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AMEREN MISSOURI
CALLAWAY ENERGY CENTER
FULTON, MISSOURI

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ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

to

THE UNITED STATES NUCLEAR REGULATORY COMMISSION

Part I

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Prepared by

ENVIRONMENTAL, Inc.
Midwest Laboratory
and
Ameren Missouri
Callaway Energy Center

Submitted by

UNION ELECTRIC CO.
dba Ameren Missouri

Project No. 8036

PREFACE

This Annual Radiological Environmental Operating Report (AREOR) describes the Ameren Missouri Callaway Energy Center Radiological Environmental Monitoring Program (REMP), and the program results for the calendar year 2022. It is submitted in accordance with section 5.6.2 of the Callaway Energy Center Technical Specifications.

Staff members of the Environmental, Inc., Midwest Laboratory were responsible for the acquisition of data presented in this report. Environmental samples were collected by Ameren Missouri personnel or contractors to Ameren Missouri and shipped to Environmental, Inc. – Midwest Laboratory and Stanford Dosimetry, LLC, for analysis.

The report was prepared by Environmental, Inc., Midwest Laboratory and the Ameren Missouri Callaway Energy Center.

TABLE OF CONTENTS

No.		Page
	PREFACE	ii
	List of Tables	v
	List of Figures	vi
1.0	INTRODUCTION	1
2.0	SUMMARY	2
3.0	RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM	3
3.1	Program Design and Data Interpretation	3
3.2	Program Description	4
3.3	Program Execution	5
3.4	Laboratory Procedures	6
3.5	Program Modifications	7
3.6	Detection and Reporting Limits	7
3.7	Land Use Census	7
3.8	Errata from previous AREOR's	7
4.0	RESULTS AND DISCUSSION	8
4.1	Atmospheric Nuclear Detonations and Nuclear Accidents	8
4.2	Program Findings	8
5.0	TABLES	11
6.0	REFERENCES CITED	25

APPENDICES

A	Interlaboratory Comparison Program Results	A-1
B	Data Reporting Conventions	B-1
C	Non-Radiological Monitoring Program	C-1
D	Sampling Location Maps	D-1

PART II Page

Data Tabulations and Analyses i

LIST OF TABLES

No.		Page
5.1	Sampling Locations, Ameren Missouri, Callaway Energy Center	12
5.2	Collection Frequencies and Required Analyses	16
5.3	Minimum Required Detection Capabilities for REMP Sample Analysis	17
5.4	Results of the Land Use Census	18
5.5	Missed Collections and Analyses	19
5.6	Radiological Environmental Monitoring Program Summary	20
5.7	Direct Radiation Dose (mrem/90 days) for the Period 2000-2020	22

In addition, the following tables are in the Appendices:

Appendix A

	Attachment A: Acceptance criteria for spiked samples	A-2
A-1	Interlaboratory Comparison Crosscheck Program, Environmental Resource Associates RAD study (substitute program for EPA)	A-3
A-3	In-house Spiked Samples	A-6
A-4	In-house "Blank" Samples	A-8
A-5	In-house "Duplicate" Samples	A-11
A-6	Department of Energy MAPEP comparison results	A-15
A-7	Interlaboratory Comparison Crosscheck Program, Environmental Resource Associates MRAD study (substitute program for EML)	A-17

LIST OF FIGURES

Appendix D

No.		Page
D-1	Radiological Environmental Sampling Locations 1, 2, 3 mile radius from site location	D-2
D-2	Radiological Environmental Sampling Locations 3, 4, 5, 6 mile radius from site location.	D-3
D-3	Radiological Environmental Sampling Locations 5, 10, 15 mile radius from site location	D-4
D-4	Non-Potable Groundwater Monitoring Wells, 600 ft radius	D-5
D-5	Non-Potable Groundwater Monitoring Wells Collection	D-6

1.0 INTRODUCTION

This report presents an analysis of the results of the Radiological Environmental Monitoring Program (REMP) conducted during 2022 for the Union Electric Company (dba Ameren Missouri) Callaway Energy Center.

The objectives of the REMP are to monitor potential critical pathways of radioactive effluent to man and determine the radiological impact on the environment caused by operation of the Callaway Energy Center. The Radiological Environmental Monitoring Program was initiated in April 1982.

The Callaway Energy Center consists of one 3565 MWt pressurized water reactor, which achieved initial criticality on October 2, 1984. The plant is located on a plateau approximately ten miles southeast of the City of Fulton in Callaway County, Missouri and approximately eighty miles west of the St. Louis metropolitan area. The Missouri River flows by the site in an easterly direction approximately five miles south of the site at its closest point.

Tabulation of the individual analyses for the year 2022 is included in Part II of this report.

2.0 SUMMARY

The Radiological Environmental Monitoring Program, as required by the U.S. Nuclear Regulatory Commission (NRC) Technical Specifications for the Callaway Energy Center is described herein. Results for the year 2022 are summarized and discussed.

For the year, the Callaway Energy Center was operated in compliance with Offsite Dose Calculation Manual (ODCM) and Radiological Effluent Controls (REC) requirements. Results from the REMP indicate the Callaway Energy Center has had no significant radiological impact on the health and safety of the public or on the environment.

3.0 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

3.1 Program Design and Data Interpretation

The purpose of the Radiological Environmental Monitoring Program at the Callaway Energy Center is to assess the impact of the plant on its environment. For this purpose, samples are collected from waterborne, airborne, ingestion and terrestrial pathways and analyzed for radioactive content. Direct radiation levels are monitored by thermoluminescent dosimeters (TLDs).

Sources of environmental radiation can include the following:

(1) Natural background radiation arising from cosmic rays and primordial radionuclides;
(2) Fallout from atmospheric nuclear detonations;
(3) Releases from nuclear power plants, planned or accidental; and
(4) Industrial and medical radioactive waste.

Effects due to operation of the Callaway Energy Center must be distinguished from those due to other sources in interpreting the data.

The indicator-control concept is a major interpretive aid; where feasible the design of the Callaway Energy Center program has both indicator and control stations. Most types of samples are collected at indicator locations (nearby, downwind, or downstream) and at control locations (distant, upwind, or upstream). A station effect would be indicated if the radiation level at an indicator location was significantly larger than that at the control location. The difference would have to be greater than could be accounted for by typical fluctuations in radiation levels arising from other sources.

The monitoring program includes analyses for iodine-131, a fission product, and tritium, which is produced by cosmic rays, atmospheric nuclear detonations, and also by nuclear power plants. Most samples are analyzed for gamma-emitting isotopes, with results for the following groups quantified: zirconium-95, cesium-137, and cerium-144. These three gamma-emitting isotopes are selected as radiological impact indicators because of the different characteristic proportions in which they appear in the fission product mix produced by a nuclear reactor and that produced by a nuclear detonation. Each of the three isotopes is produced in roughly equivalent amounts by a reactor: each constitutes about 10% of the total activity of fission products ten days after reactor shutdown. On the other hand, ten days after a nuclear explosion, the contributions of zirconium-95, cerium-144, and cesium-137 to the activity of the resulting debris are in the approximate ratio 4:1:0.03 (Eisenbud,1963).

The other group quantified consists of niobium-95, ruthenium-103 and -106, cesium-134, barium-lanthanum-140, and cerium-141. These isotopes are released in small quantities by nuclear power plants, but to date their major source of injection into the general environment has been atmospheric nuclear testing. Nuclides of the next group, manganese-54, cobalt-58 and-60, and zinc-65, are activation products and arise from activation of corrosion products. They are typical components of nuclear power plant effluents but are not produced in significant quantities by nuclear detonation.

Nuclides of the final group, beryllium-7, which is of cosmogenic origin, and potassium-40, a naturally-occurring isotope, were chosen as analytical monitors and should not be considered radiological impact indicators.

Other means of distinguishing sources of environmental radiation can be employed in interpreting the data. Current radiation levels can be compared with previous levels, including pre-operational data. Results of the monitoring program can be related to those obtained in other parts of the world. Finally, results can be related to events known to cause elevated levels of radiation in the environment, e.g., a nuclear accident.

3.2 Program Description

The sampling and analysis schedules for the environmental radiological monitoring program at the Callaway Energy Center are summarized in Tables 5.1 and 5.2 and briefly reviewed below. Table 5.1 identifies sampling locations and specifies as to type (indicator or control) and its distance, and direction relative to the reactor site. The types of samples collected at each location, required analyses and the frequency of collections are presented in Table 5.2.

To monitor the air environment, airborne particulate and airborne iodine samples are collected by continuous pumping, at six locations. The airborne particulates are collected on glass fiber filters and the airborne iodine through activated charcoal cartridges. Both filters and cartridges are exchanged weekly. Airborne particulates are analyzed for gamma-emitting isotopes. Charcoal cartridges are analyzed for iodine-131.

The ingestion pathway is monitored by sampling of milk (if available), fish and green leafy vegetation.

Milk samples are collected semi-monthly when animals are on pasture and monthly the rest of the year. There were no milk indicator or control stations identified by the Land Use Census for the subject year. Milk samples are analyzed for iodine-131 and gamma-emitting isotopes when available.

Monthly during the growing season, edible green leafy vegetation is collected from both indicator and control locations. Vegetation samples typically consist of mustard greens, turnip greens, cabbage, lettuce, collards, radish greens, swiss chard, broccoli and poke. Other edible broad leaf vegetation is collected if primary varieties are not available. The samples are analyzed for iodine-131 and other gamma-emitting isotopes.

The waterborne pathway is monitored by sampling surface water, groundwater and drinking water, and shoreline sediments. Water samples are analyzed for tritium and gamma-emitting isotopes, and sediments are analyzed for gamma-emitting isotopes.

The waterborne pathway is also monitored by upstream and downstream semiannual collections of fish. The five most abundant recreational or commercial fish species are collected. The edible portions of the samples are analyzed for gamma-emitting isotopes.

Monthly composite samples of surface water from the Missouri River are collected from one indicator location (S02) and from one control location (S01). The surface water samples are composites of daily collections by automatic river samplers.

Onsite surface water from ponds is analyzed for tritium and gamma-emitting isotopes. The collection frequencies are semiannually.

To monitor possible sources of ground water contamination due to plant operations, non-potable ground water samples were collected monthly or quarterly from well locations both onsite and along the discharge pipeline. The samples were analyzed for tritium and gamma-emitting isotopes.

Potable well water samples are collected quarterly from the plant drinking water supply and neighboring property owners. The samples were analyzed for tritium and gamma-emitting isotopes.

Shoreline sediment is collected semiannually at the plant's intake (A) and discharge (C). These samples are collected within two feet of the edge of the water. The samples are analyzed for gamma-emitting isotopes.

3.2 Program Description (continued)

The direct ambient gamma radiation pathway is also considered. This exposure is monitored by thermoluminescent dosimeters (TLDs) at forty-four locations in and around the Callaway site. The TLDs are placed in 16 sectors around the plant as specified in the ODCM-RECS. Five of the TLD stations have neutron monitoring capability and three locations are designated as controls. TLDs are exchanged and analyzed quarterly.

Soil is collected annually from seven indicator locations (F2, F6, PR3, PR7, W2, W5 and W6) and two control locations (M9, W1) to monitor the terrestrial environment. The samples are analyzed for gamma-emitting isotopes.

3.3 Program Execution

The program was executed as described in the preceding section with the following exceptions.

(1) Airborne Particulates and Iodine:

On 02/07/2022 air samples at stations CA-A-1, CA-A-7, CA-A-8, CA-A-9, CA-A-10 and CA-A-11 were collected after 11 days due to unsafe conditions (CR#202200713).

The air samples at stations CA-A-1, CA-A-7, CA-A-8, CA-A-10 and CA-A-11 were collected 02/10/2022 after only 3 days due to the delay of the previous week's collection (CR#202200713).

The air sampler at air station CA-A-9 was found with low flow. 09/08/2022 (CR#202205973). The overall sample volume was not adversely affected, and the sample was sent for analysis with the rest of the samples. No deviations found.

The air sampler at air station CA-A-8 was found not running, no saved data. 09/15/2022 (CR#202206142).

(2) Food Products-Leafy Green Vegetables:

April 2022 – Samples could not be collected at locations CA-FPL-V9, CA-FPL-V12, CA-FPL-V16 and CA-FPL-V19 due to cold temperatures (CR#202202274).

May 2022 – Samples could not be collected at locations CA-FPL-V9 and CA-FPL-V19 due to frost damage (CR#202203241).

September 2022 – Insufficient sample available for collection at location CA-FPL-V19 (CR#202206060).

October 2022 – Insufficient sample available for collection at location CA-FPL-V16 (CR#202206730).

(3) Surface Water:

River Samplers Out of Service Time:

Sampler S01, the upstream sampler located in the plant water intake structure about 550 feet upstream of the discharge, was out of service for approximately 1 days (0.4% of the year) during 2022. This was scheduled maintenance to replace sampler heat trace. (Job 20004461).

3.3 Program Execution (continued)

Sampler S02, the downstream sampler located at the end of the mixing zone in Portland, MO, was out of service for approximately 28 days (7.7% of the year) during 2022. Most of this down time is accounted for in October and December 2022. During October, the sample pump became flooded and required repair, (CR 202206693). During December, the downtime was due to sample lines and sample building freezing during extreme cold at the end of 2022. (CR 202208496). The sample pump and lines were repaired/replaced, and Portland returned to service 01/06/2023 11:48.

During those out of service times, daily grab samples are collected as required per Callaway's procedures.

(4) Wells and Ponds (non-potable water):

The well sample scheduled to be collected 02/08/2022 at location CA-WWA-U1MW-47 could not be collected (CR#202200814).

(5) Direct Radiation:

The TLD at location CA-IDM-39A (ODCM location) found damaged (CR202200067).
The TLD at location CA-IDM-49 was found missing during the collection of TLD's for the second quarter of 2022 (CR#202204548).
The TLD at location CA-IDM-06 was found wet, during the collection of TLD's for the second quarter of 2022 (CR#202204570).
The TLD at location CA-IDM-17 was moved due to original mounting pole being removed CR202204954).

3.4 Laboratory Procedures

Gamma-spectroscopic analyses were performed with HPGe detectors. Levels of iodine-131 in vegetation and concentrations of airborne iodine-131 in charcoal samples were also determined by gamma spectroscopy.

Tritium was measured by liquid scintillation.

Analytical procedures used by Environmental, Inc. are on file at the laboratory and are available for inspection. Procedures are based on those prescribed by the Health and Safety Laboratory of the U.S. Dep't of Energy, Edition 28, 1997, U.S. Environmental Protection Agency for Measurement of Radioactivity in Drinking Water, 1980, and the U.S. Environmental Protection Agency, EERF, Radiochemical Procedures Manual, 1984.

Environmental, Inc., Midwest Laboratory has a comprehensive quality control/quality assurance program designed to assure the reliability of data obtained. Details of the QA Program are presented elsewhere (Environmental, Inc., Midwest Laboratory, 2022). The QA Program includes participation in Interlaboratory Comparison (crosscheck) Programs. Results obtained through Quality control samples and crosscheck program results are presented in Appendix A.

Environmental TLDs are processed by Environmental Dosimetry Company, affiliated with Stanford Dosimetry, LLC.

3.5 Program Modifications

Location CA-WWA-U1MW-013, removed from the non-potable groundwater wells collection program in 2021, was added back into program in 2022 (CR#202202619).

Locations Wetlands 01 and Wetlands 02 were added to the pond sampling program in 2022 (CR#202202619).

The dosimeter at location CA-IDM-49 was moved from a sign at the site to the nearest electric pole approximately fifteen feet away so that it could be reoriented to directly face the plant. Both the gamma dosimeter CA-IDM-22a and its co-located neutron dosimeter CA-IDM-63N were repositioned so that they are no longer obstructed by conduit at their location. The dosimeter at location CA-IDM-33 was reoriented to face the plant directly. Dosimeters with orientations that were only 10 – 20 degrees out of alignment with the plant (CA-IDM-46, 23, 20, 18a, 05, 44, 31a, 60/60N, 35, 39, 39a and 40) were reoriented to face the plant directly. (CR#202204202-001)

3.6 Detection and Reporting Limits

Table 5.3 gives the minimum required detection limits for radiological environmental sample analysis. For each sample type, the table lists the detection level for each isotope. The lower limit of detection (LLD) used in this report is described in NRC Regulatory Guide 4.1 Rev. 1, "Program for Monitoring Radioactivity in the Environs of Nuclear Power Plants" and the NRC Radiological Assessment Branch Technical Position, Rev. 1, November 1979, "An Acceptable Radiological Environmental Monitoring Program".

3.7 Land Use Census

The Land Use Census is performed annually during the growing season. In 2022 the field inspection of the sectors was conducted September 9, 2022, within a five-mile radius of the Callaway Energy Center. The area around the plant was divided into 16 meteorological sectors. The locations of the nearest resident, nearest milk animal, and nearest garden of greater than 500 square feet producing broadleaf vegetation were identified.

The results of the census are presented in Table 5.4. The table includes radial direction and distance from the Callaway Energy Center for each location. The bearings listed in Table 5.4 were measured from the Callaway Plant to the sample location.

There are no changes to the closest residents or closest broadleaf gardens in 2022. No milking animals were located during the survey.

All residents included in the summary were verified by the Callaway County Assessor’s GIS aerial photography.

The Missouri Department of Natural Resources has not identified any new water wells along the Mud Creek or Logan Creek corridors.

The US Army Corps of Engineers was contacted, and they confirmed that no new drinking water intakes have been located along the Missouri River within ten (10) river miles downstream from the Callaway Plant. In addition, no irrigation uses of the Missouri River were identified between the discharge point and Portland, MO during the survey.

3.8 Errata from previous Annual Radiological Environmental Operating Reports

None.

4.0 RESULTS AND DISCUSSION

All collections and analyses were made as scheduled, except for those listed in Table 5.5.

Results are summarized in Table 5.6 as recommended by the Nuclear Regulatory Commission. For each type of analysis and sample medium, the table lists the mean and range of all indicator and control locations, as well as that location with the highest mean and range.

The tabulated results of all measurements are not included in this section, although references to these results will be made in the discussion. A complete tabulation of results for 2022 is contained in Part II of the Annual Report on the Radiological Environmental Monitoring Program for the Callaway Energy Center.

4.1 Atmospheric Nuclear Detonations and Nuclear Accidents

The Fukushima Daiichi nuclear accident occurred March 11, 2011. There were no reported accidents involving significant release to the environment at nuclear reactor facilities in 2022. The last reported atmospheric test was conducted on October 16, 1980, by the People's Republic of China. There were no reported atmospheric nuclear tests in 2022.

4.2 Program Findings

Airborne Particulates and Iodine

No gamma-emitting isotopes were identified other than naturally occurring Be-7. There was no I-131 activity detected in any of the charcoal canister samples.

Air sampling for 2022 indicates no radiological effects of plant operation.

Direct Radiation (TLDs)

Forty-four gamma sensitive TLDs were placed in 16 sectors around the Callaway site. Measurements from forty-one indicator locations averaged 14.9 mrem/quarter and the three control locations averaged 14.1 mrem/quarter. Readings ranged from 10.1 to 17.6 mrem /quarter, with the highest quarterly average from the indicator location CA-IDM-51A, averaging 16.5 mrem/quarter. The TLD readings were consistent with the results for the years 2000 through 2021 as detailed in table 5.7.

Five neutron sensitive TLDs were placed in locations at the Site Boundary closest to the Independent Spent Fuel Storage Facility Installation (ISFSI) and at a control location approximately 14 miles from the site. There was no significant measurable neutron dose and there was no effect from the ISFSI in 2022.

Milk

Sampling has been discontinued since 2018 since there are not enough sampling locations to fulfill the milk sampling requirement. No milking animals were located during the 2022 Land Use Census. Leafy green (broadleaf) vegetation sampling was performed in lieu of milk sampling.

Broadleaf Vegetation

There was no I-131 activity detected in broadleaf vegetation samples. No gamma-emitting isotopes were detected in broadleaf vegetation samples except for naturally occurring beryllium-7 and potassium-40. Vegetation data for 2022 show no radiological effects of plant operation.

4.2 Program Findings (Continued)

Fish

Edible portions of fish were analyzed by gamma spectroscopy. No gamma-emitting isotopes, except for naturally occurring potassium-40, were detected in fish.

Soil

Cesium-137 activity was detected at four of the seven indicator sample locations at an average concentration of 418 pCi/kg dry. Both control samples were positive for Cesium-137 with an average activity of 120 pCi/kg dry. The cesium-137 activity is consistent with levels observed from 1999 through 2021; these levels are attributable to the deposition of fallout from previous decades.

Surface Water

No tritium was detected in any of the upstream location S01 samples. Tritium was detected in six of the twelve downstream S02 locations at levels ranging from 174 pCi/L to 449 pCi/L. No gamma-emitting isotopes were detected in any of the samples taken in 2022.

Surface Water, Ponds

One of the eleven pond samples analyzed for tritium in 2022 was positive at a level of 162 pCi/L. No gamma activity was detected. The reanalysis of the original and backup samples were <MDC.

Drinking Water Wells (potable water)

Sixty-four samples from sixteen different locations were analyzed for tritium and gamma-emitting isotopes in 2022. No tritium or gamma-emitting isotopes were detected.

Wells and Ponds (non-potable water)

Eight groundwater samples from deep wells F-05 and F-15 were analyzed for tritium and gamma-emitting isotopes. The 10/13/22 sample from well CA-WWA-F005 was positive for tritium at a concentration of 168 pCi/L. No gamma emitting isotopes detected form any of the deep well samples taken. The reanalysis of the original and backup samples both were <MDC.

Wells CA-WWA-U1MW-031, CA-WWA-U1MW-034, CA-WWA-U1MW-036, CA-WWA-U1MW-039, CA-WWA-U1MW-047, CA-WWA-U1MW-058, and CA-WWA-U1MW-059 were installed during the 2014 limited site investigation (LSI) (the 2014 LSI is described in detail in the Callaway Energy Center 2014 Annual Radioactive Effluents Release Report). These wells continue to monitor the natural attenuation of tritium which decreased significantly during 2015 and has generally continued to decrease since 2016. Tritium activity was detected in 17 of 25 results from these wells. The highest concentration was measured in CA-WWA-U1MW-31 which peaked at 458 pCi/L in November comparable to the 2021 high value of 574 pCi/L. This is likely because of seasonal variation. The average concentration among positive results for these wells was 270 pCi/L which is comparable to the 2021 average of 308 pCi/L. The contamination is being remediated by monitored natural attenuation. There are no active leaks.

Wells CA-WWA-U1MW-GWS, CA-WWA-U1MW-936, CA-WWA-U1MW-937B, CA-WWA-U1MW-937D, CA-WWA-U1MW-939R, CA-WWA-U1MW-940, CA-WWA-U1MW-941 and CA-WWA-U1MW-IFSFI (Sump) are located in the Plant Protected Area, adjacent to the power block. Tritium activity in the wells within the power block are believed to be the result of washout from gaseous

4.2 Program Findings (Continued)

Wells and Ponds (non-potable water) (Continued)

effluents. The low level tritium activity observed in well CA-WWA-U1MW-014 is likely due to residual low level contamination from moisture carryover during normal operation of air release valves (ARVs) in manholes 5 and 6B on the now-retired discharge pipeline. The pipeline was replaced in 2008 and there has been no new contamination of this area since then. The existing contamination is being remediated by monitored natural attenuation. There are no active leaks.

The results are consistent with 2015 through 2021.

Positive tritium results seen in results from location CA-WWA-U1MW-940 could be due to result of atmospheric tritium collecting in an excavation pit as described earlier in section 3.3 (5). The results at the groundwater sump (GWS) location and at location CA-WWA-U1MW-939R are in alignment with current trending (CR#202105648). See also CR#202204676-001.

Sediments

Two samples of shoreline sediments were collected in April and September 2022 at both an indicator and a control location and analyzed for gamma-emitting isotopes. No gamma-emitting isotopes were detected excepting naturally occurring potassium-40 in any of the sediment samples.

5.0 TABLES

Table 5.1. Sampling Locations. (TLDs) Update with additions(if any) and deletions

Location Code	Distance / Direction [1]	Description	Sample Types [2]
1a	10.8 mi. 310 º NW	City of Fulton on Hwy Z, 0.65 mi. E of Bus. 54, W of Campus Apartments	IDM
3	1.2 mi. 308 º NW	0.1 mi. West of Hwy CC on Gravel Rd., 0.8 mi. South Hwy O	IDM
5	1.3 mi. 79 º ENE	Meteorological Tower	IDM
6	2.0 mi. 274 º W	Cty Rd. 428, 1.2 mi. West of Hwy CC	IDM
7	1.4 mi. 184 º S	Cty Rd. 459, 2.6 mi. North of Hwy 94	IDM
9	3.8 mi. 183 º S	NW Side of the Cty Rd. 459 and Hwy 94 Junction	IDM
10	3.9 mi. 159 º SSE	Hwy 94, 1.8 mi. East of Cty Rd. 459	IDM
11a	4.7 mi. 139 º SE	City of Portland	IDM
14	4.9 mi. 122 º ESE	SE Side of Intersection Hwy D and Hwy 94	IDM
17	3.7 mi. 88 º E	Cty Rd. 4053, 0.3 mi. E of Hwy 94	IDM
18a	3.7 mi. 67 º ENE	East side of Hwy D, 0.5 mi. South of Hwy O	IDM
20	4.7 mi. 46 º NE	City of Readsville	IDM
21	3.8 mi. 23 º NNE	Cty Rd. 155, 1.9 mi. North of Hwy O	IDM
22a	0.9 mi. 10 º NNE	Cty Rd 448, 0.9 mi south of HWY O, co-located with air station A8	IDM
23	6.6 mi. 15 º NNE	City of Yucatan	IDM
26 [3]	11.7 mi. 82 º E	Town of Americus	IDM
27 [3]	9.3 mi. 114 º ESE	Town of Bluffton	IDM
30a	4.4 mi. 206 º SSW	City of Steedman, N side of Belgian Dr., 150 ft. East of Hwy CC	IDM
31a	7.8 mi. 224 º SW	City of Mokane, Jct. Hwy C and Cty Rd. 400, 0.9 mi. N. of Hwy 94	IDM
32	5.4 mi. 250 º WSW	Hwy VV, 0.6 mi. west of Cty Rd. 447	IDM
32a	5.0 mi. 243 º WSW	Cty Rd. 447	IDM
33	7.4 mi. 272 º W	City of Hams Prairie, SE of Hwy C and Hwy AD Junction	IDM
34	9.5 mi. 292 º WNW	NE Side of Hwy C and Cty Rd. 408 Junction	IDM
35	5.8 mi. 340 º NNW	City of Toledo	IDM
36	4.9 mi. 7 º N	Cty Rd. 155, 0.8 mi. South of Cty Rd. 132	IDM
37	0.5 mi. 195 º SSW	Cty Rd. 459, 0.9 mi. South of Hwy CC	IDM
38	4.6 mi. 334 º NNW	Cty Rd. 133, 1.5 mi. South of Hwy UU	IDM
39	5.4 mi. 312 º NW	Cty Rd. 111	IDM
39a	5.0 mi. 308 º NW	Cty Rd. 111	IDM
40	4.2 mi. 292 º WNW	NE Side of Cty Rd. 112 and Hwy O Junction	IDM
41	5.2 mi. 277 º W	Hwy AD, 2.5 mi. East of Hwy C	IDM
42	4.4 mi. 231 º SW	Cty Rd. 447, 2.6 mi. North of Cty Rd. 463	IDM
43	0.5 mi. 223 º SW	Cty Rd. 459, 0.7 mi. South of Hwy CC	IDM
44	1.7 mi. 254 º WSW	Hwy CC, 1.0 mi. South of Cty Rd. 459	IDM
45	1.0 mi. 285 º WNW	Cty Rd. 428, 0.1 mi. West of Hwy CC	IDM
46	1.5 mi. 328 º NNW	NE Side of Hwy CC and Cty Rd. 466 Intersection	IDM
47	1.0 mi. 10 º N	Cty Rd. 448, 0.9 mi. South of Hwy O	IDM
48	0.4 mi. NE	Cty Rd. 448, 1.5 mi. South of Hwy O, Plant Security Sign Post	IDM
49	1.6 mi. 95 º E	Cty Rd. 448, Reform Wildlife Mgmt. Parking Area, Gate Post.	IDM
50	0.9 mi. 168 º SSE	Cty Rd. 459, 3.3 mi. North of Hwy 94	IDM
51a	0.3 mi. 150º SE	Owner Control Fence, SE of the Water Treatment Plant	IDM
52	0.4 mi. 111 º ESE	Light Pole Near the East Plant Security Fence	IDM
60 [3]	13.5 mi. 224 º SW	Just past Tebbetts City sign	IDM

Table 5.1. Sampling Locations. (TLDs, continued)

Location Code	Distance / Direction [1]	Description	Sample Types [2]
60N [3]	13.5 mi 224 º SW	Co-located with location 60	IDM
61	1.9 mi 334 º NNW	Community of Reform, Corner of CC and O	IDM
61N	1.9 mi 334 º NNW	Co-located with location 61	IDM
62N	1.2 mi. 308 º NW	Co-located with location 3	IDM
63N	0.9 mi. 10 º NNE	Co-located with air station A8 and location 22a	IDM
64N	1.0 mi. 285 º WNW	Co-located with location 45	IDM

Table 5.1. Sampling Locations (Airborne Radioiodine and Particulate samples, Surface Ponds, Potable Water)

A1	1.3 mi. 79 º ENE	Meteorological Tower	APT, AIO
A7	9.5 mi. 312 º NW	C. Bartley Farm, Fulton, MO	APT, AIO
A8	0.9 mi. 10 º NNE	County Road 448, 0.9 miles South of Hwy 0	APT, AIO
A9	1.9 mi. 334 º NNW	Community of Reform	APT, AIO
A10	0.89 mi 276 º W	EOF Parking lot	APT, AIO
A11	0.71 mi 166 º SSE	Sludge lagoons lift pumps area	APT, AIO
3	2.9 mi. 168 º SSE	Potable water, County Road 448 Ward Residence	DWA
4	2.6 mi. 158 º SSE	Potable water, County Road 448 Miller Residence	DWA
5	2.5 mi. 153 º SSE	Potable water, County Road 448 Brucker Brothers Farm	DWA
7	2.1 mi. 108 º ESE	Potable water, County Road 448 S. Kriete Residence	DWA
8 [4]	3.4 mi. 193 º SSW	Potable water, County Road 457 Curry Residence	DWA
9	2.9 mi. 204 º SSW	Potable water, County Road 457 Clardy Residence	DWA
10	2.7 mi. 208 º SSW	Potable water, County Road 457 T. Dillon Residence	DWA
12	3.6 mi. 165 º SSE	Potable water, County Road 464 J. Dillon Residence	DWA
21	2.4 mi. 120 º ESE	Potable water, County Road 469 Baumgarth Residence	DWA
22	4.8 mi. 140 º SE	Potable water, State Road 94 Plummer Residence	DWA
23	5.6 mi. 142 º SE	Potable water, County Road 466 Curdt Residence	DWA
24	2.9 mi. 203 º SSW	Potable water, County Road 457 Farley Residence	DWA
25	1.89 mi. 79 º E	Potable water, County Road 448 M. Kriete Residence	DWA
V16	1.64 mi. 255 º WSW	Potable water, Hwy CC Wallendorf Farm, Steedman, MO	DWA
V19	3.28 MI. 162 º SSE	Potable water, Dillon Drive, Dillon Farm, Portland, MO	DWA
PW1	Callaway Cafeteria, 0.13 mi. 234 º SW	Potable water, Unit 1 Construction well #3 open from 400'-1400'	DWA
Pond 01	0.6 mi. 264 º W	Fishing Pond	SWA
Pond 02	0.7 mi. 232 º SW	Fishing Pond	SWA
Outfall 010	0.6 mi. 42 º NE	Stormwater Run-Off Pond	SWA
Wetlands 01	0.6 mi. 152 º SSE	Wetlands Pond #1	SWA
Wetlands 02	0.7 mi. 160 º SSE	Wetlands Pond #2	SWA
Sludge Lagoon	~0.8 mi. 153 º SSE [5]	In-service Sludge Lagoon	SWA
S01 [3]	4.8 mi. 150 º SSE	555 feet Upstream of Discharge North Bank	SWA
S02	4.9 mi. 138 º SE	1.1 River Miles Downstream of Discharge North Bank	SWA

Table 5.1. Sampling Locations, Non-potable Groundwater Wells

Location Code	Distance / Direction [1]	Description	Sample Types [2]
U1MW-937B	Plant Peninsula Area, 0.04 mi. 209 º SSW	Monitoring Well, West of the Turbine Bldg.	WWA
U1MW-937D	Plant Peninsula Area, 0.1 mi. 92 º E	Monitoring Well, North of Discharge Monitor Tanks	WWA
U1MW-939R	Plant Peninsula Area, 0.05 mi. 109 º ESE	Monitoring Well, East of the Fuel Bldg.	WWA
U1MW-940	Plant Peninsula Area, 0.05 mi. 78 º ENE	Monitoring Well, West of the Radwaste Bldg.	WWA
U1MW-941	Plant Peninsula Area, 0.07 mi. 81 º E	Monitoring Well, West of the Radwaste Bldg.	WWA
U1MW-GWS	Plant Peninsula Area, 0.02 mi. 135 º SE	Ground Water Sump, West of Reactor Bldg. and Fuel Bldg.	WWA
U1MW-ISFSI	ISFSI sump, 0.08 mi. 21 º NNE	Near ISFSI pad	WWA
U1MW-004	3.7 mi. 165 º SSE	South of Dillon residence, Groundwater Monitoring Well	WWA
U1MW-005	3.8 mi. 160 º SSE	South of Brownlee / Hudson residence, Groundwater Monitoring Well	WWA
U1MW-006	3.0 mi. 171 º S	South of Ward Residence, Groundwater Monitoring Well	WWA
U1MW-010	3.1 mi. 173 º S	Old Pipeline Bed, Groundwater Monitoring Well	WWA
U1MW-013	0.8 mi. 159 º SSE	Pipeline Corridor, south of sludge ponds	WWA
U1MW-014	3.7 mi. 171 º S	Pipeline Corridor, near manhole 6B	WWA
U1MW-015	3.9 mi. 162 º SSE	Pipeline Corridor, North of HWY 94.	WWA
U1MW-016	4.5 mi. 151 º SSE	Pipeline Corridor, near heavy haul road at intake structure	WWA
U1MW-017	3.68 mi. 171 º S	Pipeline Corridor, near manhole 6B	WWA
U1MW-018	3.75 mi. 172 º S	Pipeline Corridor, near manhole 6B	WWA
U1MW-019	3.71 mi.172 º S	Pipeline Corridor, near manhole 5	WWA
U1MW-020	3.88 mi.164 º SSE	Pipeline Corridor, near manhole 3B	WWA
U1MW-031	0.18 mi. 78 º ENE	~1m from manhole 86-2 & 1m from HDPE discharge pipeline	WWA
U1MW-034	0.21 mi. 98 º E	~130m from manhole 86-2, HDPE discharge line bedding	WWA
U1MW-036	0.26 mi. 122 º ESE	~300m from MH 86-2, HDPE discharge line bedding at cross connection pipe	WWA
U1MW-039	0.61 mi. 168 º SSE	~1100m from manhole 86-2, HDPE discharge line bedding outside OCA	WWA
U1MW-047	4.56 mi. 151 º SSE	Upstream side of HDPE gate valve vault at intake structure inside HDPE pipeline bedding	WWA
U1MW-058	0.31 mi. 132 º SE	~400m from manhole 86-2, Techite discharge line bedding	WWA
U1MW-059	1.04 mi. 166 º SSE	~1700m from MH86-2, Techite discharge line bedding outside OCA	WWA
U2 MW 2S	1.8 mi. 5 º N	Located on the periphery of the plateau	WWA
U2 MW 5S	1.1 mi. 261 º W	Located on the periphery of the plateau	WWA
U2 MW 8	0.4 mi. 12 º NNE	Located radially outward from central part of the plateau	WWA
U2 MW 16	2.9 mi. 203 º SSW	Located along Mud Creek, Farley Property, screened for CJC aquifer	WWA
F05	0.9 mi. 169 º S	CJC aquifer monitoring well	WWA
F15	0.4 mi. 29 º NNE	Outside OCA fence in center portion of plateau, screened for CJC aquifer	WWA

Table 5.1. Sampling Locations, Soil, Food Products, Milk, Fish, and Sediments.

Location Code	Distance / Direction [1]	Description	Sample Types [2]
F2	1.0 mi. 235 º SW	Callaway Plant Forest Ecology Plot F2.	SOL
F6	1.6 mi. 51 º NE	Callaway Plant Forest Ecology Plot F6.	SOL
PR3	0.95 mi. 108 º ESE	Callaway Plant Forest Ecology Plot PR3.	SOL
PR7	0.46 mi. 320 º NNW	Callaway Plant Forest Ecology Plot PR7.	SOL
W1 [3]	0.52 mi. 150 º SSE	Callaway Plant Wetlands #1, High Ground.	SOL
W2	0.525 mi. 155 º SSE	Callaway Plant Wetlands #1, Inlet Area.	SOL
W5	~0.8 mi. 153 º SSE[5]	In-service Sludge Lagoon.	SOL
W6	0.67 mi. 154 º SSE	Callaway Plant Wetlands #2, inlet area	SOL
M9 [3]	13 mi. 228 º SW	Ferguson Farm, Tebbetts, MO.	SOL
V9	1.9 mi. 294 º WNW	Meehan Farm, Steedman, MO	FPL
V12 [3]	18.7 mi. 255 º WSW	Kissock Farm, Holts Summit, MO	FPL
V16	1.64 mi. 255 º WSW	Wallendorf Farm, Steedman, MO	FPL
V19	3.28 mi. 162 º SSE	Richard and Amy Dillon Farm	FPL
A [3,6]	~4.8 mi. 150 º SSE	Between 0.6 and 10.0 river miles upstream of the plant intake.	AQF
A [3,]	~4.8 mi. 150 º SSE	Upstream of the plant intake.	AQS
C [6]	~4.9 mi. 138 º SE	Downstream, of the plant discharge, between the confluence of the Missouri River and Logan Creek and the Portland boat ramp	AQF
C	~4.9 mi. 138 º SE	Vicinity of Portland – north bank	AQS

[1] Distances are measured from the midpoint of the two reactors as described in Final Safety Analysis Report (FSAR) Sec. 2.1.1.1.

[2] AIO = Air Iodine, APT = Air Particulate, AQF = Fish, AQS = Sediment, FPL = Leafy Green Vegetables, FC = Food Crops, IDM = TLD, MLK = Milk, SOL = Soil, SWA = Surface Water, DWA = Drinking Water, WWA = Ground Water.

[3] Control Location.

[4] Property ownership changed from Brandt to Curry in 2022.

[5] The coordinates of the in-service sludge lagoon are determined at the time of sampling in accordance with HTP-ZZ-07101-DTI-REMP-SMPL-SCHED.

[6] The expanded collection areas provide sufficient habitat to collect the required number of species, see HTP-ZZ-07101-DTI-REMP-SMPL-SCHED.

Table 5.2. Collection Frequencies and Required Analyses [1] (January 1 through December 31, 2021)

Sample Type	Media Code	Collection Frequency	Required Analyses
Direct radiation	IDM	Quarterly	Gamma dose for each sample. Neutron dose for the samples monitoring ISFSI direct radiation.
Airborne iodine	AIO	Weekly	^{131}I
Air particulate	APT	Weekly	PGE[3] each sample
Surface water (river)	SWA	Monthly composite	PGE and ^{3}H
Surface water (onsite ponds)	SWA	Semiannually	PGE and ^{3}H. If contaminated with gamma emitting nuclides of plant origin, analyze for HTD[4] nuclides.
Groundwater (not potable)	WWA	Quarterly[5]	PGE and ^{3}H. If contaminated with gamma emitting nuclides of plant origin, analyze for HTD[4] nuclides. [6]
Well water-potable	DWA	Quarterly	PGE and ^{3}H. If contaminated with gamma emitting nuclides of plant origin, analyze for HTD[4] nuclides.
Shoreline sediment	AQS	Semiannually	PGE
Sludge pond sediment	SOL	Annually	PGE
Soil	SOL	Annually	PGE
Milk animal	MLK	Semimonthly when animals are on pasture, monthly other times	PGE and ^{131}I
Leafy green vegetables	FPL	Monthly when available [2]	PGE and ^{131}I
Fish	AQF	Semiannually	PGE on edible portion

[1] Samples required by ODCM unless specified otherwise.

[2] The growing season is defined as the months April 1- November 1 but will vary according to weather conditions.

[3] Principal Gamma Emitters (PGE) are defined as ^{54}Mn, ^{59}Fe, ^{58}Co, ^{60}Co, ^{65}Zn, ^{95}Zr/Nb, ^{134}Cs, ^{137}Cs, ^{140}Ba/La and other gamma- emitting nuclides that may be identified during the gamma spectroscopy analysis.

[4] Hard to Detect (HTD) nuclides are defined as ^{89}Sr, ^{90}Sr, ^{55}Fe, ^{63}Ni, ^{237}Np, ^{238}Pu, ^{239}/^{240}Pu, ^{241}Pu, ^{241}Am, ^{242}Cm and ^{243}/^{244}Cm.

[5] Monthly for locations U1MW-937B, U1MW-937D, U1MW-939R, U1MW-940, U1MW-941 and U1MW-GWS.

[6] Wells ISFSI Sump, U1MW-18, U1MW-19, U1MW-20, U1MW-31, U1MW-34, U1MW-36, U1MW-39, U1MW-47, U1MW-58, U1MW-59, U2MW-2S, U2MW-5S, U2MW-8, and U2MW-16 are analyzed for tritium only.

Table 5.3. Minimum Required Detection Capabilities for REMP Sample Analysis[1]

Analysis	Water (pCi/L)	Airborne (pCi/m^3)	Fish (pCi/kg wet)	Milk (pCi/L)	Food Products (pCi/kg wet)	Non-Food Products (pCi/kg wet)	Soil and Sediment (pCi/kg dry)
H-3	3000/2000[3]					3000	
Mn-54	15		130				
Fe-59	30		260				
Co-58/60	15		130				
Zn-65	30		260				
Zr-Nb-95 [2]	15						
I-131	1000/1[3]	0.07		1	60		
Cs-134	15	0.05	130	15	60	60	150
Cs-137	18	0.06	150	18	80	80	180
Ba-La-140 [2]	15			15			

[1] This list does not mean only these nuclides will be detected and reported. Other peaks which are measurable and identifiable will be reported.

[2] Total activity, parent plus daughter activity.

[3] LLDs for Surface and Drinking / Ground water are the same, with the exception of H-3 and I-131. The Drinking / Ground water LLDs for H-3 and I-131 are 2000 and 1 pCi/liter respectively.

Table 5.4 2022 Land Use Census Results

Closest Receptor in Miles

Sector	Residence	Garden [1, 2]	Milk [1]
N(A)	2.37	NI	NI
NNE(B)	2.16	2.97	NI
NE(C)	2.26	NI	NI
ENE(D)	2.86	NI	NI
E(E)	3.51	NI	NI
ESE(F)	2.11	4.47	NI
SE(G)	2.72	NI	NI
SSE(H)	3.11	3.28	NI
S(J)	2.86	NI	NI
SSW(K)	2.38	NI	NI
SW(L)	2.63	2.72	NI
WSW(M)	1.20	1.96	NI
W(N)	1.56	3.55	NI
WNW(P)	1.93	1.93	NI
NW(Q)	2.07	NI	NI
NNW(R)	1.81	NI	NI

[1] NI = None Identified.
[2] Broadleaf Vegetation

Table 5.5. Missed Collections and Analyses, Callaway Energy Center

Sample Type	Analysis	Location(s)	Collection Date or Period	Comments
APT/AIO	Gamma	(CA-A-001, CA-A-007, CA-A-008, CA-A-009, CA-A-010)	02/07/2022	Samples collected after 11 days due to unsafe conditions (CR#202200713).
APT/AIO	Gamma	(CA-A-001, CA-A-007, CA-A-008, CA-A-009, CA-A-010)	02/10/2022	Samples collected after 3 days due to collection delay from previous week (CR#202200713).
WWA	H-3	CA-WWA-U1MW-47	02/08/2022	Unable to collect water (CR#202200814).
FPL	Gamma	(CA-FPL-V9, CA-FPL-V12, CA-FPL-V16, CA-FPL-V19)	April 2022	Unable to collect vegetables due to cold temperatures (CR#202202274).
FPL	Gamma	(CA-FPL-V9, CA-FPL-V19)	May 2022	Unable to collect vegetables due to frost damage (CR#202203241).
IDM	Gamma	CA-IDM-49	2nd Quarter ‘22	TLD missing in field (CR#202204570).
APT/AIO	Gamma	CA-A-009	09/08/2022	Air sampler found low flow- (CR#202205973).
APT/AIO	Gamma	CA-A-008	09/15/2022	Air sampler found not running (CR#202206142).
FPL	Gamma	CA-FPL-V19	September 2022	Unable to collect enough vegetables (CR#202206060).
FPL	Gamma	CA-FPL-V16	October 2022	Unable to collect enough vegetables (CR#202206730).

Table 5.6 Radiological Environmental Monitoring Program Summary

Sample Type (Units)	Type and Number of Analyses(a)		Req'd LLD(b)	Indicator Locations Mean, Fraction, Range (c)	Location with Highest Annual Mean		Control Locations Mean, Fraction, Range (c)	Number Non-Routine Results(e)
					Location (d)	Mean, Fraction, Range (c)		
Waterborne Pathway								
Surface Water (pCi/L)	H-3	24	3000	282 (5/12) (174-449)	-	-	ND	0
	GS	24	(b)	ND	-	-	ND	0
Surface Water, Ponds (pCi/L)	H-3	11	3000	ND	-	-	None	0
	GS	11	(b)	ND	-	-	None	0
Potable Wells (pCi/L)	H-3	64	2000	ND	-	-	ND	0
	GS	64	(b)	ND	-	-	ND	0
Wells (non-potable) (pCi/L)	H-3	176	3000	498 (84/176) (159-6566)	CA-WWA-GWS 0.02 mi. 135° / SE	1626 (12/13) (184-6566)	None	0
	GS	116	(b)	ND	-	-	None	0
Sediments (pCi/kg) dry	Cs-134	4	150	ND	-	-	ND	0
	Cs-137	4	180	ND	-	-	ND	0
Airborne Pathway								
Airborne Particulates (pCi/m^3)	GS	311	(b)	ND	-	-	None	0
Airborne Iodine (pCi/m^3)	I-131	311	0.07	ND	-	-	None	0
Soil								
Soil (pCi/kg) dry	Cs-134	9	150	ND	-	-	ND	0
	Cs-137	9	180	418 (4/7) (183-627)	F-002 1.0 mi. 235° / SW	627 (1/1)	120 (2/2) (81-158)	0

Table 5.6 Radiological Environmental Monitoring Program Summary

Sample Type (Units)	Type and Number of Analyses(a)	Req'd LLD(b)	Indicator Locations Mean, Fraction, Range (c)	Location with Highest Annual Mean		Control Locations Mean, Fraction, Range (c)	Number Non-Routine Results(e)
				Location (d)	Mean, Fraction, Range (c)		
Ingestion Pathway							
Food Products Leafy Green Vegetables (pCi/kg wet)	GS 57	(b)	ND	-	-	ND	0
Fish Edible Flesh (pCi/kg) wet	GS 20	(b)	ND	-	-	ND	0
Milk (pCi/L)	I-131 0	1	none	-	-	ND	0
	GS 0	(b)	none	-	-	ND	0
Direct Radiation							
(Quarterly TLDs) (mrem/Qtr)	Gamma 173	-	14.9 (161/161) (10.3-17.6)	CA-IDM-51A 0.3 mi. 150° SE	16.5 (4/4) (15.7-17.1)	14.1 (12/12) (10.1-17.1)	0
	Neutron 20	-	ND	-	-	ND	0

(a) GS = gamma spectroscopy.
(b) LLD = nominal lower limit of detection based on a 4.66 sigma counting error for background sample. LLD's for gamma spectroscopy are in Table 5.3.
(c) Mean and range are based on detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses (F). ND= not detected.
(d) Locations are specified by station code (Table 5.2) and distance (miles) and direction relative to reactor site.
(e) Non-routine results are those which exceed ten times the control station value. If no control station value is available, the result is considered non-routine if it exceeds ten times the preoperational value for the location.
(f) Units: pCi/L.

Table 5.7 Direct Radiation Dose (mrem/90 days) for the Period 2000-2021

Station Code	Mean	3σ	Mean + 3σ	Max
CA-IDM-1A	15.8	2.8	18.6	18.0
CA-IDM-3*	16.8	2.8	19.6	20.0
CA-IDM-5	14.2	2.7	17.0	17.1
CA-IDM-6	16.2	3.5	19.7	19.0
CA-IDM-7	16.0	3.1	19.1	19.0
CA-IDM-9	14.9	2.5	17.4	17.0
CA-IDM-10	17.0	2.6	19.6	19.3
CA-IDM-11A	17.0	2.9	19.9	19.3
CA-IDM-14	15.8	2.7	18.5	18.7
CA-IDM-17	15.9	3.0	18.9	18.3
CA-IDM-18A	16.1	4.5	20.5	18.9
CA-IDM-20	16.4	2.9	19.3	19.3
CA-IDM-21	16.2	3.4	19.6	19.0
CA-IDM-22A*	14.3	5.3	19.5	18.0
CA-IDM-23	16.5	2.6	19.1	19.0
CA-IDM-26(C)	11.3	2.3	13.6	13.1
CA-IDM-27(C)	17.1	2.9	19.9	20.0
CA-IDM-30A	15.6	2.7	18.3	18.2
CA-IDM-31A	16.9	2.7	19.5	19.0
CA-IDM-32	16.6	2.8	19.4	19.0
CA-IDM-32A	16.0	3.8	19.8	20.0
CA-IDM-33	15.9	2.6	18.5	18.0
CA-IDM-34	15.3	2.8	18.1	18.0
CA-IDM-35	14.7	2.6	17.3	17.3
CA-IDM-36	15.3	3.5	18.8	18.7
CA-IDM-37	15.7	2.8	18.5	18.0
CA-IDM-38	11.4	2.2	13.6	13.9
CA-IDM-39	15.7	3.1	18.8	19.0
CA-IDM-39A	16.3	3.3	19.6	19.0
CA-IDM-40	16.8	3.4	20.2	19.2
CA-IDM-41	15.7	3.1	18.8	19.0
CA-IDM-42	13.6	2.6	16.2	16.2
CA-IDM-43	15.8	2.9	18.7	18.7
CA-IDM-44	16.1	3.3	19.4	19.0
CA-IDM-45*	14.7	3.2	17.9	20.0
CA-IDM-46	16.3	2.7	19.0	19.9
CA-IDM-47	15.5	2.8	18.3	18.0
CA-IDM-48	16.4	2.9	19.4	19.0
CA-IDM-49	15.3	3.2	18.4	18.0
CA-IDM-50	16.1	3.0	19.1	20.0
CA-IDM-51A	16.9	2.7	19.7	19.8
CA-IDM-52	16.6	2.8	19.3	19.1
CA-IDM-60(C)*	16.0	2.6	18.6	18.0
CA-IDM-61*	14.1	4.4	18.5	15.7

* ISFSI monitoring
(C) Control location

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ATI Environmental, Inc.
Midwest Laboratory
700 Landwehr Road • Northbrook, IL 60062-2310
phone (847) 564-0700 • fax (847) 564-4517

APPENDIX A

INTERLABORATORY AND INTRALABORATORY COMPARISON PROGRAM RESULTS

NOTE: Appendix A is updated four times a year. The complete appendix is included in March, June, September and December monthly progress reports only.

January, 2022 through December, 2022

Appendix A

Interlaboratory/ Intralaboratory Comparison Program Results

Environmental, Inc., Midwest Laboratory has participated in interlaboratory comparison (crosscheck) programs since the formulation of its quality control program in December 1971. These programs are operated by agencies which supply environmental type samples containing concentrations of radionuclides known to the issuing agency but not to participant laboratories. The purpose of such a program is to provide an independent check on a laboratory's analytical procedures and to alert it of any possible problems.

Participant laboratories measure the concentration of specified radionuclides and report them to the issuing agency. Several months later, the agency reports the known values to the participant laboratories and specifies control limits. Results consistently higher or lower than the known values or outside the control limits indicate a need to check the instruments or procedures used.

Results in Table A-1 were obtained through participation in the RAD PT Study Proficiency Testing Program administered by Environmental Resource Associates, serving as a replacement for studies conducted previously by the U.S. EPA Environmental Monitoring Systems Laboratory, Las Vegas, Nevada.

Table A-2 lists results for thermoluminescent dosimeters (TLDs), via irradiation and evaluation by the University of Wisconsin-Madison Radiation Calibration Laboratory at the University of Wisconsin Medical Radiation Research Center.

Table A-3 lists results of the analyses on intralaboratory "spiked" samples for the past twelve months. All samples are prepared using NIST traceable sources. Data for previous years available upon request.

Table A-4 lists results of the analyses on intralaboratory "blank" samples for the past twelve months. Data for previous years available upon request.

Table A-5 lists analytical results from the intralaboratory "duplicate" program for the past twelve months. Acceptance is based on each result being within 25% of the mean of the two results or the two sigma uncertainties of each result overlap.

The results in Table A-6 were obtained through participation in the Mixed Analyte Performance Evaluation Program.

Results in Table A-7 were obtained through participation in the MRAD PT Study Proficiency Testing Program administered by Environmental Resource Associates, serving as a replacement for studies conducted previously by the Environmental Measurement Laboratory Quality Assessment Program (EML).

Attachment A lists the laboratory acceptance criteria for various analyses.

Out-of-limit results are explained directly below the result.

Attachment A

ACCEPTANCE CRITERIA FOR INTRALABORATORY “SPIKED” SAMPLES

Analysis	Ratio of lab result to known value.
Gamma Emitters	0.8 to 1.2
Strontium-89, Strontium-90	0.8 to 1.2
Potassium-40	0.8 to 1.2
Gross alpha	0.5 to 1.5
Gross beta	0.8 to 1.2
Tritium	0.8 to 1.2
Radium-226, Radium-228	0.7 to 1.3
Plutonium	0.8 to 1.2
Iodine-129, Iodine-131	0.8 to 1.2
Nickel-63, Technetium-99, Uranium-238	0.7 to 1.3
Iron-55	0.8 to 1.2
Other Analyses	0.8 to 1.2

TABLE A-1. Interlaboratory Comparison Crosscheck program, Environmental Resource Associates (ERA)[a].

RAD study

Lab Code	Date	Analysis	Concentration (pCi/L) Laboratory Result	ERA Result	Control Limits	Acceptance
RAD-128 Study						
ERDW-95	1/10/2022	Ba-133	67.4 ± 4.3	63.0	52.4 - 69.4	Pass
ERDW-95	1/10/2022	Cs-134	82.6 ± 4.1	84.9	69.6 - 93.4	Pass
ERDW-95	1/10/2022	Cs-137	35.4 ± 4.6	29.3	25.2 - 35.3	Fail [b]
ERDW-95	1/10/2022	Co-60	104 ± 4	102	91.8 - 114	Pass
ERDW-95	1/10/2022	Zn-65	356 ± 13	312	281 - 384	Pass
ERDW-97	1/10/2022	Gr. Alpha	30.9 ± 2.2	32.5	16.6 - 42.1	Pass
ERDW-97	1/10/2022	Gr. Beta	62.9 ± 2.3	68.3	47.4 - 75.1	Pass
ERDW-99	1/10/2022	Ra-226	8.40 ± 0.72	9.53	7.14 - 11.1	Pass
ERDW-99	1/10/2022	Ra-228	7.25 ± 2.32	8.71	5.59 - 11.0	Pass
ERDW-99	1/10/2022	Uranium	70.9 ± 2.3	69.0	56.4 - 75.9	Pass
ERDW-95	1/10/2022	H-3	23,600 ± 700	22,200	19,500 - 24,400	Pass
RAD-130 Study						
ERDW-2087	8/25/2022	Ba-133	37.2 ± 3.9	38.2	30.9 - 42.8	Pass
ERDW-2087	8/25/2022	Cs-134	81.8 ± 3.9	88.6	72.7 - 97.5	Pass
ERDW-2087	8/25/2022	Cs-137	174 ± 6	170	153 - 189	Pass
ERDW-2087	8/25/2022	Co-60	76.9 ± 4.0	72.4	65.2 - 82.1	Pass
ERDW-2087	8/25/2022	Zn-65	349 ± 3	326	293 - 380	Pass
ERDW-2087	8/25/2022	Gr. Alpha	52.8 ± 2.4	60.2	31.5 - 74.8	Pass
ERDW-2087	8/25/2022	Gr. Beta	18.7 ± 1.0	17.7	10.1 - 25.9	Pass
ERDW-2091	8/25/2022	Ra-226	9.23 ± 0.57	13.1	9.77 - 15.1	Fail [c]
ERDW-2091	8/25/2022	Ra-228	8.72 ± 1.49	8.40	5.38 - 10.6	Pass
ERDW-2095	8/25/2022	H-3	23,900 ± 481	22,100	19,400 - 24,300	Pass
ERDW-2089	8/25/2022	I-131	30.8 ± 1.0	27.1	23.0 - 32.5	Pass
090622D Study						
ERDW-2091	9/6/2022	Ra-226	21.5 ± 1.1	19.3	14.3 - 22.0	Pass [c]

[a] Results obtained by Environmental, Inc., Midwest Laboratory as a participant in the crosscheck program for proficiency testing in drinking water conducted by Environmental Resource Associates (ERA).

[b] The cesium-137 result did not meet ERA acceptance criteria. It is believed that detector drift could have contributed to the original Cs-137 result landing outside the upper acceptance limit.

[c] The radium-226 result did not meet ERA acceptance criteria. An ERA Quick Response PT sample was ordered. The results were within the acceptance criteria. The reason for the earlier failing result is not known.

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TABLE A-3. Intralaboratory "Spiked" Samples

Lab Code[b]	Date	Concentration[a] Analysis	Laboratory results 2s, n=1[c]	Known Activity	Control Limits[d]	Acceptance	Ratio Lab/Known
SPDW-30305	1/5/2022	Gr. Alpha	3.9 ± 0.8	6.3	3.1 - 9.4	Pass	0.62
SPDW-30305	1/5/2022	Gr. Beta	65.5 ± 1.6	75.9	60.7 - 91.1	Pass	0.86
SPDW-40000	1/7/2022	H-3	2,220 ± 162	2,110	1,688 - 2,532	Pass	1.05
SPDW-40013	1/6/2022	Ra-226	12.7 ± 0.3	12.3	8.6 - 16.0	Pass	1.03
SPDW-40014	7/12/2021	H-3	11,681 ± 345	10,400	8,320 - 12,480	Pass	1.12
SPDW-40015	7/12/2021	H-3	11,318 ± 340	10,400	8,320 - 12,480	Pass	1.09
SPDW-40022	2/3/2022	Ra-228	14.5 ± 3.9	15.3	10.7 - 19.9	Pass	0.95
SPDW-40024	2/4/2022	H-3	10,502 ± 321	10,400	8,320 - 12,480	Pass	1.01
SPDW-40025	1/11/2021	H-3	2,278 ± 176	2,110	1,688 - 2,532	Pass	1.08
SPDW-40026	1/11/2021	H-3	2,291 ± 176	2,110	1,688 - 2,532	Pass	1.09
SPDW-40028	2/11/2022	H-3	10,594 ± 322	10,400	8,320 - 12,480	Pass	1.02
SPDW-40037	2/25/2022	H-3	10,724 ± 322	10,400	8,320 - 12,480	Pass	1.03
SPDW-40045	3/3/2022	Sr-90	19.2 ± 1.1	17.1	13.7 - 20.5	Pass	1.12
SPDW-40052	3/10/2022	H-3	10,851 ± 328	10,400	8,320 - 12,480	Pass	1.04
SPDW-40064	3/18/2022	H-3	10,795 ± 332	10,400	8,320 - 12,480	Pass	1.04
SPDW-40073	3/22/2022	Ra-228	15.1 ± 2.4	13.4	9.4 - 17.4	Pass	1.13
SPDW-40075	1/28/2022	Ra-226	12.2 ± 0.3	12.3	8.6 - 16.0	Pass	0.99
SPDW-40078	3/14/2022	U-234	28.0 ± 2.0	23.0	16.1 - 29.9	Pass	1.22
SPDW-40078	3/14/2022	U-238	29.9 ± 2.1	23.2	16.2 - 30.2	Pass	1.29
SPW-598	3/24/2022	Fe-55	10,505 ± 1,100	10,006	8,005 - 12,007	Pass	1.05
SPDW-40087	3/24/2022	Ra-226	14.4 ± 0.4	12.3	8.6 - 16.0	Pass	1.17
LCS-W-032222	1/10/2022	Ba-133	65.4 ± 6.5	63.0	50 - 76	Pass	1.04
LCS-W-032222	1/10/2022	Cs-134	87.7 ± 6.0	84.9	68 - 102	Pass	1.03
LCS-W-032222	1/10/2022	Cs-137	34.2 ± 6.6	29.3	23 - 35	Pass	1.17
LCS-W-032222	1/10/2022	Co-60	106 ± 6	102	82 - 122	Pass	1.04
LCS-W-032222	1/10/2022	Zn-65	341 ± 18	312	250 - 374	Pass	1.09
SPDW-40083	4/1/2022	H-3	10,785 ± 329	10,400	8,320 - 12,480	Pass	1.04
LCS-W-040622	1/10/2022	Ba-133	60.4 ± 7.6	63.0	50.4 - 75.6	Pass	0.96
LCS-W-040622	1/10/2022	Cs-134	91.4 ± 6.8	84.9	67.9 - 102	Pass	1.08
LCS-W-040622	1/10/2022	Cs-137	31.7 ± 8.5	29.3	23.4 - 35.2	Pass	1.08
LCS-W-040622	1/10/2022	Co-60	111 ± 7	102	81.6 - 122	Pass	1.08
LCS-W-040622	1/10/2022	Zn-65	330 ± 28	312	250 - 374	Pass	1.06
LCS-SO-040822	8/1/2020	Cs-134	17,126 ± 176	19,189	15,351 - 23,027	Pass	0.89
LCS-SO-040822	8/1/2020	Co-57	29,070 ± 356	29,730	23,784 - 35,676	Pass	0.98
LCS-SO-040822	8/1/2020	Co-60	27,057 ± 166	27,027	21,622 - 32,432	Pass	1.00
LCS-SO-040822	8/1/2020	Mn-54	17,886 ± 455	16,486	13,189 - 19,783	Pass	1.08
LCS-SO-040822	8/1/2020	K-40	18,799 ± 685	16,810	13,448 - 20,172	Pass	1.12
LCS-SO-040822	8/1/2020	Zn-65	14,460 ± 754	12,703	10,162 - 15,244	Pass	1.14
SPDW-40085	4/4/2022	Sr-90	17.3 ± 1.1	17.1	13.7 - 20.5	Pass	1.01
SPDW-40089	4/8/2022	H-3	10,677 ± 326	10,400	8,320 - 12,480	Pass	1.03
SPDW-40130	4/8/2022	Ra-226	11.4 ± 0.3	12.3	8.6 - 16.0	Pass	0.93
SPDW-40098	4/11/2022	Gr. Alpha	6.7 ± 1.1	6.3	3.1 - 9.4	Pass	1.07
SPDW-40098	4/11/2022	Gr. Beta	71.7 ± 1.7	75.9	60.7 - 91.1	Pass	0.94
SPDW-40102	4/14/2022	H-3	10,369 ± 323	10,400	8,320 - 12,480	Pass	1.00

[a] Liquid sample results are reported in pCi/Liter, air filters (pCi/m3), charcoal (pCi/charcoal canister), and solid samples (pCi/kg).
[b] Laboratory codes : W & SPW (Water), MI (milk), AP (air filter), SO (soil), VE (vegetation), CH (charcoal canister), F (fish), U (urine).
[c] Results are based on single determinations.
[d] Acceptance criteria are listed in Attachment A of this report.

TABLE A-3. Intralaboratory "Spiked" Samples

Lab Code[b]	Date	Concentration[a] Analysis	Laboratory results 2s, n=1[c]	Known Activity	Control Limits[d]	Acceptance	Ratio Lab/Known
SPDW-40132	5/3/2022	H-3	10,834 ± 329	10,400	8,320 - 12,480	Pass	1.04
SPDW-40142	5/5/2022	Ra-226	11.6 ± 0.4	12.3	8.6 - 16.0	Pass	0.94
SPDW-40139	5/18/2022	H-3	10,465 ± 322	10,400	8,320 - 12,480	Pass	1.01
SPDW-40147	5/9/2022	Gr. Alpha	22.1 ± 1.2	32.5	16.3 - 48.8	Pass	0.68
SPDW-40132	5/3/2022	H-3	10,834 ± 329	10,400	8,320 - 12,480	Pass	1.04
SPDW-40142	5/5/2022	Ra-226	11.6 ± 0.4	12.3	8.6 - 16.0	Pass	0.94
SPDW-40139	5/18/2022	H-3	10,465 ± 322	10,400	8,320 - 12,480	Pass	1.01
SPDW-40147	5/9/2022	Gr. Alpha	22.1 ± 1.2	32.5	16.3 - 48.8	Pass	0.68
SPDW-40147	5/9/2022	Gr. Beta	63.1 ± 1.6	62.9	50.3 - 75.5	Pass	1.00
SPDW-40157	5/25/2022	Ra-226	10.1 ± 0.3	12.3	8.6 - 16.0	Pass	0.82
SPW-1856	6/14/2022	Sr-90	17.4 ± 2.9	17.1	13.7 - 20.5	Pass	1.02
LCS-AP-061522	3/21/2022	Cs-134	479 ± 10	549	439 - 0,659	Pass	0.87
LCS-AP-061522	3/21/2022	Cs-137	1,418 ± 117	1,320	1,056 - 1,584	Pass	1.07
LCS-AP-061522	3/21/2022	Co-60	891 ± 8	885	708 - 1,062	Pass	1.01
LCS-AP-061522	3/21/2022	Zn-65	769 ± 18	671	537 - 0,805	Pass	1.15
SPDW-40164	6/21/2022	Ra-228	14.2 ± 1.8	13.4	9.4 - 17.4	Pass	1.06
SPDW-40167	6/23/2022	H-3	10,497 ± 322	10,400	8,320 - 12,480	Pass	1.01
SPDW-40177	6/30/2022	Ra-226	12.1 ± 0.3	12.3	8.6 - 16.0	Pass	0.98
SPW-1881	6/27/2022	Tc-99	97.1 ± 1.7	107.8	75.5 - 140.1	Pass	0.90
SPDW-40253	7/12/2022	Ra-226	11.6 ± 0.3	12.3	8.6 - 16.0	Pass	0.94
SPW-40179	7/15/2022	H-3	10,467 ± 324	10,400	8,320 - 12,480	Pass	1.01
SPDW-40200	7/26/2022	Gr. Alpha	21.1 ± 1.3	32.5	16.3 - 48.8	Pass	0.65
SPDW-40200	7/26/2022	Gr. Beta	61.0 ± 1.6	62.9	50.3 - 75.5	Pass	0.97
SPDW-40220	7/29/2022	H-3	10,553 ± 326	10,400	8,320 - 12,480	Pass	1.01
SPDW-40212	8/9/2022	Ra-228	14.5 ± 2.3	13.4	9.4 - 17.4	Pass	1.08
SPDW-40220	8/16/2022	H-3	10,613 ± 326	10,400	8,320 - 12,480	Pass	1.02
SPDW-40239	8/22/2022	Gr. Alpha	37.1 ± 2.0	60.2	31.5 - 74.8	Pass	0.62
SPDW-40239	8/22/2022	Gr. Beta	16.6 ± 0.9	17.7	10.1 - 25.9	Pass	0.94
SPDW-40255	8/12/2022	Ra-226	9.1 ± 0.3	12.3	8.6 - 16.0	Pass	0.74
SPDW-40265	9/2/2022	H-3	10,555 ± 325	10,400	8,320 - 13,520	Pass	1.01
SPDW-40267	9/6/2022	Ra-228	14.0 ± 1.4	13.4	9.4 - 17.4	Pass	1.04
SPDW-40283	9/9/2022	H-3	10,059 ± 318	10,400	8,320 - 12,480	Pass	0.97
SPDW-40300	8/31/2022	Ra-226	11.2 ± 0.3	12.3	8.6 - 16.0	Pass	0.91
SPMI-2918	9/19/2022	Sr-90	17.9 ± 1.0	17.1	13.7 - 20.5	Pass	1.05
SPDW-40321	9/20/2022	Ra-226	13.2 ± 0.5	12.3	8.6 - 16.0	Pass	1.07
SPDW-40305	9/21/2022	Ra-228	12.5 ± 1.8	13.4	9.4 - 17.4	Pass	0.93
SPDW-40294	9/20/2022	Gr. Alpha	35.1 ± 2.0	60.2	31.5 - 74.8	Pass	0.58
SPDW-40294	9/20/2022	Gr. Beta	16.5 ± 1.0	17.7	10.1 - 25.9	Pass	0.93
SPDW-40303	9/19/2022	H-3	10,078 ± 316	10,400	8,320 - 12,480	Pass	0.97
SPDW-40361	10/12/2022	Ra-226	10.0 ± 0.3	12.3	8.6 - 16.0	Pass	0.81

[a] Liquid sample results are reported in pCi/Liter, air filters (pCi/m3), charcoal (pCi/charcoal canister), and solid samples (pCi/kg).
[b] Laboratory codes : W & SPW (Water), MI (milk), AP (air filter), SO (soil), VE (vegetation), CH (charcoal canister), F (fish), U (urine).
[c] Results are based on single determinations.
[d] Acceptance criteria are listed in Attachment A of this report.

TABLE A-3. Intralaboratory "Spiked" Samples

Lab Code[b]	Date	Concentration[a] Analysis	Laboratory results 2s, n=1[c]	Known Activity	Control Limits[d]	Acceptance	Ratio Lab/Known
SPDW-40344	11/3/2022	Ra-228	13.2 ± 1.8	13.4	9.4 - 17.4	Pass	0.99
SPDW-40346	11/8/2022	Gr. Alpha	42.0 ± 2.2	60.2	31.5 - 74.8	Pass	0.70
SPDW-40346	11/8/2022	Gr. Beta	16.6 ± 1.0	17.7	10.1 - 25.9	Pass	0.94
SPDW-40352	11/17/2022	Sr-90	18.8 ± 1.2	17.1	13.7 - 20.5	Pass	1.10
SPDW-40355	11/18/2022	H-3	10,143 ± 316	10,400	8,320 - 12,480	Pass	0.98
SPDW-40364	11/30/2022	Gr. Alpha	38.4 ± 1.5	60.2	31.5 - 74.8	Pass	0.64
SPDW-40364	11/30/2022	Gr. Beta	30.9 ± 1.2	17.7	10.1 - 25.9	Pass	1.75
LCS-W-110822	2/1/2022	Cs-137	222 ± 10	206	165 - 247	Pass	1.08
LCS-W-110822	2/1/2022	Co-57	1,060 ± 117	973	778 - 1,168	Pass	1.09
LCS-W-110822	2/1/2022	Co-60	250 ± 8	251	201 - 301	Pass	1.00
LCS-W-110822	2/1/2022	Mn-54	537 ± 18	511	409 - 613	Pass	1.05
LCS-W-110822	2/1/2022	Zn-65	673 ± 35	708	566 - 850	Pass	0.95
SPDW-40372	11/21/2022	Ra-226	11.3 ± 0.3	12.3	8.6 - 16.0	Pass	0.92
SPU-3883	12/1/2022	H-3	21,694 ± 1,387	23,900	19,120 - 28,680	Pass	0.91
SPW-3950	12/1/2022	Ni-63	1,937 ± 28	2,135.0	1,495 - 2,776	Pass	0.91
SPDW-40366	12/2/2022	H-3	22,466 ± 464	23,900	19,120 - 28,680	Pass	0.94
SPW-3969	12/2/2022	Ni-63	2,123 ± 29	2,135.0	1,495 - 2,776	Pass	0.99
SPW-3881	12/5/2022	Tc-99	85.0 ± 1.6	107.8	75.5 - 140.1	Pass	0.79
SPDW-40374	12/12/2022	H-3	22,554 ± 463	23,900	19,120 - 28,680	Pass	0.94
SPDW-40382	12/12/2022	Ra-226	12.7 ± 0.4	12.3	8.6 - 16.0	Pass	1.03
SPDW-40380	12/22/2022	H-3	22,200 ± 462	23,900.0	19,120 - 28,680	Pass	0.93

[a] Liquid sample results are reported in pCi/Liter, air filters (pCi/m3), charcoal (pCi/charcoal canister), and solid samples (pCi/kg).
[b] Laboratory codes : W & SPW (Water), MI (milk), AP (air filter), SO (soil), VE (vegetation), CH (charcoal canister), F (fish), U (urine).
[c] Results are based on single determinations.
[d] Acceptance criteria are listed in Attachment A of this report.

TABLE A-4. Intralaboratory "Blank" Samples

Lab Code[b]	Sample Type	Date	Analysis[c]	Concentration[a]		
				Laboratory results (4.66σ)		Acceptance
				LLD	Activity[d]	Criteria (4.66 σ)
SPDW-30304	Water	1/5/2022	Gr. Alpha	0.47	0.07 ± 0.33	2
SPDW-30304	Water	1/5/2022	Gr. Beta	0.77	0.33 ± 0.55	4
SPDW-40001	Water	1/7/2022	H-3	156	3 ± 75	200
SPDW-40012	Water	1/6/2022	Ra-226	0.06	-0.08 ± 0.05	2
SPDW-40016	Water	7/12/2021	H-3	165	-41 ± 85	200
SPDW-40017	Water	7/21/2021	H-3	165	0 ± 87	200
SPDW-40021	Water	2/3/2022	Ra-228	1.15	0.20 ± 0.56	2
SPDW-40023	Water	2/4/2022	H-3	162	78 ± 81	200
SPDW-40027	Water	2/11/2022	H-3	168	26 ± 85	200
SPDW-40036	Water	2/25/2022	H-3	160	55 ± 78	200
SPDW-40044	Water	3/3/2022	Sr-89	0.62	0.20 ± 0.44	5
SPDW-40044	Water	3/3/2022	Sr-90	0.60	-0.18 ± 0.26	1
SPDW-40046	Water	3/3/2022	I-131	0.12	0.04 ± 0.08	1
SPDW-40051	Water	3/10/2022	H-3	161	17 ± 78	200
SPDW-40063	Water	3/18/2022	H-3	177	60 ± 96	200
SPDW-40072	Water	3/22/2022	Ra-228	1.20	0.29 ± 0.56	2
SPDW-40074	Water	1/28/2022	Ra-226	0.06	0.08 ± 0.14	2
SPDW-40077	Water	3/14/2022	U-234	0.19	0.17 ± 0.20	1
SPDW-40077	Water	3/14/2022	U-238	0.19	-0.04 ± 0.14	1
SPW-597	Water	3/31/2022	Fe-55	1159	92 ± 708	2000
SPDW-40081	Water	3/30/2022	Ra-228	1.66	0.19 ± 0.79	2
SPDW-40082	Water	4/1/2022	H-3	170	60 ± 85	200
SPDW-40084	Water	4/4/2022	Sr-89	0.51	0.28 ± 0.41	5
SPDW-40084	Water	4/4/2022	Sr-90	0.55	0.01 ± 0.25	1
SPDW-40088	Water	4/8/2022	H-3	166.00	66.00 ± 83.00	200
SPDW-40129	Water	4/8/2022	Ra-226	0.01	0.11 ± 0.02	2
SPDW-40098	Water	4/11/2022	Gr. Alpha	0.42	0.06 ± 0.30	2
SPDW-40098	Water	4/11/2022	Gr. Beta	0.75	-0.73 ± 0.50	4
SPDW-40101	Water	4/14/2022	H-3	164	37 ± 84	200
SPDW-40120	Water	4/22/2022	H-3	109	74 ± 84	200
SPDW-40131	Water	5/3/2022	H-3	165	75 ± 86	200
SPDW-40141	Water	5/5/2022	Ra-226	0.08	0.01 ± 0.07	2
SPU-1297	Urine	5/12/2022	H-3	1325	674 ± 733	200
SPDW-40138	Water	5/18/2022	H-3	163	69 ± 80	200
SPDW-40156	Water	5/25/2022	Ra-226	0.04	0.09 ± 0.03	2
SPW-1855	Water	6/14/2022	Sr-89	0.63	0.02 ± 0.49	5
SPW-1855	Water	6/14/2022	Sr-90	0.57	0.00 ± 0.26	1
SPDW-40172	Water	6/14/2022	Ra-226	0.03	0.06 ± 0.03	2
SPDW-40163	Water	6/21/2022	Ra-228	0.84	0.30 ± 0.43	2
SPDW-40166	Water	6/23/2022	H-3	162	46 ± 78	200
SPW-1876	Water	6/27/2022	C-14	9.99	-9.14 ± 5.92	200

[a] Liquid sample results are reported in pCi/Liter, air filters (pCi/m^3), charcoal (pCi/charcoal canister), and solid samples (pCi/g).

[b] Laboratory codes : W & SPW (Water), MI (milk), AP (air filter), SO (soil), VE (vegetation), CH (charcoal canister), F (fish), U (urine).

[c] I-131(G); iodine-131 as analyzed by gamma spectroscopy.

[d] Activity reported is a net activity result.

TABLE A-4. Intralaboratory "Blank" Samples

Lab Code[b]	Sample Type	Date	Analysis[c]	Concentration[a] Laboratory results (4.66σ) LLD	Activity[d]	Acceptance Criteria (4.66 σ)
SPW-1878	Water	6/27/2022	Fe-55	522	-200 ± 306	2000
SPW-1880	Water	6/27/2022	Tc-99	11.4	-6.0 ± 6.8	200
SPW-1891	Water	6/28/2022	Ni-63	75.9	0.0 ± 46.1	200
SPDW-40176	Water	6/30/2022	Ra-226	0.04	0.06 ± 0.04	2
SPDW-40252	Water	7/12/2022	Ra-226	0.04	-0.06 ± 0.10	2
SPDW-40178	Water	7/15/2022	H-3	167	58 ± 83	200
SPW-2220	Water	7/21/2022	C-14	3.52	-3.15 ± 2.09	200
SPDW-40199	Water	7/26/2022	Gr. Alpha	0.80	0.47 ± 0.58	2
SPDW-40199	Water	7/26/2022	Gr. Beta	0.77	0.98 ± 0.57	4
SPDW-40207	Water	7/29/2022	H-3	161	-21 ± 84	200
SPDW-40211	Water	8/9/2022	Ra-228	1.23	0.20 ± 0.59	2
SPDW-40219	Water	8/16/2022	H-3	161	68 ± 80	200
SPDW-40238	Water	8/22/2022	Gr. Alpha	0.47	0.05 ± 0.34	2
SPDW-40238	Water	8/22/2022	Gr. Beta	0.75	0.34 ± 0.54	4
SPDW-40263	Water	9/2/2022	I-131	0.17	-0.05 ± 0.09	1
SPDW-40264	Water	9/2/2022	H-3	162	82 ± 81	200
SPDW-40264	Water	9/6/2022	Ra-228	1.11	-0.22 ± 0.49	2
SPDW-40282	Water	9/9/2022	H-3	163	71 ± 83	200
SPDW-40291	Water	9/16/2022	I-131	0.11	-0.01 ± 0.08	1
SPMI-2917	Milk	9/19/2022	Sr-89	0.58	0.03 ± 0.47	5
SPMI-2917	Milk	9/19/2022	Sr-90	0.51	0.30 ± 0.27	1
SPDW-40293	Water	9/20/2022	Gr. Alpha	0.52	0.10 ± 0.37	2
SPDW-40293	Water	9/20/2022	Gr. Beta	0.78	0.26 ± 0.55	4
SPDW-40302	Water	9/19/2022	H-3	160	97 ± 80	200
SPDW-40304	Water	9/21/2022	Ra-228	0.87	0.09 ± 0.41	2
SPDW-40311	Water	9/30/2022	I-131	0.15	0.00 ± 0.08	1
SPDW-40345	Water	11/8/2022	Gr. Alpha	0.53	-0.17 ± 0.36	2
SPDW-40345	Water	11/8/2022	Gr. Beta	0.78	-0.05 ± 0.54	4
SPDW-40350	Water	11/11/2022	H-3	166	96 ± 84	200
SPDW-40352	Water	11/17/2022	Sr-89	0.66	-0.01 ± 0.53	5
SPDW-40352	Water	11/17/2022	Sr-90	0.61	0.11 ± 0.29	1
SPDW-40354	Water	11/18/2022	H-3	155	21 ± 76	200
SPDW-40354	Water	11/18/2022	I-131	0.18	-0.11 ± 0.09	1
SPW-3880	Water	12/1/2022	Tc-99	5.58	2.99 ± 3.44	200
SPU-3882	Urine	12/1/2022	H-3	1157	599 ± 642	2000
SPW-3949	Water	12/2/2022	Ni-63	16.3	9.0 ± 10.0	200
SPW-3968	Water	12/2/2022	Ni-63	15.9	0.0 ± 9.6	200
SPDW-40370	Water	12/7/2022	I-131	0.10	-0.04 ± 0.06	1
SPDW-40381	Ra-226	12/12/2022	Ra-226	0.06	-0.04 ± 0.05	2
SPDW-40379	H-3	12/22/2022	H-3	162	107 ± 84	200

[a] Liquid sample results are reported in pCi/Liter, air filters (pCi/m^3), charcoal (pCi/charcoal canister), and solid samples (pCi/g).

[b] Laboratory codes : W & SPW (Water), MI (milk), AP (air filter), SO (soil), VE (vegetation), CH (charcoal canister), F (fish), U (urine).

[c] I-131(G); iodine-131 as analyzed by gamma spectroscopy.

[d] Activity reported is a net activity result.

TABLE A-5. Intralaboratory "Duplicate" Samples

			Concentration[a]			
Lab Code[b]	Date	Analysis	First Result	Second Result	Averaged Result	Acceptance
CF-20,21	1/3/2022	Gr. Beta	7.07 ± 0.26	7.05 ± 0.26	7.06 ± 0.18	Pass
CF-20,21	1/3/2022	K-40	9.06 ± 0.28	7.54 ± 0.70	8.30 ± 0.38	Pass
U-135,136	1/20/2022	Beta (-K40)	5.74 ± 1.63	3.53 ± 1.40	4.64 ± 1.07	Pass
DW-40019,40020	1/25/2022	Gr. Alpha	5.01 ± 1.34	6.01 ± 1.40	5.51 ± 0.97	Pass
DW-40019,40020	1/25/2022	Ra-226	1.19 ± 0.15	0.98 ± 0.17	1.09 ± 0.11	Pass
DW-40019,40020	1/25/2022	Ra-228	4.84 ± 0.98	5.38 ± 1.05	5.11 ± 0.72	Pass
W-159,160	1/27/2022	Gr. Alpha	3.04 ± 3.19	3.85 ± 2.04	3.45 ± 1.89	Pass
W-159,160	1/27/2022	Gr. Beta	14.4 ± 2.7	13.1 ± 1.5	13.7 ± 1.5	Pass
W-159,160	1/27/2022	Ra-226	0.94 ± 0.19	1.11 ± 0.30	1.03 ± 0.18	Pass
W-159,160	1/27/2022	Ra-228	3.14 ± 0.96	3.39 ± 0.96	3.27 ± 0.68	Pass
W-888,889	2/14/2022	Ni-63	119 ± 47	95 ± 48	107 ± 34	Pass
S-391,392	2/17/2022	K-40	11.2 ± 0.8	9.8 ± 0.7	10.5 ± 0.5	Pass
DW-40040,40041	2/25/2022	Ra-226	2.78 ± 0.21	2.01 ± 0.22	2.40 ± 0.15	Pass
DW-40040,40041	2/25/2022	Ra-228	3.15 ± 0.95	3.29 ± 0.94	3.22 ± 0.67	Pass
AP-022821A,B	2/28/2022	Gr. Beta	0.038 ± 0.005	0.039 ± 0.005	0.039 ± 0.003	Pass
S-435,436	3/2/2022	Pb-214	1.42 ± 0.11	1.29 ± 0.15	1.36 ± 0.09	Pass
S-435,436	3/2/2022	Ac-228	0.94 ± 0.20	1.06 ± 0.15	1.00 ± 0.13	Pass
AP-030721A,B	3/7/2022	Gr. Beta	0.038 ± 0.005	0.038 ± 0.005	0.038 ± 0.004	Pass
S-477,478	3/8/2022	K-40	6.58 ± 0.23	6.73 ± 0.24	6.66 ± 0.17	Pass
SWT-657,658	3/9/2022	Gr. Beta	1.00 ± 0.54	1.20 ± 0.57	1.10 ± 0.39	Pass
DW-40059,40060	3/11/2022	Ra-226	0.40 ± 0.10	0.53 ± 0.11	0.47 ± 0.07	Pass
DW-40059,40060	3/11/2022	Ra-228	0.40 ± 0.60	0.72 ± 0.60	0.56 ± 0.42	Pass
AP-0315221A,B	3/15/2022	Gr. Beta	0.025 ± 0.003	0.027 ± 0.003	0.026 ± 0.002	Pass
AP-1161,1162	3/29/2022	Be-7	0.07 ± 0.02	0.07 ± 0.02	0.07 ± 0.01	Pass
DW-700,701	4/4/2022	Gr. Alpha	1.70 ± 1.83	2.82 ± 1.78	2.26 ± 1.28	Pass
DW-700,701	4/4/2022	Gr. Beta	3.33 ± 1.26	4.29 ± 1.30	3.81 ± 0.91	Pass
DW-700,701	4/4/2022	Ra-226	0.50 ± 0.16	0.65 ± 0.14	0.58 ± 0.11	Pass
DW-700,701	4/4/2022	Ra-228	5.04 ± 1.00	4.79 ± 0.99	4.92 ± 0.70	Pass
SG-706,707	4/4/2022	Gr. Alpha	25.7 ± 3.6	21.7 ± 3.2	23.7 ± 2.4	Pass
SG-706,707	4/4/2022	Gr. Beta	23.2 ± 1.7	24.5 ± 1.8	23.9 ± 1.3	Pass
SG-706,707	4/4/2022	Ra-226	2.47 ± 0.10	2.62 ± 0.09	2.55 ± 0.07	Pass
SG-706,707	4/4/2022	Ra-228	4.63 ± 0.22	4.40 ± 0.20	4.52 ± 0.15	Pass
DW-40091,40092	4/5/2022	Gr. Alpha	0.43 ± 0.78	0.57 ± 0.82	0.50 ± 0.57	Pass
DW-40091,40092	4/6/2022	Ra-226	0.21 ± 0.10	0.24 ± 0.08	0.23 ± 0.06	Pass
U-951,952	4/13/2022	Gr. Beta	2.72 ± 1.55	4.11 ± 1.45	3.41 ± 1.06	Pass
U-951,952	4/13/2022	H-3	861 ± 723	1,015 ± 732	938 ± 514	Pass
W-1014,1015	4/21/2022	Ra-228	1.76 ± 0.93	1.51 ± 0.92	1.64 ± 0.65	Pass
W-1014,1015	4/21/2022	Ra-226	1.23 ± 0.27	1.36 ± 0.29	1.30 ± 0.20	Pass
DW-40117,40118	4/26/2022	Ra-226	0.33 ± 0.22	0.29 ± 0.09	0.31 ± 0.12	Pass
SW-1034,1035	4/26/2022	H-3	15,159 ± 386	16,022 ± 396	15,591 ± 277	Pass
DW-40124,40125	4/28/2022	Gr. Alpha	0.70 ± 0.56	0.60 ± 0.68	0.65 ± 0.44	Pass

TABLE A-5. Intralaboratory "Duplicate" Samples

			Concentration[a]			
Lab Code[b]	Date	Analysis	First Result	Second Result	Averaged Result	Acceptance
SO-1266,1267	5/9/2022	K-40	17.7 ± 0.8	16.0 ± 1.0	16.8 ± 0.6	Pass
SO-1266,1267	5/9/2022	Pb-214	0.42 ± 0.05	0.30 ± 0.06	0.36 ± 0.04	Pass
SO-1266,1267	5/9/2022	Ac-228	0.58 ± 0.09	0.61 ± 0.02	0.60 ± 0.05	Pass
AP-51721,51722	5/17/2022	Gr. Beta	0.023 ± 0.003	0.022 ± 0.003	0.022 ± 0.002	Pass
SG-1368,1369	5/18/2022	Pb-214	4.31 ± 0.27	5.78 ± 0.31	5.05 ± 0.21	Pass
SG-1368,1369	5/18/2022	Ac-228	6.08 ± 0.56	6.59 ± 0.50	6.34 ± 0.38	Pass
SG-1368,1369	5/18/2022	Gr. Alpha	37.8 ± 1.7	40.6 ± 1.7	39.2 ± 1.2	Pass
SG-1368,1369	5/18/2022	Gr. Beta	34.8 ± 0.8	31.2 ± 0.8	33.0 ± 0.6	Pass
DW-40143,40144	5/19/2022	Ra-226	1.17 ± 0.25	1.56 ± 0.16	1.37 ± 0.15	Pass
DW-40143,40144	5/19/2022	Ra-228	1.29 ± 0.72	2.14 ± 0.85	1.72 ± 0.56	Pass
AP-53121,53122	5/31/2022	Gr. Beta	0.016 ± 0.003	0.014 ± 0.003	0.015 ± 0.002	Pass
PM-1646,1647	6/1/2022	K-40	14.2 ± 0.8	13.9 ± 0.4	14.1 ± 0.5	Pass
S-1731,1732	6/6/2022	K-40	16.5 ± 0.8	15.8 ± 1.9	16.2 ± 1.0	Pass
DW-40152,40153	6/7/2022	Gr. Alpha	4.00 ± 0.74	3.50 ± 0.70	3.75 ± 0.51	Pass
AP-60721,60722	6/7/2022	Gr. Beta	0.014 ± 0.003	0.013 ± 0.003	0.013 ± 0.002	Pass
S-1773,1774	6/13/2022	Be-7	1.29 ± 0.28	1.56 ± 0.15	1.43 ± 0.16	Pass
S-1773,1774	6/13/2022	K-40	13.8 ± 0.7	13.3 ± 0.7	13.6 ± 0.5	Pass
AP-61321,61322	6/13/2022	Gr. Beta	0.023 ± 0.004	0.023 ± 0.004	0.023 ± 0.003	Pass
AP-62021,62022	6/20/2022	Gr. Beta	0.031 ± 0.005	0.031 ± 0.005	0.031 ± 0.003	Pass
AP-62721,62722	6/27/2022	Gr. Beta	0.027 ± 0.005	0.027 ± 0.005	0.027 ± 0.003	Pass
DW-40169,40170	6/29/2022	Ra-228	1.06 ± 0.70	0.17 ± 0.54	0.62 ± 0.44	Pass
DW-40169,40170	6/29/2022	Ra-226	0.22 ± 0.12	0.03 ± 0.12	0.13 ± 0.08	Pass
W-2014,2015	7/4/2022	Ra-226	0.73 ± 0.24	0.72 ± 0.27	0.73 ± 0.18	Pass
S-2035,2036	7/7/2022	Pb-214	1.00 ± 0.09	1.65 ± 0.11	1.33 ± 0.07	Pass
S-2035,2036	7/7/2022	Ac-228	1.16 ± 0.20	1.09 ± 0.18	1.13 ± 0.13	Pass
S-2152,2153	7/13/2022	Pb-214	0.58 ± 0.07	0.65 ± 0.05	0.62 ± 0.04	Pass
S-2152,2153	7/13/2022	Ac-228	0.62 ± 0.11	0.61 ± 0.08	0.62 ± 0.07	Pass
S-2152,2153	7/18/2022	K-40	10.9 ± 0.8	12.5 ± 0.8	11.7 ± 0.6	Pass
DW-40192,40193	7/19/2022	Ra-226	0.80 ± 0.10	0.70 ± 0.10	0.75 ± 0.07	Pass
DW-40192,40193	7/19/2022	Ra-228	0.03 ± 0.60	1.20 ± 0.68	0.62 ± 0.45	Pass
DW-40205,40206	7/27/2022	Ra-226	0.32 ± 0.15	0.28 ± 0.10	0.30 ± 0.09	Pass
DW-40205,40206	7/27/2022	Ra-228	0.34 ± 0.59	0.65 ± 0.62	0.50 ± 0.43	Pass
G-2343,2344	8/1/2022	Be-7	3.00 ± 0.31	3.04 ± 0.26	3.02 ± 0.20	Pass
G-2343,2344	8/1/2022	K-40	5.82 ± 0.53	6.03 ± 0.39	5.93 ± 0.33	Pass
W-2406,2407	8/1/2022	Gr. Alpha	4.27 ± 3.20	4.60 ± 2.95	4.44 ± 2.18	Pass
W-2406,2407	8/1/2022	Gr. Beta	11.1 ± 2.6	10.5 ± 2.4	10.8 ± 1.8	Pass
W-2406,2407	8/1/2022	Ra-226	1.83 ± 0.28	2.31 ± 0.35	2.07 ± 0.22	Pass
W-2406,2407	8/1/2022	Ra-228	2.87 ± 0.95	2.43 ± 0.93	2.65 ± 0.66	Pass
DW-40213,40214	8/3/2022	Gr. Alpha	0.60 ± 0.60	-0.30 ± 0.70	0.15 ± 0.46	Pass
DW-40213,40214	8/3/2022	Gr. Beta	0.72 ± 0.59	0.85 ± 0.54	0.79 ± 0.40	Pass
DW-40225,40226	8/10/2022	Ra-226	0.53 ± 0.13	0.41 ± 0.10	0.47 ± 0.08	Pass

TABLE A-5. Intralaboratory "Duplicate" Samples

			Concentration[a]			
Lab Code[b]	Date	Analysis	First Result	Second Result	Averaged Result	Acceptance
DW-40225,40226	8/10/2022	Ra-228	1.20 ± 0.71	1.00 ± 0.71	1.10 ± 0.50	Pass
S-2553,2554	8/18/2022	K-40	1.74 ± 0.27	1.33 ± 0.22	1.54 ± 0.17	Pass
WW-2774,2775	8/19/2022	H-3	138 ± 86	171 ± 88	155 ± 62	Pass
S-2797,2798	8/22/2022	K-40	19.0 ± 0.2	18.7 ± 0.2	18.9 ± 0.1	Pass
DW-40241,40242	8/23/2022	Ra-226	3.10 ± 0.19	3.54 ± 0.19	3.32 ± 0.13	Pass
DW-40241,40242	8/23/2022	Ra-228	6.05 ± 0.98	6.61 ± 1.02	6.33 ± 0.71	Pass
W-2681,2682	8/24/2022	H-3	1054 ± 126	962 ± 122	1008 ± 88	Pass
DW-40259,40260	8/30/2022	Ra-228	0.49 ± 0.11	0.11 ± 0.10	0.30 ± 0.07	Pass
DW-40259,40260	8/30/2022	Ra-226	0.49 ± 0.11	0.11 ± 0.09	0.30 ± 0.07	Pass
DW-40259,40260	8/30/2022	Ra-228	0.00 ± 0.57	0.47 ± 61.00	0.24 ± 30.50	Pass
AP-830227A,B	8/30/2022	Gr. Beta	0.027 ± 0.004	0.026 ± 0.004	0.027 ± 0.003	Pass
AP-808227A,B	8/30/2022	Gr. Beta	0.016 ± 0.004	0.018 ± 0.004	0.017 ± 0.003	Pass
VE-2702,2703	8/30/2022	K-40	2.58 ± 0.12	2.62 ± 0.27	2.60 ± 0.15	Pass
VE-2702,2703	8/30/2022	Be-7	0.21 ± 0.05	0.30 ± 0.13	0.26 ± 0.07	Pass
VE-2702,2703	8/30/2022	Sr-90	0.002 ± 0.001	0.002 ± 0.001	0.002 ± 0.001	Pass
SG-3978,3979	9/7/2022	Gr. Alpha	470 ± 29	552 ± 32	511 ± 22	Pass
SG-3978,3979	9/7/2022	Pb-214	31.3 ± 0.8	30.9 ± 1.6	31.1 ± 0.9	Pass
SG-3978,3979	9/7/2022	Ac-228	41.6 ± 1.5	43.2 ± 2.8	42.4 ± 1.6	Pass
SG-2844	9/9/2022	Gr. Alpha	25.7 ± 4.0	18.7 ± 3.5	22.2 ± 2.7	Pass
SG-2844	9/9/2022	Gr. Beta	21.3 ± 2.0	22.2 ± 2.0	21.8 ± 1.4	Pass
SG-2844	9/9/2022	Pb-214	4.35 ± 0.12	4.43 ± 0.10	4.39 ± 0.08	Pass
SG-2844	9/9/2022	Ac-228	5.37 ± 0.22	5.39 ± 0.17	5.38 ± 0.14	Pass
DW-40279,40280	9/9/2022	Ra-226	3.92 ± 0.23	4.18 ± 0.25	4.05 ± 0.17	Pass
DW-40279,40280	9/9/2022	Ra-228	7.05 ± 1.09	6.58 ± 1.06	6.82 ± 0.76	Pass
SG-2841,2842	9/9/2022	Pb-214	0.90 ± 0.50	1.16 ± 0.12	1.03 ± 0.26	Pass
SG-2841,2842	9/9/2022	Ac-228	0.91 ± 0.10	0.88 ± 0.17	0.90 ± 0.10	Pass
DW-40295,40296	9/13/2022	Gr. Alpha	0.79 ± 0.97	0.64 ± 0.97	0.72 ± 0.69	Pass
DW-40295,40296	9/14/2022	Ra-226	2.75 ± 0.32	2.89 ± 0.24	2.82 ± 0.20	Pass
DW-40295,40296	9/14/2022	Ra-228	2.88 ± 0.78	2.95 ± 0.76	2.92 ± 0.54	Pass
SG-2862,2863	9/14/2022	Pb-214	11.8 ± 0.2	11.2 ± 0.2	11.5 ± 0.1	Pass
SG-2862,2863	9/14/2022	Ac-228	6.95 ± 0.24	7.18 ± 0.19	7.07 ± 0.15	Pass
SG-3119,3120	9/24/2022	Pb-214	3.10 ± 0.21	3.10 ± 0.22	3.10 ± 0.15	Pass
SG-3119,3120	9/24/2022	Ac-228	2.16 ± 0.38	2.30 ± 0.33	2.23 ± 0.25	Pass
SG-3075,3076	9/28/2022	Gr. Alpha	174 ± 10	158 ± 10	166 ± 7	Pass
SG-3075,3076	9/28/2022	Pb-214	23.6 ± 0.9	24.4 ± 0.4	24.0 ± 0.5	Pass
SG-3075,3076	9/28/2022	Ac-228	38.2 ± 1.9	35.8 ± 0.8	37.0 ± 1.0	Pass
DW-40318,40319	9/29/2022	Gr. Alpha	1.02 ± 0.94	1.79 ± 1.68	1.41 ± 0.96	Pass
AP-100321A/B	10/3/2022	Gr. Beta	0.015 ± 0.003	0.011 ± 0.003	0.013 ± 0.002	Pass
SO-3140,3141	10/3/2022	Be-7	0.353 ± 0.180	0.304 ± 0.163	0.328 ± 0.121	Pass
SO-3140,3141	10/3/2022	K-40	11.2 ± 0.6	11.0 ± 0.6	11.1 ± 0.4	Pass
SO-3140,3141	10/3/2022	Cs-137	0.055 ± 0.016	0.069 ± 0.020	0.062 ± 0.013	Pass
SO-3140,3141	10/3/2022	Tl-208	0.132 ± 0.022	0.114 ± 0.024	0.123 ± 0.016	Pass

TABLE A-5. Intralaboratory "Duplicate" Samples

Lab Code[b]	Date	Analysis	Concentration[a] First Result	Second Result	Averaged Result	Acceptance
SO-3140,3141	10/3/2022	Bi-214	0.315 ± 0.041	0.390 ± 0.041	0.353 ± 0.029	Pass
SO-3140,3141	10/3/2022	Pb-212	0.344 ± 0.029	0.357 ± 0.029	0.351 ± 0.020	Pass
SO-3140,3141	10/3/2022	Pb-214	0.362 ± 0.043	0.446 ± 0.047	0.404 ± 0.032	Pass
SO-3140,3141	10/3/2022	Ra-226	0.602 ± 0.250	0.768 ± 0.248	0.685 ± 0.176	Pass
SO-3140,3141	10/3/2022	Ac-228	0.442 ± 0.101	0.405 ± 0.083	0.423 ± 0.066	Pass
SO-3140,3141	10/3/2022	Gr. Alpha	4.07 ± 1.77	4.43 ± 2.17	4.25 ± 1.40	Pass
SO-3140,3141	10/3/2022	Gr. Beta	15.6 ± 1.6	17.0 ± 1.5	16.3 ± 1.1	Pass
AP-101021A/B	10/10/2022	Gr. Beta	0.037 ± 0.005	0.040 ± 0.005	0.039 ± 0.004	Pass
S-3501,3502	10/18/2022	K-40	16.3 ± 1.2	16.3 ± 1.3	16.3 ± 0.9	Pass
AP-101821A/B	10/18/2022	Gr. Beta	0.026 ± 0.003	0.027 ± 0.003	0.026 ± 0.002	Pass
DW-40328,40329	10/25/2022	Ra-226	2.13 ± 0.18	2.17 ± 0.28	2.15 ± 0.17	Pass
AP-102621A/B	10/26/2022	Gr. Beta	0.051 ± 0.005	0.047 ± 0.005	0.049 ± 0.003	Pass
SG-3557,3558	11/1/2022	Gr. Alpha	24.5 ± 4.0	25.0 ± 4.0	24.8 ± 2.8	Pass
SG-3557,3558	11/1/2022	Gr. Beta	26.7 ± 2.2	29.3 ± 2.3	28.0 ± 1.6	Pass
SG-3557,3558	11/1/2022	Pb-214	9.23 ± 0.15	9.23 ± 0.32	9.23 ± 0.18	Pass
SG-3557,3558	11/1/2022	Ac-228	7.35 ± 0.31	8.26 ± 0.63	7.81 ± 0.35	Pass
AP-110221A/B	11/2/2022	Gr. Beta	0.020 ± 0.003	0.020 ± 0.003	0.020 ± 0.002	Pass
DW-40341,40342	11/7/2022	Ra-226	1.18 ± 0.15	0.89 ± 0.14	1.04 ± 0.10	Pass
DW-40341,40342	11/7/2022	Ra-228	1.98 ± 0.95	3.32 ± 1.12	2.65 ± 0.73	Pass
AP-110921A/B	11/9/2022	Gr. Beta	0.025 ± 0.003	0.025 ± 0.003	0.025 ± 0.002	Pass
AP-111621A/B	11/16/2022	Gr. Beta	0.013 ± 0.002	0.015 ± 0.002	0.014 ± 0.002	Pass
AP-112321A/B	11/23/2022	Gr. Beta	0.034 ± 0.004	0.031 ± 0.004	0.032 ± 0.003	Pass
AP-113021A/B	11/30/2022	Gr. Beta	0.056 ± 0.005	0.058 ± 0.005	0.057 ± 0.003	Pass
SG-4016,4017	12/5/2022	Gr. Alpha	24.5 ± 4.0	25.0 ± 4.0	24.7 ± 2.9	Pass
SG-4016,4017	12/5/2022	Gr. Beta	26.7 ± 2.2	29.3 ± 2.3	28.0 ± 1.6	Pass
SG-4016,4017	12/5/2022	Pb-214	8.64 ± 0.30	9.28 ± 0.30	8.96 ± 0.21	Pass
SG-4016,4017	12/5/2022	Ac-228	10.8 ± 0.8	10.0 ± 0.8	10.4 ± 0.6	Pass
AP-120721A/B	12/7/2022	Gr. Beta	0.034 ± 0.003	0.030 ± 0.003	0.032 ± 0.002	Pass
DW-40375,40376	12/14/2022	Ra-228	5.05 ± 0.96	7.15 ± 1.09	6.10 ± 0.73	Pass
DW-40375,40376	12/14/2022	Ra-226	3.33 ± 0.27	4.28 ± 0.29	3.81 ± 0.20	Pass
AP-121621A/B	12/16/2022	Gr. Beta	0.039 ± 0.004	0.033 ± 0.004	0.036 ± 0.003	Pass
AP-122721A/B	12/27/2022	Gr. Beta	0.018 ± 0.002	0.016 ± 0.002	0.017 ± 0.001	Pass
AP-122821A/B	12/28/2022	Gr. Beta	0.042 ± 0.003	0.039 ± 0.003	0.041 ± 0.002	Pass

Note: Duplicate analyses are performed on every twentieth sample received. Results are not listed for those analyses with activities that measure below the LLD.

[a] Results are reported in units of pCi/L, except for air filters (pCi/Filter or pCi/m3), food products, vegetation, soil and sediment (pCi/g).

[b] AP (Air Particulate), AV (Aquatic Vegetation), BS (Bottom Sediment), CF (Cattle Feed), CH (Charcoal Canister), DW (Drinking Water), E (Egg), F (Fish), G (Grass), LW (Lake Water), MI (Milk), P (Precipitation), PM (Powdered Milk), S (Solid), SG (Sludge), SO (Soil), SS (Shoreline Sediment), SW (Surface Water), SWT (Surface Water Treated), SWU (Surface Water Untreated), U (Urine), VE (Vegetation), W (Water), WW (Well Water).

TABLE A-6. Department of Energy's Mixed Analyte Performance Evaluation Program (MAPEP).

			Concentration[a]			
Lab Code [b]	Reference Date	Analysis	Laboratory result	Known Activity	Control Limits [c]	Acceptance
MAAP-506	2/1/2022	Gross Alpha	1.10 ± 0.14	1.20	0.36 - 2.04	Pass
MAAP-506	2/1/2022	Gross Beta	0.83 ± 0.06	0.681	0.341 - 1.022	Pass
MADW-408	2/1/2022	Gross Alpha	0.34 ± 0.04	0.574	0.172 ± 0.976	Pass
MADW-408	2/1/2022	Gross Beta	6.61 ± 0.09	7.25	3.63 - 10.88	Pass
MASO-504	2/1/2022	Cs-134	738 ± 8	890	623 - 1157	Pass
MASO-504	2/1/2022	Cs-137	399 ± 9	365	256 - 475	Pass
MASO-504	2/1/2022	Co-57	1479 ± 375	1400	980 - 1820	Pass
MASO-504	2/1/2022	Co-60	433 ± 6	443	310 - 576	Pass
MASO-504	2/1/2022	Mn-54	1258 ± 606	1140	798 - 1482	Pass
MASO-504	2/1/2022	Zn-65	-2.11 ± 4.44	0	NA [c]	Pass
MASO-504	2/1/2022	K-40	641 ± 40	596	417 - 775	Pass
MADW-500	2/1/2022	Cs-134	-0.06 ± 0.11	0	NA [c]	Pass
MADW-500	2/1/2022	Cs-137	8.09 ± 0.33	7.64	5.35 - 9.93	Pass
MADW-500	2/1/2022	Co-57	37.04 ± 0.55	36.0	25.20 - 46.80	Pass
MADW-500	2/1/2022	Co-60	8.91 ± 0.27	9.3	6.5 - 12.1	Pass
MADW-500	2/1/2022	Mn-54	20.4 ± 0.6	18.9	13.2 - 24.6	Pass
MADW-500	2/1/2022	Zn-65	28.65 ± 0.94	26.2	18.3 - 34.1	Pass
MADW-500	2/1/2022	K-40	4.80 ± 2.57	0	NA [c]	Pass
MADW-500	2/1/2022	H-3	309 ± 10	300	210 - 390	Pass
MADW-500	2/1/2022	Ra-226	0.83 ± 0.10	0.8	0.6 - 1.0	Pass
MADW-500	2/1/2022	U-234	0.13 ± 0.01	1.5	1.1 - 2.0	Fail [d]
MADW-500	2/1/2022	U-238	0.12 ± 0.01	1.54	1.08 - 2.00	Fail [d]
MAAP-502	2/1/2022	Cs-134	0.83 ± 0.05	0.93	0.65 - 1.21	Pass
MAAP-502	2/1/2022	Cs-137	0.87 ± 0.07	0.726	0.51 - 0.94	Pass
MAAP-502	2/1/2022	Co-57	0.87 ± 0.05	0	NA [c]	Fail [e]
MAAP-502	2/1/2022	Co-60	0.83 ± 0.07	0.72	0.50 - 0.94	Pass
MAAP-502	2/1/2022	Mn-54	0.02 ± 0.02	0	NA [c]	Pass
MAAP-502	2/1/2022	Sr-90	0.72 ± 0.10	0.54	0.38 - 0.70	Fail [f]
MAVE-507	2/1/2022	Cs-134	7.53 ± 0.17	7.61	5.33 - 9.89	Pass
MAVE-507	2/1/2022	Cs-137	1.60 ± 0.12	1.52	1.06 - 1.98	Pass
MAVE-507	2/1/2022	Co-57	6.21 ± 0.17	5.09	3.56 - 6.62	Pass
MAVE-507	2/1/2022	Co-60	0.01 ± 0.03	0	NA [c]	Pass
MAVE-507	2/1/2022	Mn-54	2.940 ± 0.140	3	1.81 - 3.37	Pass
MAVE-507	2/1/2022	Zn-65	1.69 ± 0.17	1.47	1.03 - 1.91	Pass
MADW-2613	8/1/2022	Gross Alpha	1.39 ± 0.10	0.90	0.27 - 1.53	Pass
MADW-2613	8/1/2022	Gross Beta	1.69 ± 0.04	1.31	0.66 - 1.97	Pass

TABLE A-6. Department of Energy's Mixed Analyte Performance Evaluation Program (MAPEP).

			Concentration[a]			
Lab Code [b]	Reference Date	Analysis	Laboratory result	Known Activity	Control Limits [c]	Acceptance
MASO-2737	8/1/2022	Cs-134	523 ± 5	627	439 - 815	Pass
MASO-2737	8/1/2022	Cs-137	1.18 ± 2.21	0	NA [c]	Pass
MASO-2737	8/1/2022	Co-57	715 ± 6	786	550 - 1022	Pass
MASO-2737	8/1/2022	Co-60	-0.04 ± 1.07	0	NA [c]	Pass
MASO-2737	8/1/2022	Mn-54	903 ± 11	841	589 - 1093	Pass
MASO-2737	8/1/2022	Zn-65	1227 ± 19	1140	798 - 1482	Pass
MASO-2737	8/1/2022	K-40	595 ± 37	537	376 - 698	Pass
MADW-2733	8/1/2022	Cs-134	13.6 ± 0.3	17.1	12.0 - 22.2	Pass
MADW-2733	8/1/2022	Cs-137	16.0 ± 0.4	16.8	11.8 - 21.8	Pass
MADW-2733	8/1/2022	Co-57	27.5 ± 0.4	30.0	21.0 - 39.0	Pass
MADW-2733	8/1/2022	Co-60	14.4 ± 0.3	17.0	11.9 - 22.1	Pass
MADW-2733	8/1/2022	Mn-54	-0.03 ± 0.10	0	NA [c]	Pass
MADW-2733	8/1/2022	Zn-65	11.5 ± 0.6	11.3	7.9 - 14.7	Pass
MADW-2733	8/1/2022	K-40	3.88 ± 1.51	0	NA [c]	Pass
MADW-2733	8/1/2022	Sr-90	6.79 ± 0.32	7.73	5.41 - 10.05	Pass
MAAP-2735	8/1/2022	Cs-134	-0.001 ± 0.029	0	NA [c]	Pass
MAAP-2735	8/1/2022	Cs-137	1.76 ± 0.11	1.53	1.07 - 1.99	Pass
MAAP-2735	8/1/2022	Co-57	3.50 ± 0.07	3.32	2.32 - 4.32	Pass
MAAP-2735	8/1/2022	Co-60	2.11 ± 0.08	1.99	1.39 - 2.59	Pass
MAAP-2735	8/1/2022	Mn-54	2.18 ± 0.13	1.88	1.32 - 2.44	Pass
MAAP-2735	8/1/2022	Zn-65	1.83 ± 0.22	1.58	1.11 - 2.05	Pass
MAVE-2740	8/1/2022	Cs-134	0.01 ± 0.06	0	NA [c]	Pass
MAVE-2740	8/1/2022	Cs-137	1.15 ± 0.12	1.083	0.758 - 1.408	Pass
MAVE-2740	8/1/2022	Co-57	-0.003 ± 0.035	0	NA [c]	Pass
MAVE-2740	8/1/2022	Co-60	4.71 ± 0.14	4.62	3.23 - 6.01	Pass
MAVE-2740	8/1/2022	Mn-54	2.67 ± 0.19	2.43	1.70 - 3.16	Pass
MAVE-2740	8/1/2022	Zn-65	7.73 ± 0.39	7.49	5.24 - 9.74	Pass

[a] Results are reported in units of Bq/kg (soil), Bq/L (water) or Bq/total sample (filters, vegetation).

[b] Laboratory codes as follows: MAW (water), MADW (water), MAAP (air filter), MASO (soil) and MAVE (vegetation).

[c] MAPEP results are presented as the known values and expected laboratory precision (1 sigma, 1 determination) and control limits as defined by the MAPEP. A known value of "zero" indicates an analysis was included in the testing series as a "false positive". MAPEP does not provide control limits.

[d] Results for a different dataset were mistakenly input into the MAPEP system. If the correct dataset had been entered, the results, (U-234: 1.62 ± 0.04, U-238: 1.69 ± 0.04), would have been within the aceptance range.

[e] MAPEP likely added Eu-152 as an interference to Co-57. Reanalyzing the spectra in duplicate with libraries to account for both Co-57 and Eu-152 yields Co-57 results of 0.03 ± 0.04 & 18 ± 0.18 Bq/sample. Which satisfies MAPEP criteria for passing a "false positive" test.

[f] The analysis of this sample was repeated and the result, (Sr-90: 0.52 ± 0.09), was within the acceptance range.

TABLE A-7. Interlaboratory Comparison Crosscheck Program, Environmental Resource Associates (ERA)[a].

MRAD-30 Study

Lab Code [b]	Date	Analysis	Concentration [a] Laboratory Result	ERA Value [c]	Control Limits [d]	Acceptance
ERAP-640	3/21/2022	Cs-134	458	549	356 - 673	Pass
ERAP-640	3/21/2022	Cs-137	1430	1,320	1,080 - 1730	Pass
ERAP-640	3/21/2022	Co-60	913	885	752 - 1120	Pass
ERAP-640	3/21/2022	Mn-54	< 4.1	< 35.0	0.00 - 35.0	Pass
ERAP-640	3/21/2022	Zn-65	771	671	550 - 1030	Pass
ERAP-639	3/21/2022	Gross Alpha	93.5	94.2	49.2 - 155	Pass
ERAP-639	3/21/2022	Gross Beta	60.7	66.8	40.5 - 101.0	Pass

[a] Results obtained by Environmental, Inc., Midwest Laboratory (EIML) as a participant in the crosscheck program for proficiency testing administered by Environmental Resource Associates, serving as a replacement for studies conducted previously by the Environmental Measurements Laboratory Quality Assessment Program (EML).

[b] Laboratory code ERAP (air filter). Results are reported in units of (pCi/Filter).

[c] The ERA Assigned values for the air filter standards are equal to 100% of the parameter present in the standard as determined by the gravimetric and/or volumetric measurements made during standard preparation as applicable.

[d] The acceptance limits are established per the guidelines contained in the Department of Energy (DOE) report EML-564, Analysis of Environmental Measurements Laboratory (EML) Quality Assessment Program (QAP) Data Determination of Operational Criteria and Control Limits for Performance Evaluation Purposes or ERA's SOP for the generation of Performance Acceptance Limits.

ATI Environmental, Inc.
Midwest Laboratory
700 Landwehr Road • Northbrook, IL 60062-2310
phone (847) 564-0700 • fax (847) 564-4517

Appendix B

Data Reporting Conventions

APPENDIX B. DATA REPORTING CONVENTIONS

Data Reporting Conventions

1.0. All activities, except gross alpha and gross beta, are decay corrected to collection time or the end of the collection period.

2.0. Single Measurements

Each single measurement is reported as follows: $x \pm s$

where: x = value of the measurement;

$s = 2\sigma$ counting uncertainty (corresponding to the 95% confidence level).

In cases where the activity is less than the lower limit of detection L, it is reported as: < L, where L = the lower limit of detection based on 4.66σ uncertainty for a background sample.

3.0. Duplicate analyses

If duplicate analyses are reported, the convention is as follows. :

3.1 Individual results: For two analysis results; $x_1 \pm s_1$ and $x_2 \pm s_2$

Reported result: $x \pm s$; where $x = (1/2)(x_1 + x_2)$ and $s = (1/2)\sqrt{s_1^2 + s_2^2}$

3.2. Individual results: $< L_1$, $< L_2$ Reported result: < L, where L = lower of L_1 and L_2

3.3. Individual results: $x \pm s$, < L Reported result: $x \pm s$ if $x \geq L$; < L otherwise.

4.0. Computation of Averages and Standard Deviations

4.1 Averages and standard deviations listed in the tables are computed from all of the individual measurements over the period averaged; for example, an annual standard deviation would not be the average of quarterly standard deviations. The average $\bar{x}$ and standard deviation "s" of a set of n numbers $x_1, x_2 \ldots x_n$ are defined as follows:

$$\bar{x} = \frac{1}{n} \sum x \qquad s = \sqrt{\frac{\sum (x - \bar{x})^2}{n-1}}$$

4.2 Values below the highest lower limit of detection are not included in the average.

4.3 If all values in the averaging group are less than the highest LLD, the highest LLD is reported.

4.4 If all but one of the values are less than the highest LLD, the single value x and associated two sigma error is reported.

4.5 In rounding off, the following rules are followed:

4.5.1. If the number following those to be retained is less than 5, the number is dropped, and the retained numbers are kept unchanged. As an example, 11.443 is rounded off to 11.44.

4.5.2. If the number following those to be retained is equal to or greater than 5, the number is dropped and the last retained number is raised by 1. As an example, 11.445 is rounded off to 11.45.

Appendix C. NON-RADIOLOGICAL MONITORING PROGRAM

1.0. Introduction

Union Electric Company Callaway Plant, d.b.a. Ameren Missouri Callaway Energy Center, in accordance with federal regulations and a desire to maintain the quality of the local environment around Callaway Plant, has implemented the Environmental Protection Plan (EPP) contained in Appendix B of the Callaway Plant Operating License.

The objective of the EPP is to provide for protection of non-radiological environmental values during operation of the Callaway Plant.

This report describes the conduct of the EPP for the Callaway Plant during 2022.

2.0. Unusual or Important Events

No unusual or important events reportable under the EPP Section 4.1 were identified during 2022.

3.0. EPP Non-compliances

During 2022, there was zero non-compliance with the EPP.

4.0. Nonroutine Reports

There were no nonroutine reports submitted in accordance with the EPP, Section 5.4.2 in 2022.

5.0. Plant Design and Operation Environmental Evaluations.

This section lists all changes in the plant design, operation, tests or experiments installed during 2022, which could have involved a potentially significant unreviewed environmental question in accordance with section 3.1 of Appendix B.

During 2022, one major plant change was completed that could have involved a potentially significant unreviewed environmental question. The interpretations and conclusions regarding this plant change, along with a description of the change and activity, are presented below.

RFR 210182 – Callaway Plant Outfall Closures

Description of Change:

RFR 210182 covers the closure of three separate stormwater settling ponds. Outfalls 13 through 15 were installed during construction as settling ponds to capture suspended solids from construction activities. Since that time, the site has stabilized, and as a result, the ponds are shallow due to silt accumulation and provide very little retention time. Further, the associated dams are in need of repair. Due to the cost of repairs, it is proposed to close the ponds and restore the site to its original configuration. Corporate Environmental approached DNR with this proposal and modified the NPDES permit to change from the current sampling points to newly installed sampling stations upstream of the ponds. The current NPDES permit reflects these approved changes.

Evaluation of Change:

As part of the Final Environmental Evaluation, both the ER and FES-OL were reviewed for any previously evaluated adverse environmental impacts and any new adverse environmental impacts not previously evaluated. No adverse environmental impacts were identified. The settling pond closures were designed to imitate the lay of the land before forming the ponds during plant construction.

This change does not involve an unreviewed environmental question, and therefore, NRC approval was not required.

APPENDIX D

Sampling Location Maps

Figure D-1. Radiological Environmental Sampling Locations 1, 2, 3, mile radius from site location.

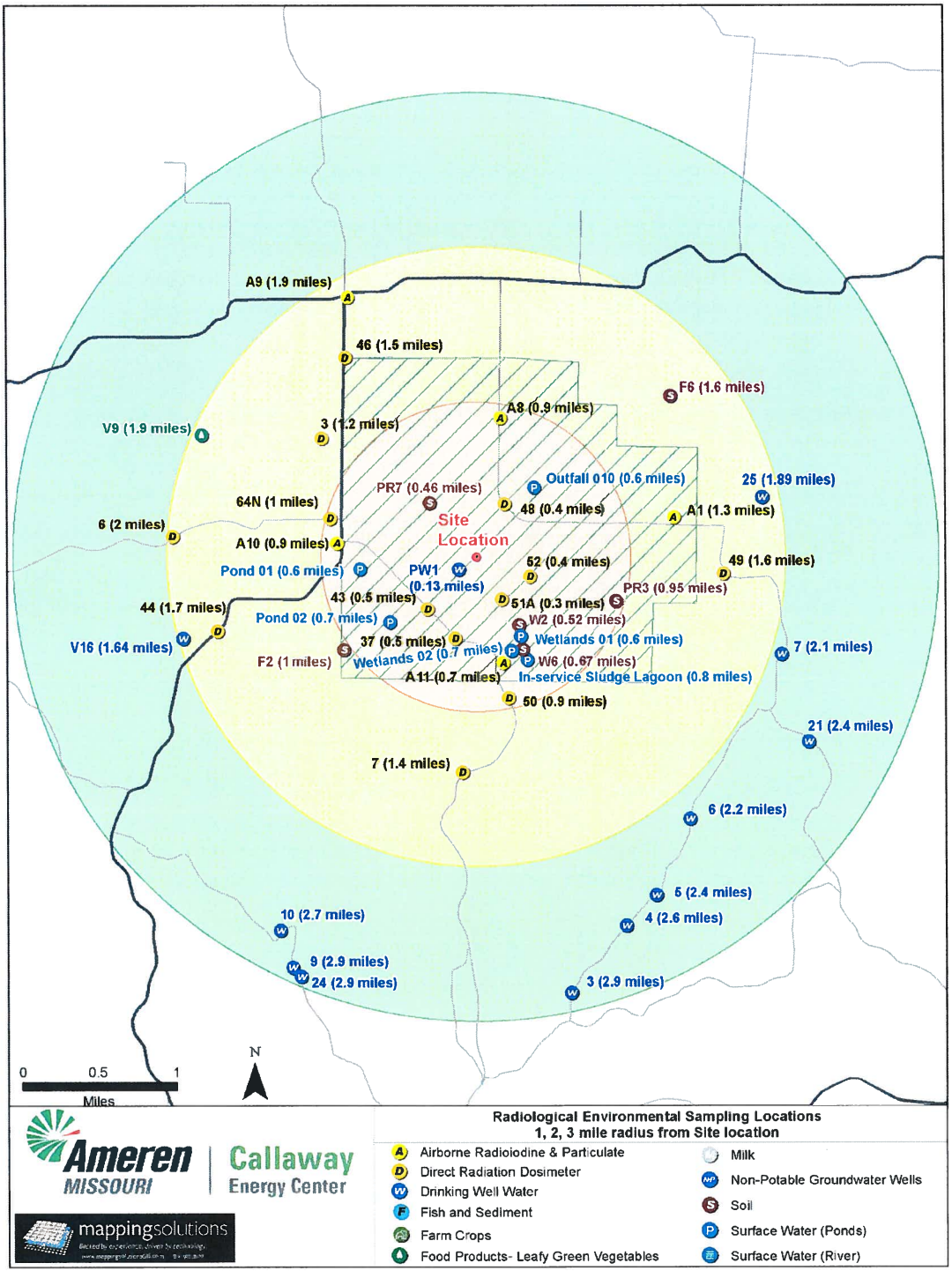


Figure D-2. Radiological Environmental Sampling Locations 3, 4, 5, 6 mile radius from site location.

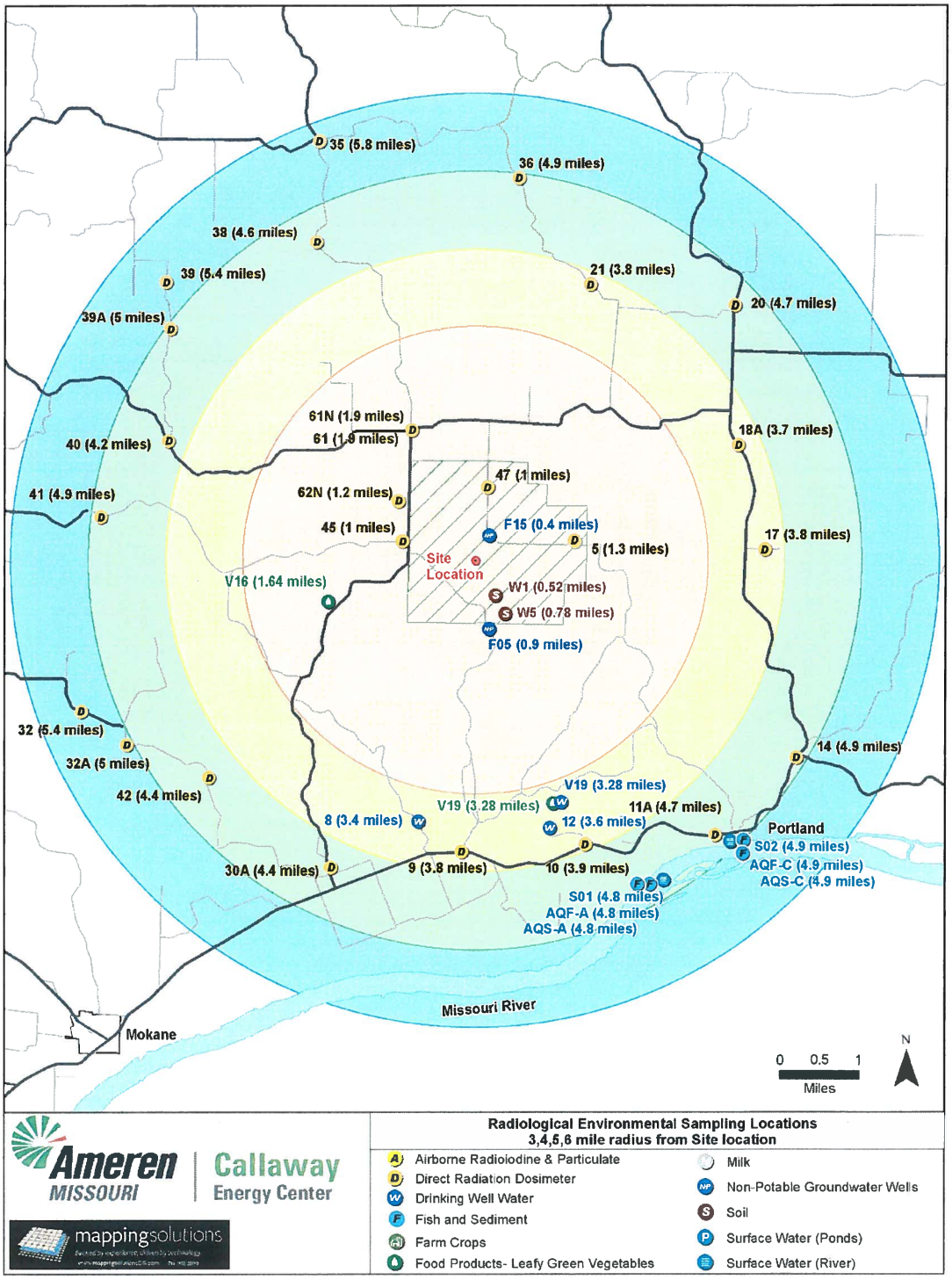


Figure D-3. Radiological Environmental Sampling Locations 5, 10, 15 mile radius from site location.

Figure D-4. Non-Potable Groundwater Monitoring Wells, 600 ft radius from Site.

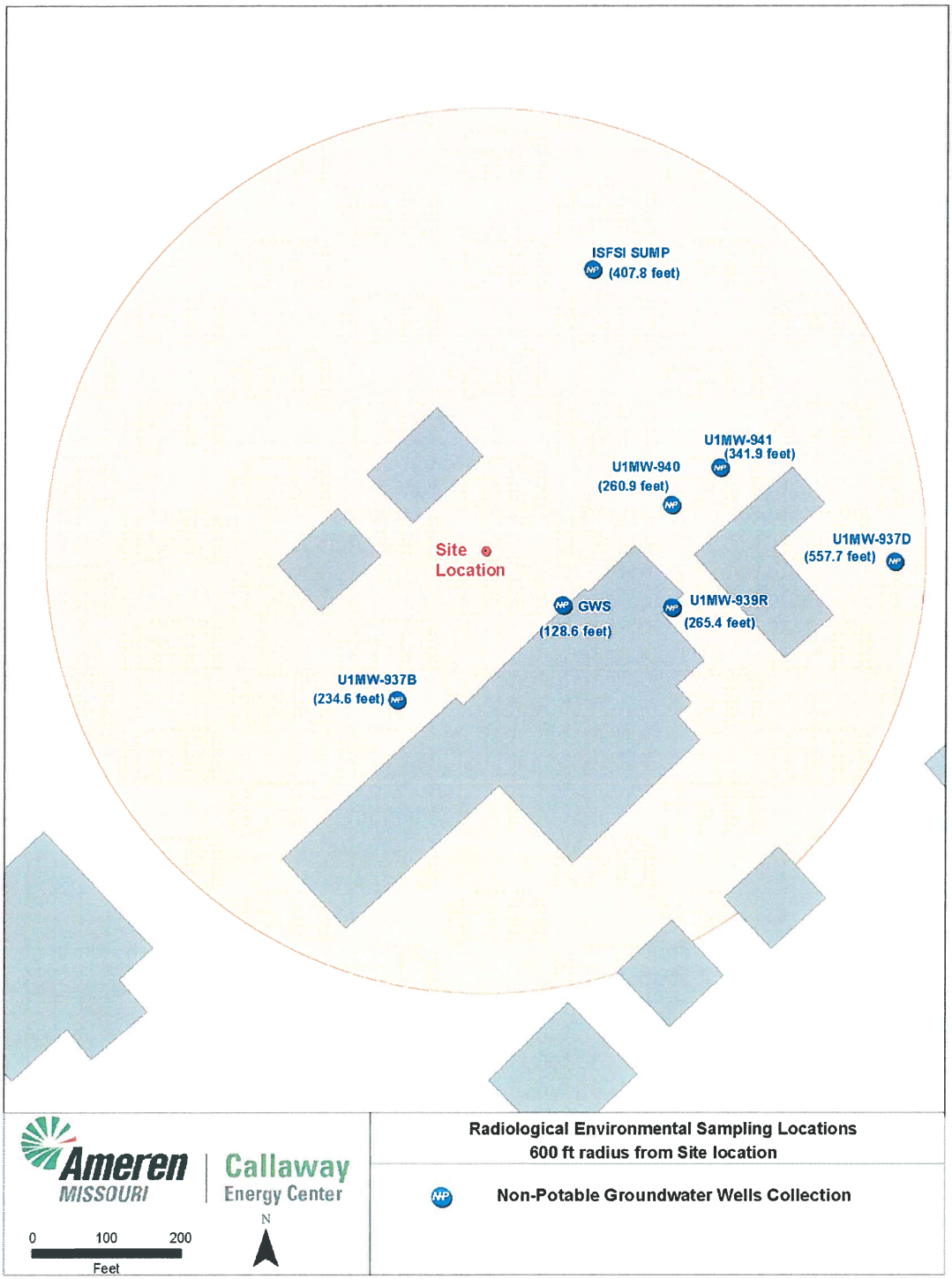
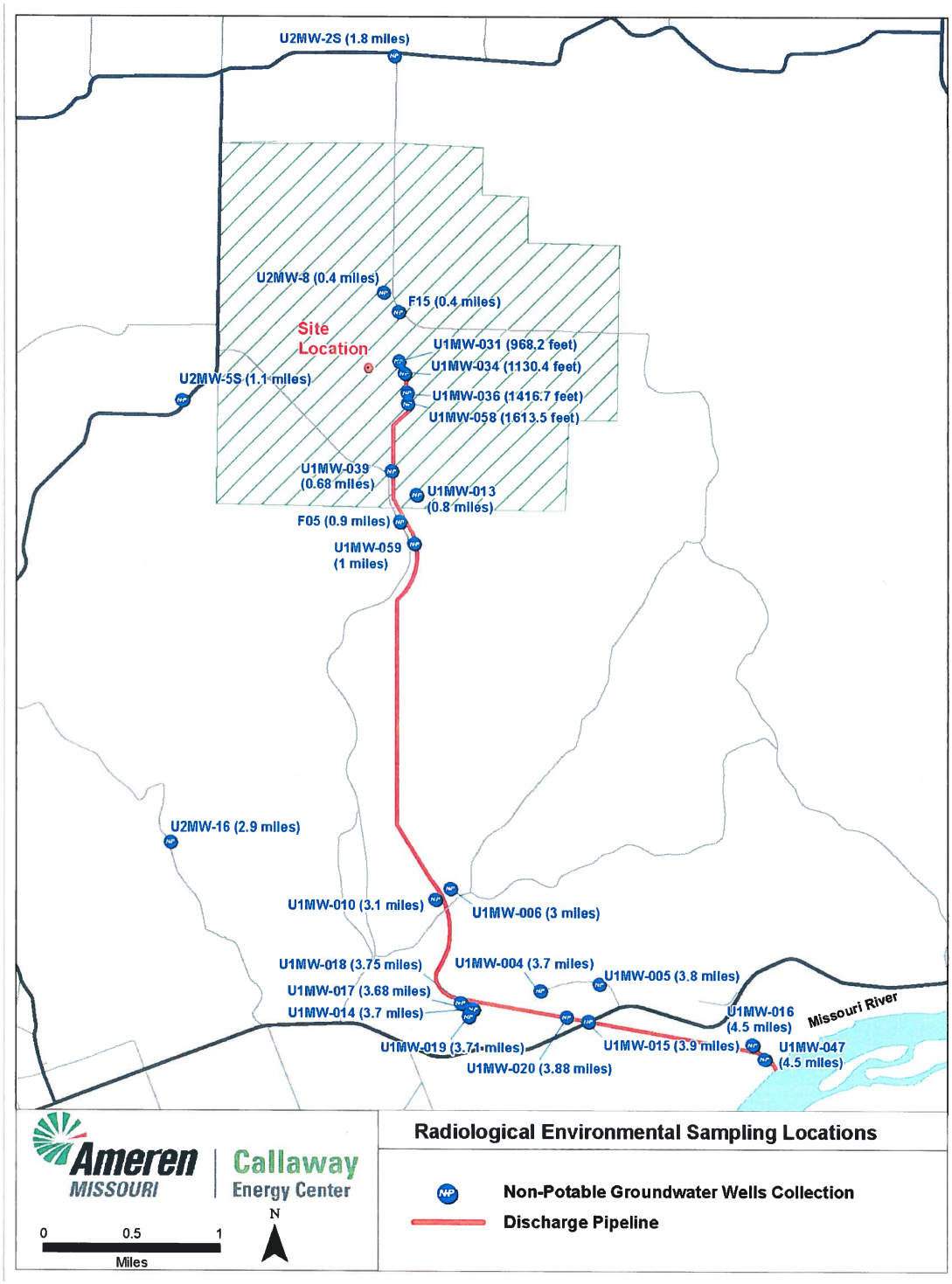


Figure D-5. Non-Potable Groundwater Monitoring Wells Collection.



ATI Environmental, Inc.
Midwest Laboratory
700 Landwehr Road • Northbrook, IL 60062-2310
phone (847) 564-0700 • fax (847) 564-4517

AMEREN MISSOURI,
CALLAWAY ENERGY CENTER
FULTON, MISSOURI

Docket Numbers 50-483 and 72-1045

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

to

THE UNITED STATES NUCLEAR REGULATORY COMMISSION

Part II

DATA TABULATIONS AND ANALYSES

January 1 to December 31, 2022

Prepared by

ENVIRONMENTAL, Inc.
Midwest Laboratory

Submitted by

Union Electric Co.
dba Ameren Missouri

Project No. 8036

Approved : 

Ashok Banavali,Ph.D.
Laboratory Manager

TABLE OF CONTENTS

Section		Page
	List of Tables	iii
1.0	Introduction	iv
2.0	Data Tables	v

LIST OF TABLES

No.	Title	Page
1	Airborne particulates and charcoal cartridges, analysis for gamma-emitting isotopes, and iodine-131	1-1
2	Milk, analysis for iodine-131 and gamma emitting isotopes	2-1
3	Vegetation, analysis for iodine-131 and gamma emitting isotopes	3-1
4	Soil, analysis for gamma-emitting isotopes	4-1
5	Surface water, analysis for tritium and gamma-emitting isotopes	5-1
6	Surface water (Ponds), analysis for tritium and gamma-emitting isotopes	6-1
7	Drinking water, analysis for tritium and gamma-emitting isotopes	7-1
8	Wells (non-potable water), analysis for tritium and gamma-emitting isotopes	8-1
8a	Wells (non-potable water), analyses for hard-to-detect isotopes	8-9
9.	Shoreline sediment, analysis for gamma-emitting isotopes	9-1
10	Fish, analysis for gamma-emitting isotopes	10-1
11	Direct Radiation	
11a.	Gamma dose	11-1
11b.	Neutron dose	11-2

1.0 INTRODUCTION

The following constitutes a supplement to the Annual Report for the Radiological Environmental Monitoring Program conducted at the Ameren Missouri, Callaway Energy Center, Fulton, Missouri in 2022. Results of completed analyses are presented in the attached tables.

For information regarding sampling locations, type and frequency of collection, and sample codes, refer to Part I, Tables 5.1 - 5.2 and the figures in Appendix D.

Analyses results from additional sampling may be found in Appendix A.

2.0 DATA TABLES

Table 1. Air particulates and charcoal cartridges, analyses for gamma-emitting isotopes and I-131[a].

Collection: Continuous, weekly exchange.

Units: pCi/m^3

Location		CA-A-001								
		^{7}Be	^{58}Co	^{60}Co	^{95}Zr	^{134}Cs	^{137}Cs	^{140}BaLa	^{144}Ce	
Required LLDs		-	-	-	-	0.050	0.060	-	-	
Date Collected	Vol.									
01-06-22	310	< 0.11	< 0.010	< 0.006	< 0.015	< 0.009	< 0.009	< 0.025	< 0.048	
01-13-22	252	0.26 ± 0.14	< 0.014	< 0.005	< 0.026	< 0.010	< 0.007	< 0.023	< 0.029	
01-20-22	251	< 0.15	< 0.007	< 0.008	< 0.023	< 0.006	< 0.010	< 0.041	< 0.042	
01-27-22	253	< 0.14	< 0.012	< 0.007	< 0.020	< 0.010	< 0.011	< 0.022	< 0.050	
02-07-22	406	< 0.10	< 0.007	< 0.006	< 0.014	< 0.007	< 0.006	< 0.008	< 0.032	[b]
02-10-22	99	< 0.36	< 0.040	< 0.032	< 0.086	< 0.046	< 0.039	< 0.062	< 0.160	[c]
02-16-22	215	< 0.17	< 0.012	< 0.008	< 0.028	< 0.013	< 0.008	< 0.021	< 0.054	
02-23-22	248	< 0.12	< 0.005	< 0.013	< 0.015	< 0.011	< 0.011	< 0.029	< 0.053	
03-03-22	286	0.25 ± 0.10	< 0.009	< 0.008	< 0.013	< 0.009	< 0.008	< 0.009	< 0.027	
03-10-22	269	0.27 ± 0.13	< 0.010	< 0.009	< 0.014	< 0.010	< 0.009	< 0.013	< 0.049	
03-17-22	272	0.34 ± 0.12	< 0.006	< 0.005	< 0.011	< 0.010	< 0.008	< 0.012	< 0.046	
03-24-22	278	0.19 ± 0.08	< 0.006	< 0.005	< 0.013	< 0.006	< 0.006	< 0.006	< 0.024	
03-31-22	274	0.21 ± 0.09	< 0.008	< 0.005	< 0.009	< 0.009	< 0.007	< 0.010	< 0.046	
04-07-22	274	0.16 ± 0.08	< 0.007	< 0.007	< 0.007	< 0.010	< 0.008	< 0.011	< 0.038	
04-14-22	274	< 0.09	< 0.007	< 0.007	< 0.012	< 0.010	< 0.008	< 0.016	< 0.041	
04-21-22	278	0.28 ± 0.11	< 0.007	< 0.005	< 0.016	< 0.008	< 0.006	< 0.010	< 0.052	
04-28-22	275	0.30 ± 0.15	< 0.009	< 0.006	< 0.016	< 0.010	< 0.010	< 0.036	< 0.033	
05-05-22	274	< 0.14	< 0.006	< 0.006	< 0.022	< 0.009	< 0.009	< 0.032	< 0.035	
05-12-22	269	0.20 ± 0.12	< 0.010	< 0.004	< 0.019	< 0.009	< 0.006	< 0.014	< 0.048	
05-19-22	265	0.19 ± 0.11	< 0.014	< 0.014	< 0.027	< 0.014	< 0.007	< 0.053	< 0.062	
05-26-22	271	0.12 ± 0.07	< 0.008	< 0.006	< 0.022	< 0.009	< 0.007	< 0.037	< 0.050	
06-02-22	268	< 0.11	< 0.008	< 0.006	< 0.013	< 0.009	< 0.007	< 0.013	< 0.037	
06-09-22	265	0.28 ± 0.12	< 0.010	< 0.006	< 0.020	< 0.011	< 0.011	< 0.025	< 0.041	
06-16-22	261	0.20 ± 0.11	< 0.011	< 0.006	< 0.014	< 0.010	< 0.008	< 0.017	< 0.063	
06-23-22	262	0.32 ± 0.12	< 0.006	< 0.006	< 0.023	< 0.009	< 0.006	< 0.025	< 0.051	
06-30-22	252	< 0.15	< 0.010	< 0.004	< 0.023	< 0.011	< 0.011	< 0.037	< 0.030	

[a] Iodine-131 concentrations are < 0.07 pCi/m^3 unless noted otherwise.

[b] Samples collected after 11 days. See Part I Table 5.5, Missed Collections and Analyses, results were reported as LLD was met (CR#202200713).

[c] Samples collected about 3 days collection period. See Part I Table 5.5, Missed Collections and Analyses, results were reported as LLD was met (CR#202200713).

Table 1. Air particulates and charcoal cartridges, analyses for gamma-emitting isotopes and I-131[a].

Collection: Continuous, weekly exchange.

Units: pCi/m^3

Location		CA-A-001 (cont.)							
		^{7}Be	^{58}Co	^{60}Co	^{95}Zr	^{134}Cs	^{137}Cs	^{140}BaLa	^{144}Ce
Required LLDs		-	-	-	-	0.050	0.060	-	-
Date Collected	Vol.								
07-07-22	263	< 0.14	< 0.009	< 0.003	< 0.024	< 0.009	< 0.011	< 0.040	< 0.047
07-14-22	260	< 0.11	< 0.009	< 0.006	< 0.016	< 0.010	< 0.007	< 0.015	< 0.044
07-21-22	266	0.24 ± 0.11	< 0.006	< 0.004	< 0.015	< 0.007	< 0.007	< 0.019	< 0.039
07-28-22	264	0.21 ± 0.09	< 0.009	< 0.004	< 0.012	< 0.008	< 0.007	< 0.019	< 0.041
08-04-22	261	0.16 ± 0.09	< 0.008	< 0.009	< 0.013	< 0.010	< 0.009	< 0.020	< 0.056
08-12-22	302	< 0.12	< 0.009	< 0.005	< 0.012	< 0.009	< 0.008	< 0.013	< 0.048
08-18-22	228	0.26 ± 0.11	< 0.011	< 0.008	< 0.013	< 0.011	< 0.007	< 0.027	< 0.048
08-25-22	266	0.29 ± 0.12	< 0.007	< 0.003	< 0.020	< 0.009	< 0.009	< 0.017	< 0.046
09-01-22	262	0.18 ± 0.10	< 0.007	< 0.011	< 0.017	< 0.010	< 0.011	< 0.013	< 0.057
09-08-22	308	0.20 ± 0.09	< 0.004	< 0.007	< 0.019	< 0.008	< 0.007	< 0.007	< 0.025
09-15-22	267	0.12 ± 0.06	< 0.007	< 0.005	< 0.013	< 0.006	< 0.006	< 0.010	< 0.034
09-22-22	233	0.28 ± 0.11	< 0.006	< 0.007	< 0.015	< 0.010	< 0.012	< 0.010	< 0.052
09-29-22	262	< 0.10	< 0.007	< 0.012	< 0.008	< 0.010	< 0.009	< 0.011	< 0.048
10-06-22	266	0.19 ± 0.10	< 0.012	< 0.009	< 0.017	< 0.014	< 0.011	< 0.014	< 0.069
10-13-22	262	< 0.17	< 0.010	< 0.009	< 0.028	< 0.014	< 0.010	< 0.046	< 0.065
10-20-22	264	< 0.11	< 0.008	< 0.008	< 0.010	< 0.009	< 0.006	< 0.020	< 0.046
10-27-22	262	0.24 ± 0.12	< 0.010	< 0.009	< 0.024	< 0.009	< 0.006	< 0.030	< 0.030
11-03-22	266	0.18 ± 0.11	< 0.012	< 0.009	< 0.022	< 0.012	< 0.007	< 0.020	< 0.035
11-10-22	266	0.17 ± 0.10	< 0.007	< 0.005	< 0.010	< 0.008	< 0.007	< 0.017	< 0.042
11-17-22	269	< 0.13	< 0.008	< 0.008	< 0.017	< 0.011	< 0.006	< 0.015	< 0.061
11-23-22	230	< 0.12	< 0.009	< 0.013	< 0.018	< 0.012	< 0.015	< 0.015	< 0.046
12-01-22	306	< 0.14	< 0.012	< 0.007	< 0.024	< 0.010	< 0.006	< 0.032	< 0.054
12-08-22	266	< 0.14	< 0.010	< 0.009	< 0.023	< 0.012	< 0.005	< 0.027	< 0.047
12-15-22	265	< 0.14	< 0.010	< 0.009	< 0.018	< 0.011	< 0.010	< 0.053	< 0.048
12-21-22	230	< 0.11	< 0.015	< 0.009	< 0.019	< 0.007	< 0.008	< 0.074	< 0.047
12-29-22	266	0.15 ± 0.08	< 0.010	< 0.008	< 0.014	< 0.008	< 0.006	< 0.043	< 0.033

[a] Iodine-131 concentrations are < 0.07 pCi/m^3 unless noted otherwise.

Table 1. Air particulates and charcoal cartridges, analyses for gamma-emitting isotopes and I-131[a].

Collection: Continuous, weekly exchange.
Units: pCi/m^3

Location		CA-A-007								
		^{7}Be	^{58}Co	^{60}Co	^{95}Zr	^{134}Cs	^{137}Cs	^{140}BaLa	^{144}Ce	
Required LLDs		-	-	-	-	0.050	0.060	-	-	
Date Collected	Vol.									
01-06-22	308	< 0.13	< 0.014	< 0.007	< 0.019	< 0.009	< 0.006	< 0.057	< 0.028	
01-13-22	263	< 0.16	< 0.009	< 0.010	< 0.025	< 0.011	< 0.007	< 0.047	< 0.059	
01-20-22	261	< 0.14	< 0.006	< 0.011	< 0.018	< 0.011	< 0.009	< 0.024	< 0.058	
01-27-22	263	0.24 ± 0.11	< 0.011	< 0.005	< 0.016	< 0.009	< 0.008	< 0.028	< 0.051	
02-07-22	425	0.19 ± 0.07	< 0.006	< 0.004	< 0.014	< 0.006	< 0.004	< 0.014	< 0.029	[b]
02-10-22	104	< 0.28	< 0.028	< 0.023	< 0.048	< 0.029	< 0.023	< 0.127	< 0.128	[c]
02-16-22	225	0.31 ± 0.16	< 0.011	< 0.009	< 0.016	< 0.012	< 0.011	< 0.019	< 0.061	
02-23-22	259	< 0.13	< 0.008	< 0.009	< 0.015	< 0.010	< 0.011	< 0.033	< 0.068	
03-03-22	301	< 0.12	< 0.007	< 0.009	< 0.017	< 0.009	< 0.004	< 0.010	< 0.031	
03-10-22	261	0.19 ± 0.08	< 0.010	< 0.008	< 0.014	< 0.010	< 0.009	< 0.005	< 0.036	
03-17-22	264	0.23 ± 0.12	< 0.008	< 0.007	< 0.011	< 0.011	< 0.010	< 0.013	< 0.064	
03-24-22	268	0.15 ± 0.08	< 0.007	< 0.008	< 0.012	< 0.007	< 0.008	< 0.007	< 0.026	
03-31-22	264	0.20 ± 0.10	< 0.009	< 0.009	< 0.014	< 0.009	< 0.005	< 0.009	< 0.026	
04-07-22	265	0.15 ± 0.08	< 0.011	< 0.007	< 0.018	< 0.010	< 0.010	< 0.007	< 0.031	
04-14-22	265	0.12 ± 0.07	< 0.008	< 0.007	< 0.017	< 0.009	< 0.007	< 0.017	< 0.041	
04-21-22	268	0.21 ± 0.11	< 0.006	< 0.007	< 0.025	< 0.011	< 0.008	< 0.010	< 0.057	
04-28-22	264	0.27 ± 0.11	< 0.010	< 0.005	< 0.024	< 0.008	< 0.009	< 0.041	< 0.037	
05-05-22	263	< 0.12	< 0.009	< 0.006	< 0.025	< 0.011	< 0.009	< 0.016	< 0.044	
05-12-22	260	< 0.13	< 0.006	< 0.007	< 0.013	< 0.011	< 0.006	< 0.018	< 0.060	
05-19-22	256	0.30 ± 0.14	< 0.011	< 0.006	< 0.014	< 0.009	< 0.009	< 0.013	< 0.042	
05-26-22	260	< 0.13	< 0.011	< 0.007	< 0.019	< 0.005	< 0.006	< 0.035	< 0.055	
06-02-22	259	< 0.11	< 0.007	< 0.007	< 0.026	< 0.010	< 0.011	< 0.018	< 0.035	
06-09-22	258	0.34 ± 0.12	< 0.010	< 0.004	< 0.028	< 0.011	< 0.009	< 0.015	< 0.057	
06-16-22	259	0.18 ± 0.11	< 0.008	< 0.007	< 0.015	< 0.010	< 0.007	< 0.014	< 0.051	
06-23-22	253	< 0.16	< 0.006	< 0.009	< 0.021	< 0.007	< 0.006	< 0.036	< 0.054	
06-30-22	259	< 0.14	< 0.006	< 0.008	< 0.028	< 0.011	< 0.009	< 0.029	< 0.051	

[a] Iodine-131 concentrations are < 0.07 pCi/m^3 unless noted otherwise.

[b] Samples collected after 11 days. See Part I Table 5.5, Missed Collections and Analyses, results were reported as LLD was met (CR#202200713).

[c] Samples collected about 3 days collection period. See Part I Table 5.5, Missed Collections and Analyses, results were reported as LLD was met (CR#202200713).

Table 1. Air particulates and charcoal cartridges, analyses for gamma-emitting isotopes and I-131[a].

Collection: Continuous, weekly exchange.

Units: pCi/m^3

Location		CA-A-007 (cont.)							
		^{7}Be	^{58}Co	^{60}Co	^{95}Zr	^{134}Cs	^{137}Cs	^{140}BaLa	^{144}Ce
Required LLDs		-	-	-	-	0.050	0.060	-	-
Date Collected	Vol.								
07-07-22	258	< 0.13	< 0.008	< 0.007	< 0.027	< 0.012	< 0.008	< 0.037	< 0.045
07-14-22	254	< 0.13	< 0.005	< 0.005	< 0.025	< 0.010	< 0.010	< 0.032	< 0.030
07-21-22	265	0.17 ± 0.09	< 0.008	< 0.004	< 0.012	< 0.006	< 0.004	< 0.013	< 0.032
07-28-22	277	0.26 ± 0.15	< 0.016	< 0.012	< 0.017	< 0.014	< 0.009	< 0.020	< 0.053
08-04-22	281	0.17 ± 0.08	< 0.007	< 0.004	< 0.013	< 0.006	< 0.004	< 0.007	< 0.040
08-12-22	337	< 0.13	< 0.006	< 0.008	< 0.016	< 0.011	< 0.008	< 0.030	< 0.025
08-18-22	258	0.23 ± 0.12	< 0.007	< 0.005	< 0.020	< 0.009	< 0.010	< 0.027	< 0.053
08-25-22	302	0.21 ± 0.10	< 0.008	< 0.006	< 0.016	< 0.008	< 0.007	< 0.013	< 0.038
09-01-22	300	< 0.14	< 0.010	< 0.009	< 0.028	< 0.012	< 0.009	< 0.013	< 0.057
09-08-22	256	0.20 ± 0.10	< 0.007	< 0.005	< 0.011	< 0.009	< 0.008	< 0.012	< 0.051
09-15-22	310	< 0.10	< 0.004	< 0.005	< 0.016	< 0.007	< 0.007	< 0.007	< 0.036
09-22-22	312	< 0.11	< 0.009	< 0.007	< 0.017	< 0.009	< 0.008	< 0.011	< 0.052
09-29-22	310	< 0.09	< 0.007	< 0.006	< 0.012	< 0.008	< 0.006	< 0.007	< 0.042
10-06-22	312	0.28 ± 0.10	< 0.004	< 0.004	< 0.016	< 0.007	< 0.006	< 0.012	< 0.037
10-13-22	307	0.20 ± 0.11	< 0.008	< 0.008	< 0.021	< 0.009	< 0.008	< 0.015	< 0.045
10-20-22	309	< 0.11	< 0.008	< 0.006	< 0.018	< 0.007	< 0.008	< 0.021	< 0.040
10-27-22	302	0.20 ± 0.10	< 0.005	< 0.006	< 0.012	< 0.007	< 0.009	< 0.011	< 0.023
11-03-22	307	< 0.10	< 0.005	< 0.005	< 0.010	< 0.008	< 0.003	< 0.032	< 0.031
11-10-22	305	< 0.08	< 0.005	< 0.004	< 0.015	< 0.007	< 0.005	< 0.015	< 0.037
11-17-22	306	< 0.08	< 0.005	< 0.005	< 0.017	< 0.007	< 0.005	< 0.021	< 0.025
11-23-22	261	< 0.12	< 0.006	< 0.006	< 0.014	< 0.009	< 0.007	< 0.024	< 0.053
12-01-22	300	< 0.14	< 0.006	< 0.008	< 0.028	< 0.011	< 0.005	< 0.080	< 0.045
12-08-22	257	< 0.15	< 0.007	< 0.009	< 0.025	< 0.010	< 0.009	< 0.026	< 0.053
12-15-22	253	< 0.15	< 0.012	< 0.006	< 0.018	< 0.011	< 0.005	< 0.025	< 0.056
12-21-22	217	< 0.19	< 0.014	< 0.024	< 0.023	< 0.013	< 0.018	< 0.103	< 0.057
12-29-22	282	0.16 ± 0.09	< 0.010	< 0.009	< 0.017	< 0.009	< 0.005	< 0.038	< 0.041

[a] Iodine-131 concentrations are < 0.07 pCi/m^3 unless noted otherwise.

Table 1. Air particulates and charcoal cartridges, analyses for gamma-emitting isotopes and I-131[a].

Collection: Continuous, weekly exchange.

Units: pCi/m^3

Location		CA-A-008								
		^{7}Be	^{58}Co	^{60}Co	^{95}Zr	^{134}Cs	^{137}Cs	^{140}BaLa	^{144}Ce	
Required LLDs		-	-	-	-	0.050	0.060	-	-	
Date Collected	Vol.									
01-06-22	325	< 0.14	< 0.016	< 0.010	< 0.015	< 0.011	< 0.009	< 0.123	< 0.043	
01-13-22	282	< 0.13	< 0.012	< 0.008	< 0.014	< 0.010	< 0.008	< 0.034	< 0.052	
01-20-22	278	0.17 ± 0.10	< 0.007	< 0.006	< 0.015	< 0.009	< 0.008	< 0.025	< 0.046	
01-27-22	281	< 0.12	< 0.008	< 0.005	< 0.020	< 0.011	< 0.010	< 0.018	< 0.051	
02-07-22	459	< 0.08	< 0.004	< 0.004	< 0.014	< 0.006	< 0.007	< 0.007	< 0.030	[b]
02-10-22	110	< 0.31	< 0.023	< 0.017	< 0.050	< 0.023	< 0.018	< 0.048	< 0.117	[c]
02-16-22	239	< 0.14	< 0.008	< 0.005	< 0.017	< 0.012	< 0.007	< 0.025	< 0.056	
02-23-22	276	0.20 ± 0.09	< 0.006	< 0.007	< 0.019	< 0.009	< 0.007	< 0.019	< 0.037	
03-03-22	318	< 0.11	< 0.010	< 0.012	< 0.020	< 0.011	< 0.009	< 0.026	< 0.053	
03-10-22	274	0.16 ± 0.08	< 0.008	< 0.005	< 0.019	< 0.011	< 0.005	< 0.006	< 0.061	
03-17-22	275	< 0.11	< 0.010	< 0.006	< 0.010	< 0.010	< 0.009	< 0.005	< 0.056	
03-24-22	282	< 0.09	< 0.007	< 0.006	< 0.016	< 0.011	< 0.008	< 0.011	< 0.050	
03-31-22	286	0.19 ± 0.07	< 0.007	< 0.008	< 0.011	< 0.010	< 0.008	< 0.010	< 0.034	
04-07-22	268	0.24 ± 0.10	< 0.007	< 0.007	< 0.018	< 0.008	< 0.009	< 0.012	< 0.032	
04-14-22	266	< 0.12	< 0.011	< 0.008	< 0.010	< 0.009	< 0.006	< 0.008	< 0.050	
04-21-22	269	0.24 ± 0.12	< 0.007	< 0.007	< 0.012	< 0.010	< 0.008	< 0.019	< 0.047	
04-28-22	265	< 0.12	< 0.011	< 0.007	< 0.014	< 0.009	< 0.008	< 0.017	< 0.036	
05-05-22	265	0.19 ± 0.11	< 0.006	< 0.006	< 0.015	< 0.009	< 0.010	< 0.018	< 0.030	
05-12-22	260	< 0.14	< 0.012	< 0.004	< 0.017	< 0.010	< 0.010	< 0.023	< 0.029	
05-19-22	257	0.31 ± 0.14	< 0.006	< 0.012	< 0.023	< 0.009	< 0.007	< 0.016	< 0.058	
05-26-22	261	0.17 ± 0.10	< 0.009	< 0.006	< 0.014	< 0.009	< 0.004	< 0.038	< 0.054	
06-02-22	261	0.22 ± 0.11	< 0.006	< 0.005	< 0.019	< 0.010	< 0.005	< 0.027	< 0.047	
06-09-22	258	0.25 ± 0.10	< 0.010	< 0.005	< 0.023	< 0.011	< 0.010	< 0.018	< 0.048	
06-16-22	255	< 0.13	< 0.004	< 0.004	< 0.028	< 0.010	< 0.009	< 0.020	< 0.047	
06-23-22	257	0.29 ± 0.14	< 0.009	< 0.010	< 0.016	< 0.011	< 0.009	< 0.048	< 0.030	
06-30-22	258	< 0.14	< 0.011	< 0.006	< 0.017	< 0.010	< 0.007	< 0.033	< 0.036	

[a] Iodine-131 concentrations are < 0.07 pCi/m^3 unless noted otherwise.

[b] Samples collected after 11 days. See Part I Table 5.5, Missed Collections and Analyses, results were reported as LLD was met (CR#202200713).

[c] Samples collected about 3 days collection period. See Part I Table 5.5, Missed Collections and Analyses, results were reported as LLD was met (CR#202200713).

Table 1. Air particulates and charcoal cartridges, analyses for gamma-emitting isotopes and I-131[a].

Collection: Continuous, weekly exchange.

Units: pCi/m^3

Location		CA-A-008 (cont.)							
		^{7}Be	^{58}Co	^{60}Co	^{95}Zr	^{134}Cs	^{137}Cs	$^{140}BaLa$	^{144}Ce
Required LLDs		-	-	-	-	0.050	0.060	-	-
Date Collected	Vol.								
07-07-22	256	< 0.15	< 0.013	< 0.011	< 0.022	< 0.011	< 0.008	< 0.048	< 0.050
07-14-22	252	< 0.16	< 0.005	< 0.013	< 0.017	< 0.012	< 0.008	< 0.027	< 0.034
07-21-22	257	< 0.15	< 0.009	< 0.004	< 0.020	< 0.011	< 0.007	< 0.016	< 0.029
07-28-22	255	0.22 ± 0.09	< 0.005	< 0.007	< 0.014	< 0.007	< 0.008	< 0.009	< 0.029
08-04-22	253	< 0.15	< 0.012	< 0.005	< 0.030	< 0.013	< 0.007	< 0.023	< 0.060
08-12-22	292	< 0.11	< 0.011	< 0.006	< 0.010	< 0.010	< 0.009	< 0.038	< 0.046
08-18-22	221	0.25 ± 0.14	< 0.013	< 0.011	< 0.019	< 0.011	< 0.005	< 0.032	< 0.062
08-25-22	257	0.22 ± 0.10	< 0.005	< 0.007	< 0.017	< 0.011	< 0.009	< 0.020	< 0.054
09-01-22	253	0.17 ± 0.09	< 0.008	< 0.007	< 0.012	< 0.009	< 0.006	< 0.013	< 0.048
09-08-22	256	0.18 ± 0.08	< 0.004	< 0.006	< 0.015	< 0.010	< 0.009	< 0.012	< 0.040
09-15-22					NS[b]				
09-22-22	240	0.21 ± 0.10	< 0.005	< 0.005	< 0.011	< 0.009	< 0.010	< 0.007	< 0.041
09-29-22	277	0.18 ± 0.10	< 0.007	< 0.008	< 0.011	< 0.011	< 0.009	< 0.019	< 0.032
10-06-22	284	< 0.11	< 0.006	< 0.005	< 0.018	< 0.008	< 0.007	< 0.029	< 0.035
10-13-22	279	0.15 ± 0.08	< 0.008	< 0.006	< 0.012	< 0.011	< 0.006	< 0.021	< 0.041
10-20-22	278	< 0.11	< 0.009	< 0.008	< 0.010	< 0.008	< 0.008	< 0.029	< 0.042
10-27-22	278	< 0.13	< 0.010	< 0.005	< 0.016	< 0.011	< 0.007	< 0.030	< 0.048
11-03-22	284	< 0.12	< 0.010	< 0.006	< 0.019	< 0.009	< 0.004	< 0.017	< 0.053
11-10-22	283	0.18 ± 0.10	< 0.010	< 0.007	< 0.015	< 0.009	< 0.009	< 0.019	< 0.052
11-17-22	286	< 0.09	< 0.008	< 0.006	< 0.010	< 0.008	< 0.006	< 0.011	< 0.041
11-23-22	245	< 0.12	< 0.015	< 0.010	< 0.014	< 0.015	< 0.013	< 0.030	< 0.054
12-01-22	326	< 0.11	< 0.009	< 0.005	< 0.014	< 0.008	< 0.009	< 0.044	< 0.038
12-08-22	282	< 0.11	< 0.012	< 0.005	< 0.020	< 0.008	< 0.007	< 0.050	< 0.041
12-15-22	282	< 0.12	< 0.012	< 0.007	< 0.022	< 0.009	< 0.009	< 0.050	< 0.053
12-21-22	244	< 0.14	< 0.007	< 0.010	< 0.017	< 0.011	< 0.012	< 0.116	< 0.064
12-29-22	329	< 0.10	< 0.008	< 0.003	< 0.017	< 0.006	< 0.007	< 0.042	< 0.036

[a] Iodine-131 concentrations are < 0.07 pCi/m^3 unless noted otherwise.

[b] No sample; See Part I Table 5.5, Missed Collections and Analyses (CR#202206142).

Table 1. Air particulates and charcoal cartridges, analyses for gamma-emitting isotopes and I-131[a].

Collection: Continuous, weekly exchange.

Units: pCi/m^3

Location		CA-A-009								
		^{7}Be	^{58}Co	^{60}Co	^{95}Zr	^{134}Cs	^{137}Cs	^{140}BaLa	^{144}Ce	
Required LLDs		-	-	-	-	0.050	0.060	-	-	
Date Collected	Vol.									
01-06-22	329	< 0.13	< 0.009	< 0.007	< 0.016	< 0.008	< 0.006	< 0.028	< 0.043	
01-13-22	275	< 0.19	< 0.019	< 0.016	< 0.036	< 0.016	< 0.018	< 0.118	< 0.064	
01-20-22	275	< 0.13	< 0.011	< 0.007	< 0.020	< 0.008	< 0.007	< 0.043	< 0.057	
01-27-22	274	< 0.19	< 0.013	< 0.007	< 0.025	< 0.016	< 0.007	< 0.036	< 0.065	
02-07-22	443	0.14 ± 0.08	< 0.005	< 0.004	< 0.014	< 0.007	< 0.005	< 0.011	< 0.033	[b]
02-10-22	108	< 0.26	< 0.031	< 0.027	< 0.056	< 0.025	< 0.021	< 0.057	< 0.113	[c]
02-16-22	236	< 0.16	< 0.018	< 0.011	< 0.027	< 0.014	< 0.013	< 0.069	< 0.076	
02-23-22	273	< 0.19	< 0.015	< 0.017	< 0.029	< 0.019	< 0.009	< 0.060	< 0.054	
03-03-22	332	0.16 ± 0.09	< 0.006	< 0.007	< 0.019	< 0.010	< 0.009	< 0.022	< 0.047	
03-10-22	287	0.27 ± 0.10	< 0.007	< 0.006	< 0.013	< 0.008	< 0.007	< 0.010	< 0.021	
03-17-22	289	0.26 ± 0.10	< 0.010	< 0.009	< 0.009	< 0.008	< 0.010	< 0.015	< 0.051	
03-24-22	289	< 0.09	< 0.010	< 0.007	< 0.015	< 0.009	< 0.007	< 0.010	< 0.037	
03-31-22	280	< 0.13	< 0.008	< 0.007	< 0.019	< 0.012	< 0.012	< 0.016	< 0.050	
04-07-22	285	0.18 ± 0.08	< 0.007	< 0.005	< 0.014	< 0.008	< 0.006	< 0.009	< 0.046	
04-14-22	283	0.19 ± 0.08	< 0.007	< 0.005	< 0.010	< 0.007	< 0.006	< 0.019	< 0.041	
04-21-22	287	0.21 ± 0.13	< 0.010	< 0.006	< 0.016	< 0.008	< 0.006	< 0.022	< 0.035	
04-28-22	287	0.22 ± 0.10	< 0.008	< 0.007	< 0.013	< 0.008	< 0.007	< 0.025	< 0.041	
05-05-22	283	0.22 ± 0.11	< 0.011	< 0.006	< 0.022	< 0.009	< 0.009	< 0.021	< 0.044	
05-12-22	285	< 0.11	< 0.008	< 0.007	< 0.014	< 0.010	< 0.010	< 0.014	< 0.054	
05-19-22	284	0.25 ± 0.12	< 0.007	< 0.002	< 0.016	< 0.007	< 0.011	< 0.017	< 0.041	
05-26-22	284	0.17 ± 0.08	< 0.011	< 0.010	< 0.021	< 0.010	< 0.012	< 0.023	< 0.045	
06-02-22	285	< 0.12	< 0.014	< 0.006	< 0.017	< 0.009	< 0.005	< 0.023	< 0.041	
06-09-22	285	< 0.15	< 0.006	< 0.003	< 0.020	< 0.009	< 0.004	< 0.014	< 0.041	
06-16-22	283	< 0.12	< 0.007	< 0.004	< 0.023	< 0.009	< 0.011	< 0.053	< 0.035	
06-23-22	286	0.38 ± 0.12	< 0.006	< 0.005	< 0.019	< 0.008	< 0.009	< 0.028	< 0.026	
06-30-22	286	0.18 ± 0.10	< 0.010	< 0.007	< 0.014	< 0.010	< 0.009	< 0.022	< 0.045	

[a] Iodine-131 concentrations are < 0.07 pCi/m^3 unless noted otherwise.

[b] Samples collected after 11 days. See Part I Table 5.5, Missed Collections and Analyses, results were reported as LLD was met (CR#202200713).

[c] Samples collected about 3 days collection period. See Part I Table 5.5, Missed Collections and Analyses, results were reported as LLD was met (CR#202200713).

Table 1. Air particulates and charcoal cartridges, analyses for gamma-emitting isotopes and I-131[a].

Collection: Continuous, weekly exchange.

Units: pCi/m^3

Location		CA-A-009 (cont.)							
		^{7}Be	^{58}Co	^{60}Co	^{95}Zr	^{134}Cs	^{137}Cs	^{140}BaLa	^{144}Ce
Required LLDs		-	-	-	-	0.050	0.060	-	-
Date Collected	Vol.								
07-07-22	286	< 0.11	< 0.007	< 0.005	< 0.017	< 0.009	< 0.008	< 0.028	< 0.036
07-14-22	282	< 0.12	< 0.013	< 0.004	< 0.018	< 0.008	< 0.008	< 0.019	< 0.047
07-21-22	289	0.21 ± 0.09	< 0.005	< 0.011	< 0.012	< 0.008	< 0.008	< 0.021	< 0.047
07-28-22	288	0.26 ± 0.14	< 0.010	< 0.004	< 0.021	< 0.008	< 0.005	< 0.029	< 0.046
08-04-22	272	< 0.12	< 0.008	< 0.007	< 0.019	< 0.010	< 0.011	< 0.019	< 0.036
08-12-22	317	< 0.08	< 0.009	< 0.003	< 0.016	< 0.008	< 0.008	< 0.027	< 0.028
08-18-22	243	0.23 ± 0.10	< 0.005	< 0.010	< 0.018	< 0.009	< 0.009	< 0.015	< 0.036
08-25-22	284	0.22 ± 0.09	< 0.006	< 0.006	< 0.014	< 0.007	< 0.004	< 0.019	< 0.034
09-01-22	277	0.21 ± 0.11	< 0.010	< 0.003	< 0.021	< 0.009	< 0.010	< 0.009	< 0.043
09-08-22	172	< 0.12	< 0.007	< 0.012	< 0.023	< 0.013	< 0.010	< 0.017	< 0.061 [b]
09-15-22	272	0.14 ± 0.04	< 0.004	< 0.004	< 0.009	< 0.005	< 0.003	< 0.007	< 0.023
09-22-22	270	0.22 ± 0.10	< 0.008	< 0.003	< 0.016	< 0.008	< 0.005	< 0.007	< 0.032
09-29-22	261	< 0.09	< 0.009	< 0.005	< 0.011	< 0.009	< 0.004	< 0.007	< 0.030
10-06-22	266	< 0.14	< 0.008	< 0.005	< 0.021	< 0.009	< 0.008	< 0.023	< 0.030
10-13-22	262	0.17 ± 0.10	< 0.007	< 0.006	< 0.013	< 0.007	< 0.007	< 0.025	< 0.044
10-20-22	267	< 0.12	< 0.008	< 0.007	< 0.023	< 0.010	< 0.008	< 0.041	< 0.039
10-27-22	266	< 0.16	< 0.010	< 0.009	< 0.015	< 0.011	< 0.006	< 0.037	< 0.039
11-03-22	271	0.24 ± 0.14	< 0.011	< 0.006	< 0.011	< 0.009	< 0.009	< 0.018	< 0.047
11-10-22	271	0.28 ± 0.11	< 0.010	< 0.006	< 0.016	< 0.009	< 0.006	< 0.038	< 0.028
11-17-22	275	< 0.12	< 0.006	< 0.006	< 0.017	< 0.009	< 0.008	< 0.012	< 0.051
11-23-22	235	< 0.10	< 0.011	< 0.011	< 0.021	< 0.010	< 0.007	< 0.019	< 0.054
12-01-22	313	< 0.12	< 0.006	< 0.006	< 0.021	< 0.009	< 0.008	< 0.024	< 0.042
12-08-22	268	< 0.11	< 0.009	< 0.006	< 0.021	< 0.009	< 0.006	< 0.037	< 0.051
12-15-22	248	< 0.12	< 0.010	< 0.008	< 0.020	< 0.008	< 0.006	< 0.025	< 0.042
12-21-22	234	< 0.22	< 0.010	< 0.011	< 0.036	< 0.015	< 0.010	< 0.042	< 0.064
12-29-22	313	< 0.12	< 0.008	< 0.007	< 0.015	< 0.007	< 0.006	< 0.049	< 0.026

[a] Iodine-131 concentrations are < 0.07 pCi/m^3 unless noted otherwise.

[b] Sampler found not running. See Part I Table 5.5, Missed Collections and Analyses. LLD was met (CR#202205973).

Table 1. Air particulates and charcoal cartridges, analyses for gamma-emitting isotopes and I-131[a].

Collection: Continuous, weekly exchange.

Units: pCi/m^3

Location		CA-A-010								
		^{7}Be	^{58}Co	^{60}Co	^{95}Zr	^{134}Cs	^{137}Cs	^{140}BaLa	^{144}Ce	
Required LLDs		-	-	-	-	0.050	0.060	-	-	
Date Collected	Vol.									
01-06-22	271	< 0.17	< 0.012	< 0.005	< 0.031	< 0.013	< 0.012	< 0.047	< 0.069	
01-13-22	246	< 0.12	< 0.008	< 0.009	< 0.018	< 0.010	< 0.007	< 0.048	< 0.056	
01-20-22	242	< 0.15	< 0.013	< 0.010	< 0.024	< 0.012	< 0.010	< 0.050	< 0.046	
01-27-22	238	< 0.23	< 0.025	< 0.010	< 0.030	< 0.016	< 0.019	< 0.120	< 0.099	
02-07-22	373	0.15 ± 0.07	< 0.006	< 0.005	< 0.014	< 0.007	< 0.005	< 0.033	< 0.023	[b]
02-10-22	118	< 0.24	< 0.025	< 0.015	< 0.046	< 0.019	< 0.015	< 0.062	< 0.137	[c]
02-16-22	258	< 0.14	< 0.010	< 0.008	< 0.015	< 0.012	< 0.007	< 0.018	< 0.047	
02-23-22	295	0.27 ± 0.14	< 0.010	< 0.007	< 0.023	< 0.010	< 0.008	< 0.024	< 0.046	
03-03-22	328	0.18 ± 0.08	< 0.010	< 0.006	< 0.016	< 0.008	< 0.006	< 0.011	< 0.039	
03-10-22	279	0.26 ± 0.12	< 0.008	< 0.008	< 0.012	< 0.009	< 0.011	< 0.011	< 0.047	
03-17-22	273	0.20 ± 0.09	< 0.009	< 0.007	< 0.019	< 0.010	< 0.010	< 0.005	< 0.053	
03-24-22	254	0.20 ± 0.11	< 0.010	< 0.009	< 0.018	< 0.012	< 0.008	< 0.010	< 0.047	
03-31-22	243	0.23 ± 0.11	< 0.006	< 0.013	< 0.013	< 0.012	< 0.008	< 0.013	< 0.055	
04-07-22	249	0.19 ± 0.11	< 0.009	< 0.007	< 0.012	< 0.008	< 0.007	< 0.008	< 0.027	
04-14-22	245	0.21 ± 0.10	< 0.006	< 0.006	< 0.021	< 0.009	< 0.007	< 0.020	< 0.047	
04-21-22	247	0.25 ± 0.12	< 0.014	< 0.007	< 0.029	< 0.010	< 0.009	< 0.031	< 0.050	
04-28-22	255	< 0.17	< 0.011	< 0.010	< 0.022	< 0.013	< 0.012	< 0.033	< 0.075	
05-05-22	246	0.30 ± 0.17	< 0.007	< 0.010	< 0.024	< 0.013	< 0.008	< 0.022	< 0.054	
05-12-22	256	< 0.17	< 0.011	< 0.005	< 0.021	< 0.011	< 0.010	< 0.029	< 0.063	
05-19-22	254	< 0.15	< 0.012	< 0.011	< 0.024	< 0.012	< 0.008	< 0.030	< 0.048	
05-26-22	246	< 0.14	< 0.007	< 0.005	< 0.024	< 0.008	< 0.007	< 0.024	< 0.041	
06-02-22	250	< 0.17	< 0.006	< 0.006	< 0.019	< 0.015	< 0.014	< 0.035	< 0.038	
06-09-22	250	0.36 ± 0.18	< 0.010	< 0.006	< 0.017	< 0.015	< 0.015	< 0.029	< 0.067	
06-16-22	254	0.25 ± 0.14	< 0.009	< 0.005	< 0.022	< 0.009	< 0.011	< 0.016	< 0.047	
06-23-22	252	0.32 ± 0.14	< 0.009	< 0.011	< 0.024	< 0.011	< 0.011	< 0.048	< 0.047	
06-30-22	251	< 0.17	< 0.012	< 0.012	< 0.025	< 0.013	< 0.006	< 0.042	< 0.069	

[a] Iodine-131 concentrations are < 0.07 pCi/m^3 unless noted otherwise.

[b] Samples collected after 11 days. See Part I Table 5.5, Missed Collections and Analyses, results were reported as LLD was met (CR#202200713).

[c] Samples collected about 3 days collection period. See Part I Table 5.5, Missed Collections and Analyses, results were reported as LLD was met (CR#202200713).

Table 1. Air particulates and charcoal cartridges, analyses for gamma-emitting isotopes and I-131[a].

Collection: Continuous, weekly exchange.

Units: pCi/m^3

Location		CA-A-010 (cont.)							
		^{7}Be	^{58}Co	^{60}Co	^{95}Zr	^{134}Cs	^{137}Cs	^{140}BaLa	^{144}Ce
Required LLDs		-	-	-	-	0.050	0.060	-	-
Date Collected	Vol.								
07-07-22	251	< 0.13	< 0.011	< 0.004	< 0.023	< 0.010	< 0.011	< 0.016	< 0.046
07-14-22	246	< 0.15	< 0.005	< 0.003	< 0.015	< 0.010	< 0.007	< 0.048	< 0.049
07-21-22	252	< 0.16	< 0.007	< 0.007	< 0.018	< 0.011	< 0.010	< 0.031	< 0.034
07-28-22	245	< 0.13	< 0.010	< 0.012	< 0.028	< 0.010	< 0.087	< 0.018	< 0.066
08-04-22	244	< 0.12	< 0.010	< 0.003	< 0.020	< 0.009	< 0.011	< 0.018	< 0.052
08-12-22	281	< 0.13	< 0.009	< 0.005	< 0.021	< 0.010	< 0.008	< 0.031	< 0.039
08-18-22	206	0.22 ± 0.10	< 0.007	< 0.009	< 0.022	< 0.009	< 0.010	< 0.028	< 0.062
08-25-22	242	0.21 ± 0.12	< 0.011	< 0.009	< 0.011	< 0.009	< 0.007	< 0.013	< 0.053
09-01-22	238	0.23 ± 0.13	< 0.007	< 0.009	< 0.016	< 0.010	< 0.006	< 0.013	< 0.040
09-08-22	236	< 0.12	< 0.010	< 0.013	< 0.012	< 0.011	< 0.010	< 0.027	< 0.050
09-15-22	233	0.22 ± 0.09	< 0.007	< 0.006	< 0.013	< 0.006	< 0.007	< 0.010	< 0.035
09-22-22	233	0.22 ± 0.10	< 0.004	< 0.006	< 0.013	< 0.008	< 0.007	< 0.009	< 0.042
09-29-22	265	< 0.11	< 0.004	< 0.006	< 0.013	< 0.009	< 0.004	< 0.006	< 0.053
10-06-22	265	< 0.13	< 0.010	< 0.006	< 0.014	< 0.007	< 0.007	< 0.021	< 0.040
10-13-22	266	< 0.17	< 0.011	< 0.010	< 0.022	< 0.014	< 0.013	< 0.079	< 0.057
10-20-22	266	< 0.15	< 0.010	< 0.005	< 0.020	< 0.013	< 0.009	< 0.031	< 0.029
10-27-22	264	< 0.15	< 0.011	< 0.004	< 0.019	< 0.011	< 0.009	< 0.027	< 0.040
11-03-22	268	< 0.16	< 0.025	< 0.011	< 0.025	< 0.019	< 0.007	< 0.045	< 0.073
11-10-22	264	< 0.17	< 0.012	< 0.015	< 0.024	< 0.016	< 0.009	< 0.045	< 0.061
11-17-22	267	< 0.09	< 0.006	< 0.009	< 0.017	< 0.009	< 0.009	< 0.021	< 0.036
11-23-22	237	< 0.12	< 0.008	< 0.006	< 0.020	< 0.010	< 0.009	< 0.025	< 0.047
12-01-22	330	< 0.13	< 0.009	< 0.009	< 0.011	< 0.008	< 0.004	< 0.024	< 0.052
12-08-22	298	< 0.09	< 0.008	< 0.004	< 0.012	< 0.007	< 0.005	< 0.047	< 0.022
12-15-22	316	< 0.12	< 0.009	< 0.006	< 0.016	< 0.009	< 0.004	< 0.041	< 0.041
12-21-22	284	< 0.10	< 0.005	< 0.015	< 0.018	< 0.007	< 0.011	< 0.075	< 0.024
12-29-22	292	< 0.11	< 0.005	< 0.017	< 0.021	< 0.007	< 0.012	< 0.043	< 0.036

[a] Iodine-131 concentrations are < 0.07 pCi/m^3 unless noted otherwise.

Table 1. Air particulates and charcoal cartridges, analyses for gamma-emitting isotopes and I-131[a].

Collection: Continuous, weekly exchange.

Units: pCi/m^3

Location		CA-A-011								
		^{7}Be	^{58}Co	^{60}Co	^{95}Zr	^{134}Cs	^{137}Cs	^{140}BaLa	^{144}Ce	
Required LLDs		-	-	-	-	0.050	0.060	-	-	
Date Collected	Vol.									
01-06-22	374	< 0.11	< 0.010	< 0.004	< 0.013	< 0.007	< 0.007	< 0.039	< 0.033	
01-13-22	311	< 0.13	< 0.013	< 0.005	< 0.024	< 0.008	< 0.007	< 0.025	< 0.029	
01-20-22	307	< 0.15	< 0.010	< 0.008	< 0.023	< 0.009	< 0.009	< 0.049	< 0.044	
01-27-22	309	< 0.14	< 0.007	< 0.007	< 0.016	< 0.011	< 0.009	< 0.033	< 0.039	
02-07-22	420	< 0.08	< 0.010	< 0.006	< 0.012	< 0.007	< 0.004	< 0.008	< 0.036	[b]
02-10-22	114	< 0.29	< 0.022	< 0.014	< 0.044	< 0.024	< 0.016	< 0.046	< 0.109	[c]
02-16-22	255	< 0.13	< 0.011	< 0.011	< 0.025	< 0.010	< 0.009	< 0.024	< 0.059	
02-23-22	299	0.21 ± 0.12	< 0.010	< 0.007	< 0.015	< 0.009	< 0.009	< 0.025	< 0.029	
03-03-22	336	0.17 ± 0.09	< 0.007	< 0.007	< 0.013	< 0.008	< 0.006	< 0.016	< 0.039	
03-10-22	265	0.23 ± 0.10	< 0.006	< 0.004	< 0.012	< 0.009	< 0.009	< 0.014	< 0.034	
03-17-22	268	0.22 ± 0.11	< 0.008	< 0.007	< 0.014	< 0.011	< 0.008	< 0.007	< 0.062	
03-24-22	275	< 0.11	< 0.006	< 0.007	< 0.017	< 0.010	< 0.006	< 0.015	< 0.043	
03-31-22	271	0.17 ± 0.08	< 0.007	< 0.011	< 0.019	< 0.011	< 0.006	< 0.006	< 0.052	
04-07-22	274	0.11 ± 0.05	< 0.007	< 0.005	< 0.012	< 0.007	< 0.006	< 0.011	< 0.027	
04-14-22	272	< 0.10	< 0.008	< 0.008	< 0.017	< 0.009	< 0.005	< 0.025	< 0.039	
04-21-22	274	< 0.15	< 0.009	< 0.006	< 0.015	< 0.010	< 0.007	< 0.025	< 0.048	
04-28-22	271	0.19 ± 0.09	< 0.012	< 0.010	< 0.022	< 0.009	< 0.007	< 0.055	< 0.033	
05-05-22	269	0.32 ± 0.16	< 0.008	< 0.006	< 0.019	< 0.010	< 0.010	< 0.021	< 0.037	
05-12-22	268	< 0.12	< 0.007	< 0.005	< 0.015	< 0.010	< 0.006	< 0.017	< 0.057	
05-19-22	265	0.25 ± 0.14	< 0.012	< 0.010	< 0.025	< 0.014	< 0.011	< 0.060	< 0.049	
05-26-22	272	< 0.12	< 0.007	< 0.005	< 0.022	< 0.009	< 0.009	< 0.015	< 0.044	
06-02-22	266	< 0.12	< 0.008	< 0.005	< 0.021	< 0.010	< 0.007	< 0.036	< 0.045	
06-09-22	267	0.30 ± 0.13	< 0.007	< 0.004	< 0.021	< 0.009	< 0.010	< 0.017	< 0.042	
06-16-22	270	< 0.11	< 0.006	< 0.009	< 0.024	< 0.008	< 0.011	< 0.027	< 0.028	
06-23-22	262	0.25 ± 0.11	< 0.010	< 0.005	< 0.018	< 0.011	< 0.009	< 0.035	< 0.060	
06-30-22	268	0.21 ± 0.12	< 0.011	< 0.008	< 0.014	< 0.010	< 0.009	< 0.029	< 0.056	

[a] Iodine-131 concentrations are < 0.07 pCi/m^3 unless noted otherwise.

[b] Samples collected after 11 days due to unsafe conditions. See Part I Table 5.5, Listing of Missed Samples. Results reported as LLD was met (CR202200713).

[c] Samples collected after 3 days collection period. See Part I table 5.5, Listing of Missed Samples. Results reported as LLD was met (CR#202200713).

Table 1. Air particulates and charcoal cartridges, analyses for gamma-emitting isotopes and I-131[a].

Collection: Continuous, weekly exchange.

Units: pCi/m^3

Location		CA-A-011 (cont.)							
		^{7}Be	^{58}Co	^{60}Co	^{95}Zr	^{134}Cs	^{137}Cs	$^{140}BaLa$	^{144}Ce
Required LLDs		-	-	-	-	0.050	0.060	-	-
Date Collected	Vol.								
07-07-22	268	< 0.12	< 0.011	< 0.005	< 0.022	< 0.010	< 0.005	< 0.042	< 0.055
07-14-22	263	< 0.15	< 0.010	< 0.009	< 0.016	< 0.010	< 0.006	< 0.025	< 0.055
07-21-22	268	0.29 ± 0.11	< 0.004	< 0.004	< 0.014	< 0.008	< 0.005	< 0.015	< 0.037
07-28-22	265	0.26 ± 0.14	< 0.012	< 0.006	< 0.018	< 0.010	< 0.007	< 0.025	< 0.042
08-04-22	263	< 0.10	< 0.007	< 0.007	< 0.012	< 0.008	< 0.008	< 0.028	< 0.029
08-12-22	305	0.14 ± 0.07	< 0.008	< 0.006	< 0.020	< 0.009	< 0.008	< 0.020	< 0.030
08-18-22	228	< 0.16	< 0.015	< 0.008	< 0.024	< 0.015	< 0.013	< 0.039	< 0.060
08-25-22	268	0.21 ± 0.12	< 0.005	< 0.006	< 0.016	< 0.009	< 0.009	< 0.022	< 0.053
09-01-22	267	0.25 ± 0.11	< 0.005	< 0.008	< 0.023	< 0.010	< 0.014	< 0.012	< 0.051
09-08-22	268	< 0.09	< 0.009	< 0.006	< 0.015	< 0.007	< 0.008	< 0.015	< 0.047
09-15-22	269	0.23 ± 0.10	< 0.008	< 0.005	< 0.015	< 0.008	< 0.005	< 0.008	< 0.044
09-22-22	274	0.24 ± 0.09	< 0.004	< 0.002	< 0.014	< 0.007	< 0.005	< 0.012	< 0.036
09-29-22	277	< 0.08	< 0.007	< 0.005	< 0.012	< 0.008	< 0.004	< 0.009	< 0.035
10-06-22	282	0.22 ± 0.11	< 0.010	< 0.010	< 0.009	< 0.007	< 0.005	< 0.057	< 0.039
10-13-22	284	< 0.14	< 0.007	< 0.004	< 0.020	< 0.007	< 0.004	< 0.023	< 0.045
10-20-22	289	0.22 ± 0.13	< 0.011	< 0.006	< 0.018	< 0.010	< 0.009	< 0.017	< 0.054
10-27-22	292	< 0.11	< 0.008	< 0.005	< 0.011	< 0.007	< 0.006	< 0.031	< 0.044
11-03-22	302	0.23 ± 0.11	< 0.009	< 0.005	< 0.011	< 0.008	< 0.007	< 0.021	< 0.046
11-10-22	306	< 0.12	< 0.006	< 0.008	< 0.012	< 0.009	< 0.003	< 0.018	< 0.046
11-17-22	313	< 0.10	< 0.005	< 0.005	< 0.018	< 0.008	< 0.005	< 0.017	< 0.044
11-23-22	270	< 0.10	< 0.008	< 0.005	< 0.013	< 0.008	< 0.007	< 0.024	< 0.042
12-01-22	365	< 0.09	< 0.008	< 0.004	< 0.015	< 0.007	< 0.005	< 0.017	< 0.023
12-08-22	266	< 0.12	< 0.014	< 0.008	< 0.020	< 0.008	< 0.004	< 0.025	< 0.040
12-15-22	318	< 0.11	< 0.007	< 0.008	< 0.018	< 0.008	< 0.007	< 0.069	< 0.029
12-21-22	274	< 0.10	< 0.010	< 0.005	< 0.019	< 0.007	< 0.004	< 0.060	< 0.037
12-29-22	334	< 0.10	< 0.006	< 0.005	< 0.008	< 0.006	< 0.006	< 0.043	< 0.030

[a] Iodine-131 concentrations are < 0.07 pCi/m^3 unless noted otherwise.

Table 2. Milk, analyses for iodine-131 and gamma-emitting isotopes.

Collection: Semimonthly during grazing season, monthly otherwise.

Units: pCi/L

Location		CA-MLK-M9					
Date	Lab	Concentration (pCi/L)					
Collected	Code	I-131	K-40	Zn-65	Cs-134	Cs-137	Ba-La-140
Required LLDs		1	-	-	15	18	15
		Collection discontinued.[a]					

[a] Milk sampling discontined in 2018.

Table 3. Vegetation, analyses for iodine-131 and gamma-emitting isotopes.

Collection: Monthly, during growing season

Units: pCi/kg wet

Lab Code	Collection Date	Sample Type	Concentration (pCi/kg wet) ^{40}K	^{54}Mn	^{58}Co	^{60}Co	^{131}I	^{134}Cs	^{137}Cs
			Location: CA-FPL-V9						
				NS[a]					
				NS[b]					
CAVE- 1779	6/14/2022	Cabbage	2932 ± 284	< 7.0	< 8.5	< 14.8	< 48.8	< 12.1	< 14.0
CAVE- 1780	6/14/2022	Lettuce	4348 ± 356	< 12.4	< 7.7	< 6.1	< 55.0	< 10.3	< 12.0
CAVE- 1781	6/14/2022	Kale	3330 ± 303	< 8.3	< 11.4	< 11.3	< 52.2	< 12.3	< 13.4
CAVE- 1782	6/14/2022	Swiss Chard	9204 ± 672	< 17.3	< 24.8	< 24.2	< 49.2	< 20.6	< 15.9
CAVE- 1783	6/14/2022	Collard Greens	2526 ± 295	< 12.6	< 12.6	< 7.9	< 47.6	< 12.2	< 13.6
CAVE- 2127	7/12/2022	Collard Greens	3521 ± 350	< 14.3	< 10.4	< 4.8	< 45.5	< 11.8	< 16.6
CAVE- 2128	7/12/2022	Swiss Chard	6497 ± 490	< 12.0	< 18.8	< 11.6	< 55.9	< 14.0	< 14.3
CAVE- 2129	7/12/2022	Lettuce	7426 ± 473	< 13.2	< 8.3	< 4.6	< 31.5	< 13.0	< 12.8
CAVE- 2422	8/9/2022	Swiss Chard	16019 ± 657	< 13.7	< 8.3	< 13.8	< 25.1	< 14.3	< 13.9
CAVE- 2423	8/9/2022	Collard Greens	6135 ± 489	< 9.7	< 11.0	< 15.1	< 2.3	< 13.7	< 15.1
CAVE- 2876	9/13/2022	Collard Greens	5581 ± 389	< 11.0	< 16.1	< 10.4	< 19.0	< 15.1	< 10.4
CAVE- 2877	9/13/2022	Swiss Chard	7233 ± 352	< 11.1	< 8.5	< 10.5	< 8.9	< 10.0	< 9.3
CAVE- 2878	9/13/2022	Turnip Greens	3584 ± 216	< 6.8	< 5.2	< 4.2	< 9.7	< 6.1	< 5.7
CAVE- 3279	10/11/2022	Turnip Greens	7288 ± 503	< 15.3	< 16.8	< 7.6	< 29.6	< 17.2	< 19.9
CAVE- 3280	10/11/2022	Lettuce	5825 ± 392	< 12.5	< 18.1	< 12.8	< 41.3	< 13.2	< 7.8
CAVE- 3281	10/11/2022	Bok Choy	5114 ± 319	< 13.0	< 6.3	< 8.9	< 20.5	< 9.8	< 10.7
CAVE- 3282	10/11/2022	Mustard Greens	5805 ± 295	< 7.6	< 9.3	< 7.8	< 18.6	< 9.0	< 6.2
CAVE- 3283	10/11/2022	Swiss Chard	5478 ± 349	< 11.1	< 8.6	< 9.4	< 33.2	< 10.5	< 6.4
CAVE- 3284	10/11/2022	Collard Greens	3393 ± 252	< 7.2	< 7.7	< 6.9	< 21.9	< 8.1	< 8.5

[a] "NS" = No sample; see Part I Table 5.5, Missed Collections and Analyses (CR#202202274).

[b] "NS" = No sample; see Part I Table 5.5, Missed Collections and Analyses (CR#202203241).

Table 3. Vegetation, analyses for iodine-131 and gamma-emitting isotopes.

Collection: Monthly, during growing season

Units: pCi/kg wet

Lab Code	Collection Date	Sample Type	Concentration (pCi/kg wet) ^{40}K	^{54}Mn	^{58}Co	^{60}Co	^{131}I	^{134}Cs	^{137}Cs
			Location: CA-FPL-V12						
			NS[a]						
CAVE- 1276	5/9/2022	Cabbage	3672 ± 311	< 7.7	< 11.7	< 14.8	< 21.8	< 15.1	< 13.6
CAVE- 1277	5/9/2022	Swiss Chard	6818 ± 474	< 10.7	< 19.4	< 11.2	< 24.1	< 13.3	< 14.6
CAVE- 1278	5/9/2022	Kale	4383 ± 550	< 31.4	< 18.5	< 19.4	< 42.0	< 25.2	< 25.5
CAVE- 1784	6/13/2022	Cabbage	4108 ± 358	< 13.3	< 13.3	< 10.2	< 41.8	< 13.4	< 11.0
CAVE- 1785	6/13/2022	Lettuce	4794 ± 379	< 11.5	< 12.2	< 9.3	< 55.9	< 12.8	< 12.5
CAVE- 1786	6/13/2022	Kale	3835 ± 368	< 15.6	< 18.1	< 12.1	< 56.0	< 17.5	< 15.4
CAVE- 1787	6/13/2022	Swiss Chard	5941 ± 459	< 12.7	< 13.8	< 11.3	< 47.4	< 14.5	< 10.1
CAVE- 2130	7/11/2022	Swiss Chard	8802 ± 555	< 14.5	< 11.0	< 12.2	< 24.3	< 16.1	< 11.9
CAVE- 2131	7/11/2022	Kale	3882 ± 346	< 7.6	< 8.1	< 10.1	< 22.5	< 13.1	< 15.4
CAVE- 2133	7/11/2022	Collard Greens	5450 ± 535	< 23.9	< 24.1	< 22.0	< 43.4	< 22.0	< 27.8
CAVE- 2134	7/11/2022	Cabbage	5999 ± 579	< 13.7	< 16.1	< 10.1	< 52.9	< 19.5	< 22.5
CAVE- 2135	7/11/2022	Mustard	4989 ± 432	< 8.7	< 13.3	< 16.7	< 59.1	< 15.5	< 20.5
CAVE- 2426	8/8/2022	Collard Greens	8431 ± 682	< 24.6	< 19.9	< 17.0	< 39.7	< 25.2	< 21.0
CAVE- 2427	8/8/2022	Swiss Chard	10051 ± 412	< 13.3	< 8.7	< 13.4	< 26.8	< 14.8	< 14.2
CAVE- 2429	8/8/2022	Kale	7233 ± 507	< 16.5	< 15.0	< 8.1	< 35.8	< 13.2	< 13.4
CAVE- 2430	8/8/2022	Cabbage	4890 ± 396	< 14.3	< 11.5	< 9.9	< 23.1	< 14.6	< 12.2
CAVE- 2879	9/12/2022	Swiss Chard	5444 ± 342	< 7.4	< 10.0	< 8.0	< 20.7	< 12.6	< 10.8
CAVE- 2880	9/12/2022	Collard Greens	4256 ± 428	< 10.8	< 16.0	< 11.2	< 21.5	< 15.9	< 16.0
CAVE- 2881	9/12/2022	Kale	5983 ± 419	< 12.7	< 12.4	< 13.4	< 15.8	< 15.6	< 14.9
CAVE- 3285	10/10/2022	Kale	3560 ± 291	< 11.5	< 8.0	< 9.2	< 37.0	< 11.5	< 12.9
CAVE- 3286	10/10/2022	Swiss Chard	4971 ± 272	< 7.3	< 6.8	< 6.0	< 13.4	< 6.8	< 8.0
CAVE- 3287	10/10/2022	Collard Greens	4277 ± 252	< 7.6	< 4.9	< 5.9	< 16.9	< 7.2	< 6.3

[a] "NS" = No sample; see Part I Table 5.5, Missed Collections and Analyses (CR#202202274).

Table 3. Vegetation, analyses for iodine-131 and gamma-emitting isotopes.

Collection: Monthly, during growing season

Units: pCi/kg wet

Lab Code	Collection Date	Sample Type	Concentration (pCi/kg wet) ^{40}K	^{54}Mn	^{58}Co	^{60}Co	^{131}I	^{134}Cs	^{137}Cs
			Location: CA-FPL-V16						
				NS[a]					
CAVE- 1279	5/9/2022	Cabbage	3617 ± 448	< 13.9	< 13.4	< 10.6	< 47.3	< 19.7	< 18.5
CAVE- 1280	5/9/2022	Lettuce	7788 ± 729	< 32.0	< 22.6	< 22.0	< 42.8	< 28.8	< 23.0
CAVE- 1788	6/13/2022	Cabbage	4219 ± 226	< 8.3	< 7.1	< 9.6	< 50.4	< 7.7	< 8.7
CAVE- 1789	6/13/2022	Lettuce	5137 ± 401	< 11.4	< 11.7	< 8.9	< 45.2	< 13.3	< 11.8
CAVE- 1790	6/13/2022	Turnip greens	4212 ± 442	< 12.8	< 8.1	< 7.7	< 40.1	< 15.7	< 14.7
CAVE- 2136	7/11/2022	Collard Greens	5389 ± 413	< 10.1	< 11.7	< 7.6	< 20.8	< 12.6	< 14.1
CAVE- 2137	7/11/2022	Cabbage	4931 ± 466	< 13.1	< 10.4	< 13.9	< 18.4	< 14.7	< 12.1
CAVE- 2138	7/11/2022	Lettuce	12113 ± 772	< 19.2	< 16.0	< 16.3	< 39.5	< 21.3	< 23.3
CAVE- 2424	8/8/2022	Collard Greens	5845 ± 530	< 18.8	< 15.1	< 9.3	< 33.1	< 17.1	< 19.4
CAVE- 2425	8/8/2022	Cabbage	7501 ± 553	< 20.0	< 24.5	< 18.4	< 51.0	< 27.4	< 31.5
CAVE- 2882	9/13/2022	Cabbage	4837 ± 422	< 12.2	< 8.8	< 8.4	< 25.0	< 13.4	< 10.6
CAVE- 2883	9/13/2022	Collard Greens	7033 ± 405	< 12.7	< 12.1	< 13.6	< 9.8	< 11.0	< 10.3
				NS[b]					
			Location: CA-FPL-V19						
				NS[a]					
				NS[c]					
CAVE- 1791	6/14/2022	Lettuce	6652 ± 378	< 12.6	< 12.8	< 8.7	< 35.0	< 11.1	< 10.9
CAVE- 2139	7/11/2022	Cabbage	5741 ± 371	< 10.6	< 8.0	< 11.2	< 43.5	< 12.0	< 10.4
CAVE- 2421	8/8/2022	Cabbage	3314 ± 320	< 11.8	< 12.8	< 14.0	< 35.7	< 13.2	< 13.1
				NS[d]					
CAVE- 3278	10/11/2022	Lettuce	2486 ± 310	< 7.9	< 8.5	< 11.6	< 25.2	< 13.4	< 7.9

[a] "NS" = No sample; see Part I Table 5.5, Listing of Missed Samples (CR#202202274).

[b] "NS" = No sample; see Part I Table 5.5, Listing of Missed Samples (CR#202206730).

[c] "NS" = No sample; see Part I Table 5.5, Listing of Missed Samples (CR#202203241).

[d] "NS" = No sample; see Part I Table 5.5, Listing of Missed Samples (CR#202206060).

Table 4. Soil, analyses for gamma-emitting isotopes.

Collection: Annually

Lab Code	Collection Date	Concentration (pCi/kg dry)								
		^{40}K	^{54}Mn	^{59}Fe	^{58}Co	^{60}Co	^{95}ZrNb	^{134}Cs	^{137}Cs	^{140}BaLa
Location: SOL-F-002										
CASO- 4077	12/5/2022	12363 ± 696	< 23.2	< 64.6	< 23.1	< 23.6	< 41.7	< 21.4	627 ± 47	< 70.7
Location: SOL-F-006										
CASO- 4078	12/6/2022	12411 ± 633	< 24.5	< 44.2	< 21.4	< 36.6	< 28.6	< 25.0	510 ± 36	< 41.2
Location: SOL-PR-003										
CASO- 4079	12/5/2022	12513 ± 707	< 31.8	< 72.4	< 28.6	< 22.4	< 43.4	< 24.7	352 ± 56	< 70.7
Location: SOL-PR-007										
CASO- 4080	12/5/2022	10741 ± 563	< 19.7	< 46.5	< 15.8	< 18.8	< 22.9	< 14.2	183 ± 22	< 26.5
Location: SOL-M-009										
CASO- 4086	12/12/2022	15966 ± 712	< 29.0	< 45.4	< 26.0	< 29.1	< 39.3	< 15.7	158 ± 33	< 53.7
Location: SOL-W-001										
CASO- 4081	12/5/2022	15031 ± 639	< 24.3	< 66.8	< 22.3	< 33.2	< 34.3	< 16.1	81 ± 19	< 58.2
Location: SOL-W-002										
CASO- 4082	12/9/2022	9408 ± 792	< 43.3	< 59.9	< 36.4	< 29.4	< 48.7	< 31.2	< 31	< 72.9
Location: SOL-W-005										
CASO- 4083	12/9/2022	17794 ± 1147	< 55.6	< 85.6	< 34.6	< 21.1	< 83.9	< 47.7	< 48	< 50.2
Location: SOL-W-006										
CASO- 4085	12/9/2022	8594 ± 531	< 22.8	< 45.4	< 23.8	< 18.1	< 37.0	< 16.8	< 19	< 51.4

Table 5. Surface water, analyses for tritium and gamma-emitting isotopes.

Collection: Monthly

Location: CA-SWA-S01 Units: pCi/L

Lab Code	Required	CASW- 201	CASW- 389	CASW- 666	CASW- 1102
Date Collected	LLD	01-25-22	02-22-22	03-29-22	04-26-22
H-3	3000	< 162	< 160	< 166	< 163
Mn-54	15	< 4.4	< 5.0	< 2.6	< 1.3
Fe-59	30	< 4.7	< 8.6	< 3.4	< 4.3
Co-58	15	< 3.6	< 4.2	< 1.3	< 1.0
Co-60	15	< 2.0	< 5.4	< 2.1	< 0.9
Zn-65	30	< 3.0	< 11.2	< 2.2	< 2.6
Zr-Nb-95	15	< 4.1	< 7.3	< 2.3	< 2.5
I-131	1000	< 15.6	< 11.3	< 4.3	< 61.2
Cs-134	15	< 3.8	< 5.7	< 2.2	< 1.1
Cs-137	18	< 4.2	< 4.3	< 2.6	< 1.4
Ba-La-140	15	< 8.3	< 9.1	< 3.0	< 12.0

Lab Code	Required	CASW- 1685	CASW- 1942	CASW- 2309	CASW- 2731
Date Collected	LLD	05-31-22	06-28-22	07-26-22	08-30-22
H-3	3000	< 163	< 162	< 161	< 163
Mn-54	15	< 1.8	< 1.2	< 2.6	< 3.0
Fe-59	30	< 5.7	< 3.1	< 3.6	< 6.3
Co-58	15	< 2.2	< 2.4	< 1.2	< 3.3
Co-60	15	< 2.1	< 2.0	< 1.4	< 2.9
Zn-65	30	< 2.4	< 3.9	< 3.1	< 7.0
Zr-Nb-95	15	< 2.8	< 2.8	< 3.4	< 3.1
I-131	1000	< 25.6	< 19.3	< 8.3	< 7.5
Cs-134	15	< 1.9	< 1.7	< 2.4	< 3.7
Cs-137	18	< 2.2	< 1.9	< 2.0	< 3.5
Ba-La-140	15	< 12.6	< 6.2	< 4.6	< 3.4

Lab Code	Required	CASW- 3092	CASW- 3545	CASW- 4008	CASW- 4191
Date Collected	LLD	09-27-22	10-25-22	11-29-22	12-27-22
H-3	3000	< 166	< 166	< 157	< 157
Mn-54	15	< 2.1	< 1.8	< 2.3	< 3.6
Fe-59	30	< 3.3	< 2.1	< 6.3	< 7.0
Co-58	15	< 2.1	< 2.3	< 2.6	< 2.8
Co-60	15	< 1.7	< 2.5	< 1.5	< 2.3
Zn-65	30	< 3.8	< 4.0	< 3.1	< 4.4
Zr-Nb-95	15	< 2.5	< 3.2	< 4.4	< 4.0
I-131	1000	< 3.3	< 9.1	< 11.5	< 4.2
Cs-134	15	< 2.3	< 2.3	< 2.4	< 4.2
Cs-137	18	< 2.6	< 1.7	< 2.8	< 3.0
Ba-La-140	15	< 2.8	< 5.9	< 3.7	< 5.2

Table 5. Surface water, analyses for tritium and gamma-emitting isotopes.

Collection: Monthly

Location: CA-SWA-S02 Units: pCi/L

Lab Code	Required	CASW- 203	CASW- 390	CASW- 667	CASW- 1103
Date Collected	LLD	01-25-22	02-22-22	03-29-22	04-26-22
H-3	3000	174 ± 86	279 ± 90	209 ± 91	449 ± 100
Mn-54	15	< 2.6	< 2.5	< 2.3	< 1.2
Fe-59	30	< 2.7	< 3.9	< 4.5	< 3.0
Co-58	15	< 2.7	< 2.6	< 3.2	< 0.8
Co-60	15	< 1.6	< 1.7	< 2.2	< 1.0
Zn-65	30	< 4.0	< 1.7	< 4.5	< 2.1
Zr-Nb-95	15	< 3.4	< 2.9	< 3.3	< 2.1
I-131	1000	< 11.7	< 9.3	< 5.0	< 31.3
Cs-134	15	< 2.4	< 2.8	< 3.6	< 1.1
Cs-137	18	< 3.0	< 2.1	< 3.5	< 1.2
Ba-La-140	15	< 5.6	< 5.0	< 3.5	< 9.3

Lab Code	Required	CASW- 1686	CASW- 1943	CASW- 2310	CASW- 2732
Date Collected	LLD	05-31-22	06-28-22	07-26-22	08-30-22
H-3	3000	301 ± 92	< 161	< 161	< 163
Mn-54	15	< 1.9	< 1.0	< 3.1	< 2.3
Fe-59	30	< 7.5	< 3.4	< 4.0	< 2.8
Co-58	15	< 2.4	< 1.3	< 2.7	< 1.3
Co-60	15	< 2.7	< 1.0	< 1.7	< 1.3
Zn-65	30	< 3.7	< 2.3	< 3.9	< 2.3
Zr-Nb-95	15	< 3.2	< 2.1	< 3.7	< 2.5
I-131	1000	< 29.9	< 14.9	< 8.1	< 4.7
Cs-134	15	< 2.2	< 1.1	< 2.6	< 2.3
Cs-137	18	< 2.8	< 1.0	< 2.3	< 2.8
Ba-La-140	15	< 10.3	< 5.4	< 5.4	< 3.2

Lab Code	Required	CASW- 3093	CASW- 3546	CASW- 4009	CASW- 4192
Date Collected	LLD	09-27-22	10-25-22	11-29-22	12-27-22
H-3	3000	< 166	228 ± 91	< 157	< 157
Mn-54	15	< 1.9	< 2.5	< 2.8	< 2.0
Fe-59	30	< 3.7	< 4.2	< 5.1	< 5.3
Co-58	15	< 2.1	< 2.3	< 3.1	< 1.1
Co-60	15	< 1.8	< 1.8	< 5.9	< 5.6
Zn-65	30	< 3.1	< 2.7	< 4.4	< 5.5
Zr-Nb-95	15	< 1.9	< 1.7	< 3.8	< 3.8
I-131	1000	< 3.0	< 5.1	< 22.8	< 5.5
Cs-134	15	< 1.9	< 2.2	< 3.1	< 2.8
Cs-137	18	< 2.1	< 1.9	< 5.4	< 4.7
Ba-La-140	15	< 2.2	< 5.2	< 9.7	< 2.8

6. Surface Water (Ponds), analyses for tritium and gamma-emitting isotopes.

Lab Code	Collection Date	Concentration (pCi/L)									
		^{3}H	^{54}Mn	^{59}Fe	^{58}Co	^{60}Co	^{65}Zn	$^{95}ZrNb$	^{134}Cs	^{137}Cs	$^{140}BaLa$
					Location: CA-SWA-POND 01						
CASW- 449	03/01/22	< 161	< 2.3	< 3.9	< 2.2	< 1.8	< 2.3	< 3.4	< 2.8	< 3.3	< 5.3
CASW- 2808	09/06/22	< 160	< 2.9	< 5.3	< 3.2	< 1.6	< 5.5	< 5.1	< 4.2	< 4.6	< 5.7
					Location: CA-SWA-POND 02						
CASW- 450	03/01/22	< 161	< 2.7	< 5.9	< 2.1	< 2.3	< 5.6	< 2.6	< 3.5	< 2.6	< 4.4
CASW- 2809	09/06/22	< 160	< 3.1	< 5.2	< 2.5	< 3.7	< 5.9	< 4.5	< 3.5	< 3.8	< 3.6
					Location: CA-SWA-SLUDGE LAGOON #6						
CASW- 452	03/01/22	< 161	< 2.4	< 6.2	< 2.8	< 1.9	< 5.7	< 3.4	< 2.6	< 2.1	< 4.7
CASW- 2813	09/06/22	< 160	< 2.6	< 4.5	< 2.1	< 1.5	< 3.7	< 3.7	< 2.9	< 2.7	< 4.4
					Location: CA-SWA-OUTFALL 010						
CASW- 451	03/01/22	< 161	< 2.2	< 6.0	< 3.0	< 1.3	< 6.5	< 3.7	< 2.8	< 3.0	< 2.8
CASW- 2810	9/6/2022	< 160	< 2.3	< 2.2	< 1.9	< 1.8	< 4.5	< 1.9	< 2.2	< 2.3	< 2.2
					Location: CA-SWA-WETLANDS 01						
CASW- 2811	9/6/2022	< 160	< 1.8	< 2.8	< 2.6	< 1.8	< 4.8	< 2.8	< 3.0	< 3.5	< 4.9
					Location: CA-SWA-WETLANDS 02						
CASW- 2812	9/6/2022 [a]	162 ± 84	< 4.6	< 10.9	< 4.8	< 4.2	< 3.5	< 5.0	< 4.1	< 4.5	< 7.9
CASW- 4132	9/6/2022 [b]	< 164	< 1.8	< 15.5	< 3.2	< 3.1	< 3.4	< 6.3	< 1.6	< 2.7	< 213.5

[a] Recount 243 ± 89 pCi/L. Reanalysis < 159 pCi/L.

[b] Backup sample. Ba/La-140 MDA not met, due to late arrival.

Table 7. Drinking Water Wells, analysis for tritium and gamma-emitting isotopes.

Lab Code	Collection Date	Concentration (pCi/L) ^{3}H	^{54}Mn	^{59}Fe	^{58}Co	^{60}Co	^{65}Zn	$^{95}ZrNb$	^{134}Cs	^{137}Cs	$^{140}BaLa$
					CA-DWA-003 (Ward)						
CADW- 183	1/26/2022	< 162	< 2.7	< 4.5	< 2.3	< 1.9	< 4.8	< 3.2	< 3.1	< 3.8	< 3.6
CADW- 1072	4/26/2022	< 163	< 3.7	< 4.5	< 2.7	< 2.9	< 5.6	< 6.6	< 4.0	< 2.9	< 6.2
CADW- 2322	7/27/2022	< 161	< 1.7	< 2.7	< 1.4	< 1.8	< 4.2	< 2.2	< 1.8	< 2.3	< 2.5
CADW- 3632	11/1/2022	< 166	< 3.8	< 5.3	< 4.2	< 3.9	< 6.6	< 4.8	< 4.0	< 3.8	< 6.2
					CA-DWA-004 (Miller)						
CADW- 196	1/26/2022	< 162	< 2.8	< 5.3	< 1.9	< 3.0	< 3.2	< 3.9	< 4.1	< 3.7	< 5.3
CADW- 1073	4/26/2022	< 163	< 2.7	< 3.7	< 1.8	< 1.9	< 4.6	< 4.0	< 2.7	< 2.5	< 9.7
CADW- 2324	7/27/2022	< 161	< 2.9	< 4.0	< 1.8	< 1.5	< 6.2	< 3.6	< 2.4	< 2.3	< 6.3
CADW- 3633	11/1/2022	< 166	< 2.6	< 5.3	< 2.8	< 2.6	< 4.4	< 3.2	< 2.4	< 2.0	< 3.8
					CA-DWA-005 (Brucker Bros.)						
CADW- 182	1/25/2022	< 162	< 3.2	< 2.9	< 3.7	< 2.3	< 6.8	< 2.8	< 4.4	< 2.5	< 5.1
CADW- 1074	4/26/2022	< 163	< 2.2	< 6.0	< 2.1	< 1.3	< 4.0	< 3.0	< 2.0	< 2.2	< 4.8
CADW- 2325	7/27/2022	< 161	< 5.1	< 9.2	< 4.1	< 4.6	< 5.3	< 6.9	< 4.5	< 5.0	< 7.5
CADW- 3627	10/18/2022	< 166	< 1.0	< 2.2	< 1.0	< 1.3	< 2.6	< 1.3	< 1.0	< 1.1	< 3.1
					CA-DWA-007 (Kriete)						
CADW- 184	1/26/2022	< 162	< 3.0	< 4.5	< 3.5	< 3.1	< 4.6	< 3.5	< 3.8	< 2.8	< 3.0
CADW- 1075	4/26/2022	< 163	< 1.1	< 1.8	< 1.2	< 1.2	< 2.4	< 1.9	< 1.1	< 1.1	< 5.7
CADW- 2326	7/29/2022	< 161	< 5.1	< 9.2	< 4.1	< 4.6	< 5.3	< 5.7	< 4.5	< 5.0	< 7.5
CADW- 3629	11/1/2022	< 166	< 2.2	< 5.2	< 3.1	< 1.7	< 2.7	< 3.0	< 2.5	< 2.3	< 1.8
					CA-DWA-008 (Curry)						
CADW- 197	1/26/2022	< 162	< 2.0	< 6.6	< 2.3	< 1.3	< 4.5	< 3.1	< 3.0	< 2.9	< 3.5
CADW- 1077	4/26/2022	< 163	< 1.0	< 3.7	< 0.9	< 0.7	< 2.1	< 2.8	< 1.1	< 1.1	< 11.9
CADW- 2338	8/2/2022	< 161	< 5.5	< 3.9	< 2.9	< 3.0	< 5.2	< 3.7	< 5.7	< 4.5	< 3.9
CADW- 3643	11/1/2022	< 166	< 1.7	< 3.7	< 1.9	< 1.1	< 2.4	< 2.1	< 1.5	< 1.8	< 2.3

Table 7. Drinking Water Wells, analysis for tritium and gamma-emitting isotopes.

Lab Code	Collection Date	Concentration (pCi/L) ^{3}H	^{54}Mn	^{59}Fe	^{58}Co	^{60}Co	^{65}Zn	$^{95}ZrNb$	^{134}Cs	^{137}Cs	$^{140}BaLa$
						CA-DWA-009 (Clardy)					
CADW- 187	1/26/2022	< 162	< 3.0	< 4.6	< 1.9	< 2.6	< 2.4	< 3.2	< 3.2	< 3.5	< 3.6
CADW- 1084	4/27/2022	< 163	< 1.8	< 3.8	< 2.8	< 1.8	< 1.7	< 3.1	< 2.6	< 3.1	< 8.0
CADW- 2327	7/29/2022	< 161	< 1.3	< 1.7	< 2.1	< 1.0	< 2.4	< 2.1	< 1.7	< 2.2	< 3.9
CADW- 3638	11/1/2022	< 166	< 2.4	< 5.3	< 2.3	< 1.9	< 3.8	< 1.9	< 2.8	< 2.5	< 1.6
						CA-DWA-010 (Dillon, Susan)					
CADW- 188	1/26/2022	< 162	< 3.2	< 6.4	< 2.5	< 2.4	< 5.7	< 3.0	< 2.8	< 3.6	< 4.8
CADW- 1085	4/27/2022	< 163	< 1.7	< 4.2	< 2.4	< 1.7	< 3.0	< 3.4	< 1.7	< 2.0	< 5.4
CADW- 2328	7/29/2022	< 161	< 2.5	< 5.5	< 2.6	< 2.0	< 4.3	< 2.5	< 3.1	< 3.5	< 2.0
CADW- 3640	11/1/2022	< 166	< 2.0	< 5.6	< 1.7	< 1.7	< 3.7	< 3.1	< 2.2	< 2.1	< 4.8
						CA-DWA-012 (Dillon, Joe)					
CADW- 189	1/26/2022	< 162	< 2.6	< 3.5	< 2.5	< 2.8	< 4.0	< 2.4	< 3.0	< 3.2	< 5.9
CADW- 1086	4/27/2022	< 163	< 3.1	< 8.0	< 4.8	< 2.9	< 9.3	< 5.3	< 3.9	< 3.0	< 12.2
CADW- 2332	7/29/2022	< 161	< 3.0	< 2.4	< 1.2	< 2.1	< 2.5	< 2.9	< 2.5	< 3.0	< 3.1
CADW- 3636	11/1/2022	< 166	< 2.4	< 3.4	< 2.3	< 1.9	< 3.1	< 1.9	< 2.9	< 2.2	< 4.6
						CA-DWA-21					
CADW- 193	1/26/2022	< 162	< 3.0	< 5.4	< 2.0	< 1.6	< 3.5	< 2.8	< 2.7	< 2.6	< 6.2
CADW- 1080	4/26/2022	< 163	< 1.0	< 2.1	< 1.2	< 1.1	< 1.8	< 1.8	< 1.1	< 1.1	< 11.5
CADW- 2333	7/29/2022	< 161	< 3.3	< 5.9	< 2.3	< 3.6	< 5.8	< 3.1	< 3.7	< 3.7	< 4.3
CADW- 3630	11/1/2022	< 166	< 2.8	< 3.0	< 2.4	< 2.3	< 3.7	< 3.4	< 2.7	< 2.7	< 3.7
						CA-DWA-022 (Plummer)					
CADW- 191	1/26/2022	< 162	< 2.2	< 2.9	< 1.7	< 1.7	< 3.4	< 3.8	< 3.1	< 1.5	< 3.9
CADW- 1081	4/26/2022	< 163	< 1.4	< 2.2	< 1.5	< 0.8	< 2.6	< 2.1	< 1.0	< 1.1	< 5.2
CADW- 2334	7/29/2022	< 161	< 3.3	< 3.7	< 3.4	< 3.4	< 3.6	< 3.0	< 3.6	< 3.5	< 4.9
CADW- 3634	11/1/2022	< 166	< 2.0	< 5.9	< 2.8	< 1.8	< 5.0	< 2.6	< 3.0	< 2.0	< 4.2

Table 7. Drinking Water Wells, analysis for tritium and gamma-emitting isotopes.

Lab Code	Collection Date	Concentration (pCi/L) ^{3}H	^{54}Mn	^{59}Fe	^{58}Co	^{60}Co	^{65}Zn	$^{95}ZrNb$	^{134}Cs	^{137}Cs	$^{140}BaLa$
						CA-DWA-PW1 (Plant Cafeteria)					
CADW- 194	1/26/2022	< 162	< 4.2	< 5.3	< 3.0	< 2.9	< 4.1	< 5.5	< 4.5	< 2.9	< 5.6
CADW- 1088	4/27/2022	< 163	< 1.6	< 4.1	< 1.8	< 1.6	< 4.0	< 3.0	< 2.2	< 2.1	< 10.6
CADW- 2337	7/29/2022	< 161	< 2.5	< 3.6	< 2.0	< 1.8	< 4.1	< 3.5	< 3.2	< 2.4	< 5.9
CADW- 3642	11/1/2022	< 166	< 2.9	< 4.5	< 2.1	< 2.6	< 2.9	< 3.6	< 3.3	< 2.6	< 4.7
						CA-DWA-V16					
CADW- 195	1/26/2022	< 162	< 2.4	< 6.5	< 4.1	< 2.3	< 6.9	< 5.8	< 4.1	< 4.8	< 6.4
CADW- 1087	4/27/2022	< 163	< 2.9	< 3.8	< 2.8	< 1.3	< 1.6	< 3.6	< 2.4	< 3.1	< 11.4
CADW- 2336	7/29/2022	< 161	< 2.1	< 1.5	< 2.2	< 2.0	< 4.4	< 2.9	< 2.0	< 2.4	< 3.1
CADW- 3641	11/1/2022	< 166	< 1.2	< 3.5	< 2.2	< 1.2	< 3.5	< 1.5	< 2.0	< 1.1	< 2.9
						CA-DWA-D23					
CADW- 192	1/26/2022	< 162	< 1.7	< 4.3	< 1.9	< 1.9	< 3.5	< 2.6	< 2.8	< 3.1	< 4.7
CADW- 1082	4/26/2022	< 163	< 2.1	< 6.8	< 2.6	< 2.0	< 3.6	< 4.0	< 2.0	< 2.0	< 12.8
CADW- 2335	7/29/2022	< 161	< 2.1	< 2.4	< 1.5	< 1.3	< 3.0	< 1.7	< 1.7	< 2.1	< 3.1
CADW- 3635	11/1/2022	< 166	< 2.6	< 4.6	< 2.1	< 1.3	< 1.9	< 2.3	< 2.2	< 2.1	< 1.7
						CA-DWA-024					
CADW- 186	1/26/2022	< 162	< 2.0	< 3.7	< 2.0	< 2.1	< 6.8	< 4.0	< 3.4	< 3.5	< 6.3
CADW- 1083	4/27/2022	< 163	< 1.8	< 5.5	< 2.8	< 1.2	< 2.3	< 3.0	< 2.2	< 2.7	< 13.0
CADW- 2329	7/29/2022	< 161	< 1.7	< 2.2	< 2.0	< 1.0	< 3.3	< 2.7	< 1.9	< 1.8	< 2.8
CADW- 3637	11/1/2022	< 166	< 2.0	< 4.3	< 2.1	< 1.6	< 2.9	< 2.5	< 2.2	< 2.1	< 4.1
						CA-DWA-025					
CADW- 185	1/26/2022	< 162	< 3.0	< 4.0	< 1.3	< 1.7	< 4.6	< 3.6	< 2.8	< 2.5	< 2.6
CADW- 1076	4/26/2022	< 163	< 1.1	< 2.3	< 1.5	< 1.1	< 2.2	< 2.1	< 1.1	< 1.2	< 12.3
CADW- 2330	7/29/2022	< 161	< 2.1	< 8.6	< 3.5	< 3.1	< 4.4	< 2.5	< 3.9	< 3.8	< 8.1
CADW- 3628	11/1/2022	< 166	< 2.1	< 3.6	< 1.7	< 2.1	< 3.7	< 3.0	< 3.1	< 2.2	< 4.3
						CA-DWA-V19 (Dillon, Amy)					
CADW- 190	1/26/2022	< 162	< 2.9	< 6.0	< 1.6	< 2.2	< 2.4	< 3.9	< 3.0	< 2.7	< 6.4
CADW- 1079	4/26/2022	< 163	< 1.2	< 1.7	< 1.4	< 1.1	< 2.2	< 1.7	< 1.2	< 1.0	< 8.8
CADW- 2331	7/29/2022	< 161	< 4.5	< 3.2	< 4.0	< 2.8	< 8.0	< 5.4	< 4.7	< 4.6	< 7.2
CADW- 3631	11/1/2022	< 166	< 1.5	< 5.0	< 2.2	< 2.1	< 3.2	< 2.6	< 2.0	< 2.2	< 2.3

Table 8. Wells (non-potable), analyses for tritium and gamma-emitting isotopes.

Lab Code	Collection Date	Concentration (pCi/L)									
		^{3}H	^{54}Mn	^{59}Fe	^{58}Co	^{60}Co	^{65}Zn	$^{95}ZrNb$	^{134}Cs	^{137}Cs	$^{140}BaLa$
					Location: CA-WWA-937B						
CAWW- 112	1/13/2022	< 162	< 2.1	< 4.8	< 2.6	< 2.0	< 4.4	< 4.9	< 3.1	< 2.9	< 3.2
CAWW- 361	2/15/2022	< 161	< 2.2	< 5.6	< 2.6	< 1.9	< 3.7	< 5.2	< 3.7	< 3.3	< 5.9
CAWW- 545	3/15/2022	< 171	< 2.1	< 7.9	< 4.7	< 4.1	< 6.6	< 3.5	< 4.6	< 4.1	< 4.9
CAWW- 909	4/12/2022	< 169	< 2.4	< 4.1	< 2.1	< 1.8	< 1.7	< 2.1	< 2.4	< 3.3	< 5.2
CAWW- 1335	5/11/2022	177 ± 88	< 1.8	< 3.1	< 2.2	< 1.2	< 2.7	< 3.3	< 1.7	< 2.1	< 14.6
CAWW- 1861	6/17/2022	253 ± 89	< 2.5	< 3.1	< 3.8	< 1.8	< 1.9	< 5.6	< 3.0	< 2.8	< 9.0
CAWW- 2199	7/13/2022	210 ± 98	< 4.7	< 7.3	< 5.7	< 3.2	< 8.9	< 6.6	< 5.1	< 3.0	< 4.0
CAWW- 2564	8/9/2022	< 159	< 2.1	< 4.1	< 2.9	< 1.5	< 4.6	< 3.6	< 3.0	< 3.3	< 5.8
CAWW- 2954	9/12/2022	< 160	< 2.7	< 1.4	< 1.0	< 1.8	< 4.5	< 3.0	< 2.5	< 3.0	< 6.0
CAWW- 3437	10/14/2022	173 ± 88	< 0.9	< 4.6	< 2.2	< 1.8	< 4.6	< 2.1	< 2.2	< 2.9	< 5.0
CAWW- 3784	11/14/2022	< 160	< 5.7	< 9.1	< 5.0	< 4.1	< 7.8	< 5.8	< 6.6	< 5.4	< 10.4
CAWW- 4111	12/14/2022	< 162	< 2.2	< 3.9	< 1.9	< 2.0	< 3.8	< 3.1	< 2.5	< 2.1	< 1.8
					Location: CA-WWA-937D						
CAWW- 113	1/13/2022	< 162	< 3.1	< 4.3	< 3.7	< 3.2	< 3.9	< 3.3	< 3.8	< 3.2	< 2.9
CAWW- 365	2/15/2022	206 ± 86	< 2.6	< 3.3	< 2.8	< 1.9	< 5.0	< 2.5	< 2.7	< 3.7	< 5.0
CAWW- 546	3/15/2022	< 171	< 2.5	< 5.8	< 2.1	< 3.4	< 5.0	< 2.8	< 3.3	< 2.8	< 3.4
CAWW- 914	4/12/2022	225 ± 92	< 2.5	< 5.8	< 4.2	< 1.7	< 5.7	< 3.4	< 3.8	< 2.7	< 5.5
CAWW- 1336	5/11/2022	212 ± 90	< 1.2	< 2.6	< 1.3	< 1.1	< 2.0	< 2.4	< 1.1	< 1.0	< 9.3
CAWW- 1862	6/15/2022	196 ± 86	< 2.3	< 6.2	< 2.9	< 1.5	< 2.3	< 2.7	< 2.9	< 2.9	< 5.1
CAWW- 2201	7/13/2022	196 ± 97	< 4.0	< 5.2	< 5.9	< 2.9	< 9.7	< 3.9	< 5.8	< 5.5	< 3.3
CAWW- 2569	8/16/2022	193 ± 94	< 3.1	< 8.9	< 3.5	< 1.6	< 4.9	< 3.5	< 4.2	< 3.5	< 2.9
CAWW- 2955	9/12/2022	282 ± 90	< 4.9	< 7.2	< 2.6	< 4.0	< 6.0	< 5.2	< 5.4	< 4.3	< 3.7
CAWW- 3438	10/14/2022	225 ± 90	< 2.3	< 3.9	< 1.5	< 1.1	< 3.2	< 2.6	< 2.0	< 2.2	< 2.6
CAWW- 3789	11/15/2022	188 ± 86	< 2.6	< 6.2	< 1.7	< 2.7	< 3.2	< 4.6	< 3.8	< 2.3	< 3.5
CAWW- 4108	12/14/2022	201 ± 89	< 5.8	< 4.3	< 3.7	< 3.3	< 4.9	< 5.5	< 5.2	< 5.8	< 3.0

Table 8. Wells (non-potable), analyses for tritium and gamma-emitting isotopes.

Lab Code	Collection Date	Concentration (pCi/L) ^{3}H	^{54}Mn	^{59}Fe	^{58}Co	^{60}Co	^{65}Zn	$^{95}ZrNb$	^{134}Cs	^{137}Cs	$^{140}BaLa$
					Location: CA-WWA-939R						
CAWW- 118	1/14/2022	316 ± 94	< 2.9	< 6.4	< 3.1	< 2.3	< 4.9	< 3.1	< 2.7	< 2.8	< 6.1
CAWW- 364	2/15/2022	569 ± 104	< 2.5	< 3.3	< 3.7	< 1.2	< 3.7	< 3.2	< 2.8	< 2.5	< 4.6
CAWW- 547	3/15/2022	571 ± 110	< 2.1	< 3.6	< 2.0	< 1.9	< 4.3	< 3.4	< 2.7	< 2.4	< 3.1
CAWW- 915	4/12/2022	526 ± 106	< 2.2	< 5.0	< 2.2	< 2.3	< 4.4	< 3.8	< 3.1	< 3.0	< 7.7
CAWW- 1340	5/13/2022	1010 ± 125 [a]	< 1.1	< 3.1	< 1.5	< 0.5	< 2.5	< 3.3	< 1.0	< 1.2	< 27 [b]
CAWW- 1863	6/14/2022	931 ± 120	< 4.5	< 6.2	< 4.2	< 2.8	< 8.2	< 5.1	< 4.8	< 5.2	< 4.0
CAWW- 2204	7/13/2022	828 ± 123 [c]	< 4.1	< 8.6	< 3.5	< 3.7	< 6.7	< 4.4	< 5.0	< 3.7	< 2.2
CAWW- 2566	8/10/2022	604 ± 113	< 2.4	< 5.9	< 2.6	< 4.9	< 5.7	< 5.3	< 4.5	< 4.1	< 6.8
CAWW- 2956	9/12/2022	834 ± 115	< 3.3	< 7.4	< 2.7	< 2.9	< 3.0	< 4.3	< 3.8	< 5.1	< 3.6
CAWW- 3439	10/14/2022	762 ± 115	< 2.5	< 1.9	< 1.9	< 1.6	< 1.9	< 1.9	< 2.0	< 2.0	< 3.5
CAWW- 3790	11/15/2022	482 ± 101	< 2.1	< 3.6	< 2.6	< 1.6	< 1.8	< 2.7	< 2.5	< 3.9	< 4.7
CAWW- 4109	12/14/2022	580 ± 107	< 4.4	< 3.3	< 2.4	< 2.7	< 3.2	< 3.8	< 3.5	< 3.4	< 4.9
					Location: CA-WWA-940						
CAWW- 114	1/13/2022	< 162	< 2.2	< 6.6	< 2.1	< 2.0	< 3.7	< 2.6	< 2.9	< 1.5	< 6.0
CAWW- 363	2/15/2022	250 ± 88	< 3.9	< 6.2	< 3.7	< 2.0	< 5.5	< 2.8	< 3.7	< 2.5	< 6.1
CAWW- 548	3/15/2022	178 ± 92	< 3.5	< 6.3	< 3.8	< 3.8	< 3.0	< 2.6	< 4.0	< 2.6	< 5.0
CAWW- 912	4/12/2022	251 ± 93	< 2.6	< 8.4	< 2.3	< 2.7	< 3.3	< 6.4	< 3.8	< 3.4	< 6.3
CAWW- 1337	5/11/2022	335 ± 96	< 1.1	< 4.0	< 0.7	< 0.8	< 2.1	< 2.4	< 0.9	< 1.0	< 14.4
CAWW- 1864	6/15/2022	345 ± 94	< 2.2	< 5.0	< 2.3	< 1.2	< 2.9	< 3.4	< 2.5	< 3.0	< 9.1
CAWW- 2203	7/13/2022	290 ± 102	< 5.7	< 6.9	< 6.5	< 4.6	< 7.7	< 7.4	< 5.7	< 5.1	< 5.0
CAWW- 2565	8/9/2022	316 ± 100	< 3.3	< 6.0	< 5.3	< 3.2	< 5.3	< 6.2	< 4.2	< 3.5	< 3.6
CAWW- 2957	9/15/2022	188 ± 85	< 4.7	< 7.8	< 6.6	< 3.2	< 10.3	< 5.6	< 6.7	< 4.1	< 3.6
CAWW- 3440	10/14/2022	255 ± 92	< 1.8	< 4.4	< 1.8	< 1.8	< 3.4	< 2.4	< 2.2	< 2.4	< 3.7
CAWW- 3786	11/14/2022	303 ± 92	< 4.9	< 8.2	< 6.2	< 5.2	< 7.6	< 6.0	< 6.2	< 4.5	< 9.1
CAWW- 4106	12/14/2022	173 ± 87	< 2.3	< 3.6	< 1.6	< 2.2	< 2.4	< 2.9	< 2.3	< 2.7	< 3.3

[a] Recount 1035 ± 134 pCi/L; Reanalysis 1123 ± 137 pCi/L

[b] Unable to reach LLD due t late count (CR 202204693).

[c] For hard-to-detect analyses results see Table 8a, page 8-9.

Table 8. Wells (non-potable), analyses for tritium and gamma-emitting isotopes.

Lab Code	Collection Date	Concentration (pCi/L) ^{3}H	^{54}Mn	^{59}Fe	^{58}Co	^{60}Co	^{65}Zn	$^{95}ZrNb$	^{134}Cs	^{137}Cs	$^{140}BaLa$
					Location: CA-WWA-941						
CAWW- 116	1/14/2022	< 162	< 2.5	< 8.8	< 2.6	< 2.0	< 3.3	< 3.0	< 3.0	< 3.2	< 7.0
CAWW- 366	2/15/2022	220 ± 87	< 3.2	< 3.1	< 2.8	< 2.5	< 5.6	< 5.8	< 3.7	< 3.6	< 4.0
CAWW- 549	3/15/2022	< 171	< 2.5	< 4.2	< 3.1	< 1.9	< 4.9	< 4.2	< 3.5	< 2.4	< 4.6
CAWW- 913	4/12/2022	< 169	< 4.1	< 7.7	< 3.9	< 4.0	< 9.8	< 7.9	< 4.5	< 4.0	< 11.9
CAWW- 1338	5/11/2022	314 ± 95	< 1.0	< 4.2	< 1.4	< 0.8	< 2.4	< 1.9	< 1.1	< 1.2	< 8.1
CAWW- 1865	6/16/2022	177 ± 85	< 1.6	< 5.0	< 2.2	< 1.5	< 2.7	< 2.9	< 1.7	< 1.8	< 6.8
CAWW- 2202	7/13/2022	< 166	< 4.8	< 1.0	< 5.9	< 4.5	< 8.8	< 3.3	< 5.4	< 4.7	< 7.8
CAWW- 2568	8/9/2022	< 159	< 1.7	< 4.9	< 2.9	< 2.8	< 4.5	< 2.6	< 2.1	< 1.8	< 5.8
CAWW- 2958	9/15/2022	< 160	< 6.0	< 10.3	< 3.6	< 3.8	< 7.1	< 7.0	< 5.7	< 6.0	< 9.3
CAWW- 3441	10/14/2022	166 ± 87	< 2.6	< 4.5	< 2.3	< 1.6	< 3.1	< 2.0	< 2.7	< 1.4	< 4.9
CAWW- 3787	11/14/2022	167 ± 85	< 6.3	< 5.6	< 5.0	< 5.6	< 9.0	< 9.0	< 5.3	< 5.9	< 9.5
CAWW- 4107	12/14/2022	< 162	< 2.2	< 3.7	< 2.6	< 6.1	< 6.1	< 4.5	< 3.0	< 5.2	< 4.0
					Location: CA-WWA-GWS						
CAWW- 117	1/14/2022	< 162	< 1.5	< 5.9	< 2.5	< 2.0	< 3.0	< 2.4	< 3.6	< 3.4	< 6.5
CAWW- 362	2/15/2022	231 ± 88	< 2.4	< 5.4	< 3.6	< 3.1	< 5.5	< 2.8	< 2.9	< 2.2	< 5.4
CAWW- 551	3/15/2022	234 ± 94	< 2.1	< 4.6	< 2.7	< 2.1	< 3.7	< 3.6	< 2.6	< 1.6	< 5.9
CAWW- 911	4/12/2022	303 ± 96	< 2.8	< 8.0	< 2.4	< 2.2	< 2.9	< 4.2	< 3.8	< 4.2	< 7.3
CAWW- 1339	5/11/2022	1841 ± 153 [a]	< 2.9	< 17.2	< 4.8	< 6.3	< 4.9	< 9.7	< 5.8	< 6.3	< 14.9
CAWW- 1866	6/15/2022	6102 ± 251 [b]	< 1.5	< 3.0	< 1.6	< 1.8	< 3.2	< 2.6	< 1.7	< 2.0	< 4.1
CAWW- 2181	6/15/2022	6566 ± 262 [c]	< 1.8	< 3.2	< 2.1	< 1.6	< 3.1	< 2.6	< 1.7	< 1.9	< 6.7
CAWW- 2200	7/13/2022	1817 ± 156 [d]	< 6.2	< 4.5	< 3.9	< 2.0	< 4.7	< 6.1	< 5.6	< 5.2	< 4.5
CAWW- 2567	8/10/2022	559 ± 111	< 4.5	< 6.3	< 3.9	< 2.7	< 5.5	< 4.7	< 4.1	< 4.8	< 5.9
CAWW- 2953	9/12/2022	551 ± 103	< 4.2	< 11.5	< 4.5	< 3.5	< 5.1	< 3.7	< 4.6	< 4.3	< 4.8
CAWW- 3442	10/14/2022	730 ± 113	< 1.4	< 5.0	< 2.2	< 1.7	< 4.8	< 1.3	< 2.2	< 1.5	< 2.8
CAWW- 3785	11/14/2022	184 ± 86	< 5.1	< 7.9	< 5.1	< 4.5	< 4.7	< 4.2	< 5.7	< 4.3	< 9.4
CAWW- 4112	12/14/2022	395 ± 99	< 1.4	< 4.9	< 2.2	< 6.1	< 4.6	< 2.5	< 3.1	< 5.6	< 4.4

[a] Recount 1758 ± 157 pCi/L; Reanalysis 1805 ± 159 pCi/L

[b] Recount 6279 ± 260 pCi/L; Reanalysis 6134 ± 257 pCi/L

[c] Station Duplicate.

[d] For hard-to-detect analyses results see Table 8a, page 8-9.

Table 8. Wells (non-potable), analyses for tritium and gamma-emitting isotopes.

Lab Code	Collection Date	Concentration (pCi/L) ^{3}H	^{54}Mn	^{59}Fe	^{58}Co	^{60}Co	^{65}Zn	$^{95}ZrNb$	^{134}Cs	^{137}Cs	$^{140}BaLa$
						Location: ISFSI Sump					
CAWW- 321	2/9/2022	163 ± 84				NR[a]					
CAWW- 1389	5/13/2022	181 ± 86 [b]				NR[a]					
CAWW- 2625	8/23/2022	252 ± 91 [c]				NR[a]					
CAWW- 3985	11/22/2022	201 ± 86				NR[a]					
						Location: CA-WWA-U1MW-004					
CAWW- 322	2/8/2022	< 161	< 2.5	< 5.2	< 2.4	< 1.4	< 4.7	< 3.6	< 2.9	< 2.6	< 6.7
CAWW- 1380	5/15/2022	< 158	< 1.4	< 5.7	< 1.9	< 1.5	< 2.9	< 3.7	< 1.4	< 1.3	< 14.8
CAWW- 2639	8/19/2022	< 164	< 2.7	< 5.8	< 2.9	< 1.9	< 5.6	< 2.9	< 2.5	< 1.6	< 3.3
CAWW- 4005	11/25/2022	< 157	< 4.1	< 8.1	< 4.6	< 2.5	< 7.8	< 5.3	< 3.8	< 4.2	< 11.8
						Location: CA-WWA-U1MW-005					
CAWW- 326	2/9/2022	< 161	< 1.9	< 6.0	< 4.0	< 1.8	< 3.8	< 3.7	< 3.8	< 2.2	< 4.8
CAWW- 1381	5/15/2022	< 158	< 1.7	< 6.0	< 1.7	< 0.8	< 2.9	< 3.7	< 1.7	< 1.5	< 13.0
CAWW- 2641	8/19/2022	< 164	< 3.1	< 8.1	< 4.3	< 3.2	< 5.2	< 4.2	< 3.7	< 3.5	< 6.4
CAWW- 4006	11/25/2022	159 ± 83 [d]	< 2.3	< 5.6	< 4.3	< 2.1	< 5.7	< 3.0	< 2.7	< 2.7	< 14.4
CAWW- 515 [e]	11/25/2022	< 167	< 1.9	< 10.9	< 2.6	< 3.0	< 3.5	< 8.2	< 1.5	< 2.3	< 324
						Location: CA-WWA-U1MW-006					
CAWW- 327	2/9/2022	< 161	< 3.4	< 5.5	< 4.0	< 2.4	< 4.5	< 3.4	< 4.1	< 4.3	< 5.3
CAWW- 1382	5/15/2022	179 ± 88 [f]	< 1.3	< 1.9	< 1.1	< 0.9	< 2.5	< 2.5	< 1.1	< 1.4	< 12.6
CAWW- 2642	8/18/2022	< 164	< 1.4	< 1.7	< 1.0	< 1.3	< 2.7	< 2.0	< 1.1	< 1.0	< 3.0
CAWW- 4002	11/21/2022	< 157	< 2.6	< 4.2	< 2.9	< 2.1	< 6.0	< 3.0	< 2.3	< 3.0	< 6.5

[a] NR - Not required. Analysis for gamma-emitting isotopes not required by the ODCM.

[b] Recount <166 pCi/L, Reanalysis <166 pCi/L.

[c] Recount 206 ± 90 pCi/L

[d] Reanalysis result < 164 pCi/L

[e] Backup sample, received 3/9/23. Unable to reach BaLa-140 LLD due to sample age.

[f] Reanalysis result < 167 pCi/L.

Table 8. Wells (non-potable), analyses for tritium and gamma-emitting isotopes.

Lab Code	Collection Date	Concentration (pCi/L) ^{3}H	^{54}Mn	^{59}Fe	^{58}Co	^{60}Co	^{65}Zn	$^{95}ZrNb$	^{134}Cs	^{137}Cs	$^{140}BaLa$
					Location: CA-WWA-U1MW-010						
CAWW- 323	2/8/2022	< 161	< 2.1	< 5.1	< 2.8	< 1.0	< 4.0	< 2.6	< 2.6	< 2.3	< 2.5
CAWW- 1383	5/13/2022	< 158	< 1.2	< 3.5	< 1.7	< 0.8	< 1.2	< 2.6	< 1.1	< 1.2	< 10.1
CAWW- 2643	8/18/2022	< 164	< 1.8	< 3.8	< 1.5	< 1.5	< 3.5	< 2.2	< 1.8	< 1.6	< 2.3
CAWW- 4003	11/21/2022	< 157	< 2.8	< 5.1	< 1.9	< 5.8	< 6.3	< 5.3	< 3.3	< 4.7	< 6.6
					Location: CA-WWA-U1MW-013 (New Location)						
CAWW- 1384	5/13/2022	< 158	< 1.1	< 2.3	< 1.5	< 0.9	< 2.5	< 2.7	< 1.1	< 1.3	< 10.9
CAWW- 2644	8/18/2022	< 164	< 2.3	< 12.6	< 6.8	< 3.9	< 4.6	< 3.6	< 4.9	< 4.8	< 9.3
CAWW- 4004	11/21/2022	< 157	< 2.3	< 7.4	< 2.9	< 5.3	< 5.6	< 4.3	< 2.9	< 5.0	< 7.4
					Location: CA-WWA-U1MW-014						
CAWW- 329	2/9/2022	206 ± 86	< 3.1	< 7.4	< 2.9	< 2.8	< 7.9	< 3.2	< 4.2	< 3.5	< 6.2
CAWW- 1385	5/16/2022	323 ± 96	< 1.3	< 2.8	< 1.0	< 0.9	< 2.5	< 2.6	< 1.2	< 1.1	< 12.0
CAWW- 2645	8/19/2022	289 ± 94	< 2.3	< 5.3	< 2.4	< 1.4	< 2.9	< 2.6	< 2.4	< 2.4	< 6.1
CAWW- 3998	11/22/2022	291 ± 90	< 4.6	< 9.7	< 6.3	< 3.5	< 6.5	< 5.0	< 3.9	< 3.7	< 13.1
					Location: CA-WWA-U1MW-015						
CAWW- 325	2/8/2022	< 161	< 7.5	< 10.0	< 7.5	< 6.5	< 15.4	< 12.2	< 6.6	< 6.0	< 10.7
CAWW- 1386	5/15/2022	< 158	< 1.5	< 4.3	< 1.7	< 1.5	< 3.1	< 3.4	< 1.4	< 1.3	< 10.2
CAWW- 2646	8/19/2022	< 164	< 2.4	< 3.8	< 2.2	< 2.8	< 4.8	< 3.5	< 2.4	< 2.2	< 8.0
CAWW- 3999	11/22/2022	< 157	< 2.6	< 4.6	< 3.1	< 1.8	< 4.7	< 3.6	< 2.9	< 2.6	< 3.2
					Location: CA-WWA-U1MW-016						
CAWW- 324	2/8/2022	< 161	< 1.8	< 2.9	< 2.0	< 2.2	< 2.7	< 3.4	< 2.7	< 2.8	< 5.5
CAWW- 1387	5/15/2022	< 158	< 1.2	< 2.7	< 1.5	< 0.7	< 2.5	< 2.0	< 1.1	< 1.2	< 8.2
CAWW- 2647	8/22/2022	< 164	< 1.0	< 1.7	< 1.2	< 0.8	< 2.2	< 1.8	< 1.1	< 1.3	< 2.6
CAWW- 4007	11/25/2022	198 ± 85 [a]	< 2.2	< 4.0	< 4.1	< 2.0	< 3.6	< 3.8	< 3.4	< 3.3	< 11.7
CAWW- 516 [b]	11/25/2022	< 157	< 1.4	< 9.5	< 2.7	< 2.9	< 3.8	< 7.6	< 1.5	< 2.3	< 297
					Location: CA-WWA-U1MW-17						
CAWW- 330	2/9/2022	< 161	< 1.7	< 4.6	< 2.6	< 0.9	< 5.8	< 3.1	< 2.9	< 3.1	< 5.9
CAWW- 1388	5/16/2022	< 158	< 1.4	< 4.1	< 1.3	< 1.3	< 2.6	< 3.2	< 1.3	< 1.5	< 11.0
CAWW- 2648	8/19/2022	< 164	< 1.5	< 3.2	< 1.3	< 1.1	< 2.6	< 2.3	< 1.6	< 1.7	< 4.0
CAWW- 4001	11/22/2022	< 157	< 2.8	< 7.0	< 1.7	< 5.0	< 2.2	< 3.5	< 2.4	< 4.6	< 7.5

[a] Recount = < 158 pCi/L.

[b] Backup sample received 3/9/23. Unable to reach BaLa-140 LLD due to sample age.

Table 8. Wells (non-potable), analyses for tritium and gamma-emitting isotopes.

Lab Code	Collection Date	Concentration (pCi/L) ^{3}H	^{54}Mn	^{59}Fe	^{58}Co	^{60}Co	^{65}Zn	$^{95}ZrNb$	^{134}Cs	^{137}Cs	$^{140}BaLa$
		Location: CA-WWA-U1MW-18									
CAWW- 319	2/9/2022	< 161					NR[a]				
CAWW- 1390	5/16/2022	< 162					NR[a]				
CAWW- 2626	8/19/2022	< 163					NR[a]				
CAWW- 3990	11/22/2022	< 157					NR[a]				
		Location: CA-WWA-U1MW-19									
CAWW- 320	2/9/2022	< 161					NR[a]				
CAWW- 1391	5/16/2022	< 162					NR[a]				
CAWW- 2627	8/19/2022	< 163					NR[a]				
CAWW- 3988	11/22/2022	< 157					NR[a]				
		Location: CA-WWA-U1MW-20									
CAWW- 318	2/8/2022	< 161					NR[a]				
CAWW- 1392	5/16/2022	199 ± 87 [b]					NR[a]				
CAWW- 2628	8/22/2022	< 163					NR[a]				
CAWW- 3989	11/22/2022	< 157					NR[a]				
		Location: CA-WWA-U1MW-31									
CAWW- 309	2/8/2022	376 ± 95					NR[a]				
CAWW- 1393	5/12/2022	211 ± 87					NR[a]				
CAWW- 2629	8/17/2022	398 ± 98					NR[a]				
CAWW- 3991	11/8/2022	458 ± 99					NR[a]				
		Location: CA-WWA-U1MW-34									
CAWW- 310	2/8/2022	174 ± 85					NR[a]				
CAWW- 1394	5/12/2022	195 ± 86					NR[a]				
CAWW- 2630	8/17/2022	271 ± 92 [c]					NR[a]				
CAWW- 3995	11/21/2022	240 ± 88					NR[a]				

[a] "NR" = Not required. Analyses for gamma-emitting isotopes not required by the ODCM.

[b] Recount <166 pCi/L, Reanalysis <166 pCi/L.

[c] Recount = 240 ± 92 pCi/L.

Table 8. Wells (non-potable), analyses for tritium and gamma-emitting isotopes.

Lab Code	Collection Date	Concentration (pCi/L) ^{3}H	^{54}Mn	^{59}Fe	^{58}Co	^{60}Co	^{65}Zn	$^{95}ZrNb$	^{134}Cs	^{137}Cs	$^{140}BaLa$
		Location: CA-WWA-U1MW-36									
CAWW- 311	2/8/2022	216 ± 87					NR[a]				
CAWW- 1396	5/12/2022	251 ± 89					NR[a]				
CAWW- 2631	8/17/2022	280 ± 92					NR[a]				
CAWW- 3992	11/8/2022	280 ± 90					NR[a]				
		Location: CA-WWA-U1MW-39									
CAWW- 313	2/8/2022	< 161					NR[a]				
CAWW- 1397	5/12/2022	< 162					NR[a]				
CAWW- 2632	8/17/2022	< 163					NR[a]				
CAWW- 3984	11/21/2022	< 157					NR[a]				
		Location: CA-WWA-U1MW-47									
	2/8/2022						ND[b]				
CAWW- 1398	5/16/2022	235 ± 88									
		Location: CA-WWA-U1MW-58									
CAWW- 312	2/8/2022	273 ± 90					NR[a]				
CAWW- 1399	5/12/2022	291 ± 91					NR[a]				
CAWW- 2634	8/17/2022	183 ± 87					NR[a]				
CAWW- 3993	11/8/2022	266 ± 89					NR[a]				
		Location: CA-WWA-U1MW-59									
CAWW- 314	2/8/2022	< 161					NR[a]				
CAWW- 1400	5/13/2022	< 162					NR[a]				
CAWW- 2635	8/18/2022	< 163					NR[a]				
CAWW- 3986	11/21/2022	< 157					NR[a]				

[a] "NR" = Not required. Analyses for gamma-emitting isotopes not required by the ODCM.

[a] "ND" = No data, see Part II, Table 5.5, Missed Collections and Analyses.

Table 8. Wells (non-potable), analyses for tritium and gamma-emitting isotopes.

Lab Code	Collection Date	Concentration (pCi/L) ^{3}H	^{54}Mn	^{59}Fe	^{58}Co	^{60}Co	^{65}Zn	$^{95}ZrNb$	^{134}Cs	^{137}Cs	$^{140}BaLa$
						Location: CA-WWA-U2MW-2S					
CAWW- 315	2/8/2022	< 161					NR[a]				
CAWW- 1401	5/16/2022	< 162					NR[a]				
CAWW- 2636	8/23/2022	< 163					NR[a]				
CAWW- 3996	11/21/2022	< 157					NR[a]				
						Location: CA-WWA-U2MW-5S					
CAWW- 316	2/8/2022	< 161					NR[a]				
CAWW- 1402	5/16/2022	< 162					NR[a]				
CAWW- 2633	8/22/2022	< 163					NR[a]				
CAWW- 3987	11/22/2022	< 157					NR[a]				
						Location: CA-WWA-U2MW-8					
CAWW- 307	2/8/2022	< 161					NR[a]				
CAWW- 1403	5/12/2022	< 162					NR[a]				
CAWW- 2637	8/17/2022	< 163					NR[a]				
CAWW- 3994	11/21/2022	< 157					NR[a]				
						Location: CA-WWA-U2MW-16					
CAWW- 317	2/8/2022	< 161					NR[a]				
CAWW- 1404	5/16/2022	< 162					NR[a]				
CAWW- 2638	8/22/2022	< 163					NR[a]				
CAWW- 3997	11/25/2022	< 157					NR[a]				
						Location: CA-WWA-F-005					
CAWW- 119	1/14/2022	< 162	< 2.5	< 8.5	< 2.3	< 2.5	< 4.5	< 4.2	< 3.2	< 2.8	< 7.0
CAWW- 730	4/3/2022	< 166	< 2.6	< 4.2	< 3.0	< 2.3	< 4.8	< 4.4	< 3.1	< 3.5	< 4.1
CAWW- 1944	6/27/2022	< 161	< 0.8	< 2.7	< 1.3	< 1.0	< 2.2	< 1.6	< 1.1	< 1.2	< 2.9
CAWW- 3436	10/13/2022	168 ± 87 [b]	< 1.6	< 3.8	< 1.3	< 0.9	< 3.9	< 1.4	< 1.7	< 1.9	< 1.9
CAWW- 514 [c]	10/13/2022	< 169	< 2.2	< 19.7	< 4.0	< 2.9	< 4.3	< 13.1	< 1.5	< 2.3	< 5130
						Location: CA-WWA-F-015					
CAWW- 120	1/14/2022	< 162	< 2.2	< 3.9	< 2.0	< 1.9	< 3.5	< 2.5	< 3.3	< 2.8	< 7.5
CAWW- 731	4/3/2022	< 166	< 4.7	< 6.8	< 4.5	< 3.4	< 6.5	< 3.6	< 4.8	< 5.5	< 5.3
CAWW- 1945	6/27/2022	< 161	< 3.7	< 8.1	< 5.7	< 3.8	< 7.9	< 5.3	< 5.6	< 3.6	< 6.6
CAWW- 3434	10/13/2022	< 157	< 1.6	< 4.1	< 1.6	< 1.6	< 3.2	< 2.2	< 1.7	< 1.5	< 2.9

[a] "NR" = Not required. Analyses for gamma-emitting isotopes not required by the ODCM.

[b] Reanalysis result < 166 pCi/L.

[c] Backup sample; received 3/9/23. Unable to reach BaLa-140 LLD due to sample age.

Table 8a. Wells (non-potable), analyses for hard to detect isotopes.
Collection: Special

Lab Code	Collection Date	Concentration (pCi/L)													
		^{55}Fe	^{63}Ni	^{89}Sr	^{90}Sr	^{236}Pu	^{237}Np	^{238}Pu	$^{239/240}$Pu	^{241}Pu	^{241}Am	^{242}Cm	^{244}Cm	^{248}Cm	Location
CAWW- 2200	7/13/2022	< 501	< 70.8	< 0.5	< 0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 55.0	< 0.5	< 0.2	< 0.2	< 0.2	CA-GWS
CAWW- 2204	7/13/2022	< 516	< 70.8	< 0.4	< 0.4	< 0.1	< 0.1	< 0.1	< 0.1	< 57.5	< 0.1	< 0.1	< 0.1	< 0.1	CA-MW-939R

Table 9. Shoreline sediments, analyses for gamma-emitting isotopes.

Collection: Semiannually
Units: pCi/kg dry

Location		CA-AQS-A	
Lab Code	Req. LLD	CASS- 1100	CASS- 3157
Date Collected	-	04-14-22	09-27-22
K-40	-	12792 ± 550	14150 ± 658
Mn-54	-	< 16.5	< 22.4
Fe-59	-	< 72.0	< 74.8
Co-58	-	< 27.5	< 31.5
Co-60	-	< 16.1	< 20.6
Zr-Nb-95	-	< 60.7	< 59.5
Cs-134	150	< 12.2	< 18.9
Cs-137	180	< 16.2	< 22.8
Ba-La-140	-	< 185.6	< 199.6

Location		CA-AQS-C	
Lab Code	Req. LLD	CASS- 1101	CASS- 3158
Date Collected	-	04-14-22	09-27-22
K-40	-	16263 ± 952	14735 ± 716
Mn-54	-	< 28.8	< 32.3
Fe-59	-	< 134.9	< 94.6
Co-58	-	< 36.5	< 27.7
Co-60	-	< 12.9	< 21.3
Zr-Nb-95	-	< 95.1	< 38.2
Cs-134	150	< 30.9	< 20.6
Cs-137	180	< 32.2	< 28.7
Ba-La-140	-	< 346.5	< 160.9

Table 10. Fish, analyses for gamma-emitting isotopes.

Collection: Semiannually

Units: pCi/kg wet

Location		CA-AQF-A				
Lab Code	Req. LLD	CAF- 1089	CAF- 1090	CAF- 1091	CAF- 1092	CAF- 1093
Date Collected		04-14-22	04-14-22	04-14-22	04-14-22	04-14-22
Sample Type		Common Carp	Freshwater Drum	River Carpsucker	Silver Carp	Smallmouth Buffalo
K-40	-	2939 ± 486	2224 ± 362	3282 ± 438	3157 ± 377	2902 ± 420
Mn-54	130	< 28.6	< 15.6	< 13.3	< 11.9	< 17.2
Fe-59	260	< 109.6	< 49.0	< 73.6	< 47.5	< 48.3
Co-58	130	< 41.9	< 20.8	< 28.3	< 29.9	< 24.3
Co-60	130	< 14.7	< 16.4	< 13.9	< 17.7	< 13.3
Zn-65	260	< 49.4	< 19.9	< 29.1	< 38.1	< 56.7
Cs-134	130	< 23.4	< 15.0	< 21.2	< 17.7	< 15.4
Cs-137	150	< 16.9	< 17.3	< 18.6	< 9.8	< 12.4
Lab Code		CAF- 3147	CAF- 3148	CAF- 3149	CAF- 3150	CAF- 3151
Date Collected		09-27-22	09-27-22	09-27-22	09-27-22	09-27-22
Sample Type		Common Carp	River Carpsucker	Silver Carp	Freshwater Drum	Smallmouth Buffalo
K-40	-	3115 ± 364	3258 ± 292	3075 ± 284	2976 ± 327	3263 ± 460
Mn-54	130	< 13.9	< 10.0	< 13.4	< 15.2	< 18.4
Fe-59	260	< 53.6	< 42.2	< 38.3	< 42.4	< 61.1
Co-58	130	< 26.0	< 16.0	< 10.5	< 18.5	< 22.8
Co-60	130	< 13.9	< 9.1	< 9.0	< 14.7	< 14.2
Zn-65	260	< 30.3	< 25.7	< 25.9	< 28.8	< 54.5
Cs-134	130	< 17.4	< 12.6	< 11.6	< 12.9	< 21.8
Cs-137	150	< 14.6	< 11.1	< 10.9	< 12.9	< 17.5

Table 10. Fish, analyses for gamma-emitting isotopes.

Collection: Semiannually
Units: pCi/kg wet

Location		CA-AQF-C				
Lab Code	Req. LLD	CAF- 1094	CAF- 1095	CAF- 1096	CAF- 1097	CAF- 1098
Date Collected		04-14-22	04-14-22	04-14-22	04-14-22	04-14-22
Sample Type		Common Carp	Freshwater Drum	River Carpsucker	Silver Carp	Smallmouth Buffalo
K-40	-	2804 ± 426	3355 ± 458	2619 ± 471	3049 ± 361	3034 ± 418
Mn-54	130	< 23.6	< 20.6	< 21.9	< 17.2	< 18.1
Fe-59	260	< 72.5	< 52.8	< 48.6	< 43.4	< 57.3
Co-58	130	< 32.9	< 18.5	< 10.7	< 22.1	< 28.3
Co-60	130	< 13.2	< 16.3	< 17.7	< 10.3	< 10.2
Zn-65	260	< 22.2	< 38.5	< 56.9	< 32.5	< 38.0
Cs-134	130	< 22.9	< 17.4	< 23.7	< 18.0	< 19.6
Cs-137	150	< 18.7	< 21.5	< 21.1	< 11.2	< 16.0
Lab Code		CAF- 3152	CAF- 3153	CAF- 3154	CAF- 3155	CAF- 3156
Date Collected		09-27-22	09-27-22	09-27-22	09-27-22	09-27-22
Sample Type		Common Carp	River Carpsucker	Silver Carp	Freshwater Drum	Smallmouth Buffalo
K-40	-	3152 ± 344	3063 ± 389	2933 ± 380	2989 ± 339	2928 ± 385
Mn-54	130	< 13.6	< 17.6	< 16.0	< 10.5	< 16.4
Fe-59	260	< 36.3	< 49.7	< 35.1	< 34.6	< 76.6
Co-58	130	< 17.0	< 15.6	< 14.0	< 18.2	< 10.2
Co-60	130	< 13.6	< 12.9	< 10.7	< 16.3	< 14.2
Zn-65	260	< 27.6	< 20.0	< 18.7	< 30.3	< 49.8
Cs-134	130	< 13.7	< 17.7	< 17.2	< 14.0	< 19.2
Cs-137	150	< 11.3	< 16.0	< 11.8	< 16.7	< 16.0

Table 11a. Direct Radiation (quarterly exposure)

Location	Gamma Dose (mrem/90 days)			
	QTR 1	QTR 2	QTR 3	QTR 4
CA-IDM-1A	15.20	14.50	14.27	16.38
CA-IDM-3	16.48	15.92	15.48	16.58
CA-IDM-5	14.61	12.73	12.89	13.90
CA-IDM-6	15.50	13.76	15.35	15.10
CA-IDM-7	16.15	14.61	14.95	16.25
CA-IDM-9	15.10	14.01	13.46	15.42
CA-IDM-10	17.19	15.45	15.10	17.19
CA-IDM-11A	16.27	14.99	15.52	17.57
CA-IDM-14	15.67	15.15	14.32	15.51
CA-IDM-17	15.42	14.24	14.35	14.87
CA-IDM-18A	15.54	14.46	15.12	15.64
CA-IDM-20	16.29	15.45	15.37	15.79
CA-IDM-21	15.66	15.23	14.59	15.38
CA-IDM-22A	12.46	11.99	12.56	12.29
CA-IDM-23	16.18	15.91	15.86	16.86
CA-IDM-26 (C)	11.57	10.09	10.26	11.07
CA-IDM-27 (C)	16.75	15.61	15.77	17.06
CA-IDM-30A	15.98	14.56	14.88	15.31
CA-IDM-31A	16.39	15.87	15.17	16.72
CA-IDM-32	16.42	15.56	16.89	16.93
CA-IDM-32A	15.05	14.10	13.99	14.89
CA-IDM-33	14.81	14.10	15.08	15.46
CA-IDM-34	15.72	13.61	14.23	14.87
CA-IDM-35	14.31	13.22	13.97	14.01
CA-IDM-36	14.41	14.21	13.34	14.38
CA-IDM-37	15.70	14.51	15.75	16.47
CA-IDM-38	11.34	10.28	10.32	10.76
CA-IDM-39	15.32	14.10	13.84	15.04
CA-IDM-39A	15.12	14.35	14.60	15.09
CA-IDM-40	15.90	14.88	15.94	16.53
CA-IDM-41	14.63	13.76	14.34	14.71
CA-IDM-42	13.51	12.69	12.91	13.53
CA-IDM-43	15.00	13.91	15.08	15.84
CA-IDM-44	15.26	14.00	15.45	16.12
CA-IDM-45	13.85	13.50	13.03	13.25
CA-IDM-46	16.20	15.21	15.24	16.51
CA-IDM-47	15.54	14.45	14.53	14.77
CA-IDM-48	16.39	15.19	15.75	15.58
CA-IDM-49	14.82	NS[a]	13.90	14.77
CA-IDM-50	15.41	13.98	14.88	15.50
CA-IDM-51A	17.10	16.14	15.73	16.98
CA-IDM-52	16.35	15.19	15.35	16.28
CA-IDM-60 (C)	15.02	14.41	15.73	16.31
CA-IDM-61	15.18	13.94	13.93	14.62

[a] "NS" = No sample; see Part I, Table 5.5, Missed collections and Analyses (CR202204548).

Table 11b. Direct Radiation Neutron (quarterly exposure)

Location	Neutron Dose (mrem/90 days)			
	QTR 1	QTR 2	QTR 3	QTR 4
CA-IDM-60N (C)	0.0 ± 0.9	0.0 ± 1.0	0.0 ± 1.1	0.0 ± 1.8
CA-IDM-61N	0.0 ± 1.9	0.0 ± 0.9	0.0 ± 1.2	0.0 ± 0.7
CA-IDM-62N	0.0 ± 0.9	0.0 ± 1.3	0.0 ± 0.9	0.0 ± 1.7
CA-IDM-63N	0.0 ± 1.0	0.0 ± 1.3	0.0 ± 0.7	0.0 ± 2.1
CA-IDM-64N	0.0 ± 0.6	0.0 ± 1.4	0.0 ± 1.1	0.0 ± 1.4