7.60E+03
MW-180	02/07/18	pCi/L	< 6.5E+02	MW-118	08/22/18	pCi/L	3.00E+03
MW-207	02/07/18	pCi/L	< 5.3E+02	MW-137	08/22/18	pCi/L	2.70E+04
MW-209	02/07/18	pCi/L	< 6.3E+02	MW-139	08/22/18	pCi/L	1.20E+03
MW-211	02/07/18	pCi/L	< 5.3E+02	MW-141	08/22/18	pCi/L	2.90E+03
MW-213	02/07/18	pCi/L	< 5.2E+02	MW-153	08/22/18	pCi/L	1.20E+03
MW-217	02/07/18	pCi/L	< 5.3E+02	MW-153	08/22/18	pCi/L	1.90E+03
PZ-01	02/07/18	pCi/L	5.30E+04	MW-161	08/22/18	pCi/L	1.20E+03
SW-101	02/07/18	pCi/L	< 6.6E+02	MW-170	08/22/18	pCi/L	< 6.6E+02
MW-100	02/08/18	pCi/L	< 6.8E+02	MW-182	08/22/18	pCi/L	< 6.5E+02
MW-126	02/08/18	pCi/L	< 6.5E+02	MW-188	08/22/18	pCi/L	< 6.5E+02
MW-128	02/08/18	pCi/L	< 6.5E+02	MW-205	08/22/18	pCi/L	< 6.8E+02

Groundwater Monitoring Well Sampling Results

Table 19, Tritium Analysis Results								
Station ID	Start Date	Units	H-3		Station ID	Start Date	Units	H-3
MW-128	02/08/18	pCi/L	< 6.5E+02		MW-207	08/22/18	pCi/L	< 6.6E+02
MW-130	02/08/18	pCi/L	< 6.6E+02		MW-209	08/22/18	pCi/L	< 6.6E+02
MW-130	02/08/18	pCi/L	< 6.5E+02		MW-211	08/22/18	pCi/L	< 6.7E+02
MW-131	02/08/18	pCi/L	< 6.8E+02		MW-211	08/22/18	pCi/L	< 6.7E+02
MW-132	02/08/18	pCi/L	< 6.6E+02		MW-213	08/22/18	pCi/L	< 6.8E+02
MW-134	02/08/18	pCi/L	< 6.9E+02		MW-213	08/22/18	pCi/L	< 6.8E+02
MW-142	02/08/18	pCi/L	< 6.9E+02		MW-221	08/22/18	pCi/L	< 6.6E+02
MW-144	02/08/18	pCi/L	8.30E+02		MW-227	08/22/18	pCi/L	< 6.7E+02
MW-146	02/08/18	pCi/L	2.00E+05		MW-229	08/22/18	pCi/L	< 6.7E+02
MW-147	02/08/18	pCi/L	1.90E+05		MW-229	08/22/18	pCi/L	< 6.6E+02
MW-148	02/08/18	pCi/L	< 6.8E+02		MW-231	08/22/18	pCi/L	< 6.7E+02
MW-158	02/08/18	pCi/L	7.00E+05		PZ-01	08/22/18	pCi/L	5.40E+04
MW-159	02/08/18	pCi/L	2.80E+03		MW-219	08/23/18	pCi/L	< 6.6E+02
MW-162	02/08/18	pCi/L	< 6.9E+02		MW-223	08/23/18	pCi/L	< 6.9E+02
MW-164	02/08/18	pCi/L	< 4.8E+02		MW-225	08/23/18	pCi/L	< 6.7E+02
MW-167	02/08/18	pCi/L	< 6.8E+02		MW-233	08/23/18	pCi/L	< 6.7E+02
MW-169	02/08/18	pCi/L	< 5.3E+02		MW-235	08/23/18	pCi/L	< 6.8E+02

Annual Radioactive Effluent Release Report

Attachment 1

Page 24 of 29

Groundwater Monitoring Well Sampling Results

Table 19, Tritium Analysis Results

Station ID	Start Date	Units	H-3		Station ID	Start Date	Units	H-3
MW-172	02/08/18	pCi/L	< 6.5E+02		SW-103	08/23/18	pCi/L	< 6.8E+02
MW-174	02/08/18	pCi/L	< 6.9E+02		MW-148	09/10/18	pCi/L	5.50E+03
MW-182	02/08/18	pCi/L	< 6.9E+02		MW-112	11/06/18	pCi/L	5.70E+03
MW-185	02/08/18	pCi/L	< 6.8E+02		MW-114	11/06/18	pCi/L	1.80E+03
MW-188	02/08/18	pCi/L	< 6.8E+02		MW-116	11/06/18	pCi/L	9.40E+03
MW-205	02/08/18	pCi/L	< 5.3E+02		MW-118	11/06/18	pCi/L	2.70E+03
MW-215	02/08/18	pCi/L	< 5.2E+02		MW-139	11/06/18	pCi/L	1.20E+03
MW-219	02/08/18	pCi/L	< 5.2E+02		MW-141	11/06/18	pCi/L	2.50E+03
PZ-03	02/08/18	pCi/L	< 6.8E+02		MW-142	11/06/18	pCi/L	< 6.6E+02
SW-102	02/08/18	pCi/L	< 6.8E+02		MW-144	11/06/18	pCi/L	< 6.3E+02
SW-103	02/08/18	pCi/L	< 6.6E+02		MW-146	11/06/18	pCi/L	1.80E+05
SW-104	02/08/18	pCi/L	< 6.6E+02		MW-147	11/06/18	pCi/L	9.60E+04
MW-201	02/20/18	pCi/L	< 6.5E+02		MW-148	11/06/18	pCi/L	7.80E+03
MW-203	02/20/18	pCi/L	< 6.6E+02		MW-158	11/06/18	pCi/L	5.50E+05
MW-221	02/21/18	pCi/L	< 6.4E+02		MW-159	11/06/18	pCi/L	2.00E+03
MW-223	02/22/18	pCi/L	< 6.7E+02		MW-159	11/06/18	pCi/L	2.10E+03
MW-225	04/11/18	pCi/L	< 6.0E+02		MW-161	11/06/18	pCi/L	7.90E+02

Groundwater Monitoring Well Sampling Results

Table 19, Tritium Analysis Results								
Station ID	Start Date	Units	H-3		Station ID	Start Date	Units	H-3
MW-227	04/11/18	pCi/L	< 6.1E+02		MW-162	11/06/18	pCi/L	< 6.6E+02
MW-229	04/11/18	pCi/L	< 6.0E+02		MW-178	11/06/18	pCi/L	8.40E+03
MW-233	04/11/18	pCi/L	< 5.9E+02		MW-179	11/06/18	pCi/L	4.10E+05
MW-235	04/11/18	pCi/L	< 6.0E+02		MW-179	11/06/18	pCi/L	4.10E+05
MW-231	05/01/18	pCi/L	< 6.2E+02		MW-201	11/06/18	pCi/L	< 6.5E+02
MW-155	05/10/18	pCi/L	8.40E+04		MW-203	11/06/18	pCi/L	< 6.6E+02
MW-155	05/10/18	pCi/L	8.50E+04		MW-05	11/07/18	pCi/L	< 6.6E+02
MW-169	05/10/18	pCi/L	< 6.0E+02		MW-100	11/07/18	pCi/L	< 6.2E+02
MW-211	05/10/18	pCi/L	< 6.0E+02		MW-110	11/07/18	pCi/L	4.00E+04
MW-215	05/10/18	pCi/L	< 6.0E+02		MW-124	11/07/18	pCi/L	7.60E+04
MW-229	05/10/18	pCi/L	< 6.1E+02		MW-124	11/07/18	pCi/L	7.80E+04
MW-142	05/15/18	pCi/L	< 6.6E+02		MW-125	11/07/18	pCi/L	4.20E+05
MW-144	05/15/18	pCi/L	1.80E+03		MW-126	11/07/18	pCi/L	< 5.8E+02
MW-146	05/15/18	pCi/L	1.20E+05		MW-126	11/07/18	pCi/L	< 6.6E+02
MW-147	05/15/18	pCi/L	1.40E+04		MW-137	11/07/18	pCi/L	1.60E+04
MW-148	05/15/18	pCi/L	< 6.7E+02		MW-151	11/07/18	pCi/L	< 6.3E+02
MW151	05/15/18	pCi/L	< 6.3E+02		MW-153	11/07/18	pCi/L	1.40E+03

Annual Radioactive Effluent Release Report

Attachment 1

Page 26 of 29

Groundwater Monitoring Well Sampling Results

Table 19, Tritium Analysis Results

Station ID	Start Date	Units	H-3		Station ID	Start Date	Units	H-3
MW-158	05/15/18	pCi/L	4.10E+05		MW-155	11/07/18	pCi/L	1.40E+05
MW-159	05/15/18	pCi/L	1.50E+03		MW-156	11/07/18	pCi/L	2.60E+03
MW-159	05/15/18	pCi/L	1.40E+03		MW-157	11/07/18	pCi/L	1.70E+05
MW-162	05/15/18	pCi/L	< 6.4E+02		MW-164	11/07/18	pCi/L	< 6.3E+02
MW-164	05/15/18	pCi/L	< 6.8E+02		MW-165	11/07/18	pCi/L	< 6.5E+02
MW-165	05/15/18	pCi/L	< 6.6E+02		MW-172	11/07/18	pCi/L	< 6.3E+02
MW-178	05/15/18	pCi/L	1.40E+04		MW-180	11/07/18	pCi/L	< 6.3E+02
MW-179	05/15/18	pCi/L	3.80E+05		MW-182	11/07/18	pCi/L	< 6.3E+02
MW-186	05/15/18	pCi/L	< 6.5E+02		MW-186	11/07/18	pCi/L	< 6.5E+02
MW-187	05/15/18	pCi/L	< 6.4E+02		MW-187	11/07/18	pCi/L	< 6.5E+02
MW-201	05/15/18	pCi/L	< 6.1E+02		MW-211	11/07/18	pCi/L	< 6.3E+02
MW-203	05/15/18	pCi/L	< 6.1E+02		MW-225	11/07/18	pCi/L	< 6.5E+02
MW-110	05/16/18	pCi/L	4.20E+04		MW-233	11/07/18	pCi/L	< 6.5E+02
MW-112	05/16/18	pCi/L	6.70E+03		PZ-01	11/07/18	pCi/L	5.90E+04
MW-112	05/16/18	pCi/L	6.20E+03		PZ-03	11/07/18	pCi/L	< 6.5E+02
MW-114	05/16/18	pCi/L	1.40E+03		MW-04	11/08/18	pCi/L	< 6.5E+02
MW-116	05/16/18	pCi/L	4.40E+03		MW-08	11/08/18	pCi/L	< 6.6E+02

Groundwater Monitoring Well Sampling Results

Table 19, Tritium Analysis Results								
Station ID	Start Date	Units	H-3		Station ID	Start Date	Units	H-3
MW-124	05/16/18	pCi/L	1.00E+05		MW-103	11/08/18	pCi/L	< 6.4E+02
MW-125	05/16/18	pCi/L	3.10E+05		MW-104	11/08/18	pCi/L	< 6.3E+02
MW-137	05/16/18	pCi/L	1.90E+04		MW-106	11/08/18	pCi/L	< 6.3E+02
MW-139	05/16/18	pCi/L	7.80E+02		MW-107	11/08/18	pCi/L	< 6.6E+02
MW-141	05/16/18	pCi/L	2.50E+03		MW-108	11/08/18	pCi/L	< 6.3E+02
MW-156	05/16/18	pCi/L	2.40E+03		MW-111	11/08/18	pCi/L	< 6.5E+02
MW-157	05/16/18	pCi/L	1.50E+05		MW-120	11/08/18	pCi/L	< 6.5E+02
MW-161	05/16/18	pCi/L	1.50E+03		MW-122R	11/08/18	pCi/L	< 6.5E+02
MW-205	05/16/18	pCi/L	< 6.2E+02		MW-128	11/08/18	pCi/L	< 6.3E+02
MW-207	05/16/18	pCi/L	< 6.2E+02		MW-130	11/08/18	pCi/L	< 6.6E+02
MW-213	05/16/18	pCi/L	< 6.1E+02		MW-131	11/08/18	pCi/L	< 6.6E+02
MW-217	05/16/18	pCi/L	< 6.2E+02		MW-132	11/08/18	pCi/L	< 6.3E+02
MW-219	05/16/18	pCi/L	< 6.1E+02		MW-134	11/08/18	pCi/L	< 6.4E+02
MW-223	05/16/18	pCi/L	< 6.2E+02		MW-14	11/08/18	pCi/L	< 6.3E+02
MW-225	05/16/18	pCi/L	< 6.1E+02		MW-167	11/08/18	pCi/L	< 6.6E+02
MW-225	05/16/18	pCi/L	< 6.2E+02		MW-169	11/08/18	pCi/L	< 6.2E+02
MW-227	05/16/18	pCi/L	< 6.1E+02		MW-170	11/08/18	pCi/L	< 6.3E+02

Annual Radioactive Effluent Release Report

Attachment 1

Page 28 of 29

Groundwater Monitoring Well Sampling Results

Table 19, Tritium Analysis Results

Station ID	Start Date	Units	H-3		Station ID	Start Date	Units	H-3
MW-231	05/16/18	pCi/L	< 6.3E+02		MW-170	11/08/18	pCi/L	< 5.8E+02
MW-233	05/16/18	pCi/L	< 6.2E+02		MW-174	11/08/18	pCi/L	< 6.4E+02
MW-235	05/16/18	pCi/L	< 6.1E+02		MW-174	11/08/18	pCi/L	< 6.3E+02
PZ-01	05/16/18	pCi/L	5.60E+04		MW-18	11/08/18	pCi/L	< 6.6E+02
MW-100	05/17/18	pCi/L	< 6.6E+02		MW-18	11/08/18	pCi/L	< 6.6E+02
MW-106	05/17/18	pCi/L	< 6.3E+02		MW-185	11/08/18	pCi/L	< 6.5E+02
MW-106	05/17/18	pCi/L	< 6.4E+02		MW-185	11/08/18	pCi/L	< 6.5E+02
MW-118	05/17/18	pCi/L	2.40E+03		MW-188	11/08/18	pCi/L	< 6.3E+02
MW-120	05/17/18	pCi/L	< 6.7E+02		MW-205	11/08/18	pCi/L	< 6.3E+02
MW-122R	05/17/18	pCi/L	< 6.7E+02		MW-207	11/08/18	pCi/L	< 6.5E+02
MW-126	05/17/18	pCi/L	< 6.7E+02		MW-209	11/08/18	pCi/L	< 6.5E+02
MW-126	05/17/18	pCi/L	< 6.7E+02		MW-213	11/08/18	pCi/L	< 6.3E+02
MW-128	05/17/18	pCi/L	< 6.7E+02		MW-215	11/08/18	pCi/L	< 6.6E+02
MW-130	05/17/18	pCi/L	< 6.3E+02		MW-217	11/08/18	pCi/L	< 6.5E+02
MW-131	05/17/18	pCi/L	< 6.4E+02		MW-219	11/08/18	pCi/L	< 6.4E+02
MW-132	05/17/18	pCi/L	< 6.6E+02		MW-221	11/08/18	pCi/L	< 6.6E+02
MW-134	05/17/18	pCi/L	< 6.7E+02		MW-223	11/08/18	pCi/L	< 6.5E+02

Groundwater Monitoring Well Sampling Results

Table 19, Tritium Analysis Results								
Station ID	Start Date	Units	H-3		Station ID	Start Date	Units	H-3
MW-153	05/17/18	pCi/L	1.00E+03		MW-227	11/08/18	pCi/L	< 6.3E+02
MW-167	05/17/18	pCi/L	< 6.5E+02		MW-229	11/08/18	pCi/L	< 6.5E+02
MW-170	05/17/18	pCi/L	< 6.6E+02		MW-231	11/08/18	pCi/L	< 6.4E+02
MW172	05/17/18	pCi/L	< 6.7E+02		MW-235	11/08/18	pCi/L	< 6.4E+02
MW-174	05/17/18	pCi/L	< 6.7E+02		SW-104	11/08/18	pCi/L	< 6.5E+02
MW-180	05/17/18	pCi/L	< 6.6E+02		T-14	11/08/18	pCi/L	< 6.5E+02
MW-182	05/17/18	pCi/L	< 6.7E+02					