Wolf Creek
Nuclear Operating Corporation

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April 26, 2020
RA 20-0042

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

Subject: Docket No. 50-482: 2019 Annual Radiological Environmental Operating Report

To Whom It May Concern:

The purpose of this letter is to submit the enclosed Annual Radiological Environmental Operating Report, which is being submitted pursuant to Wolf Creek Generating Station (WCGS) Technical Specification 5.6.2. This report covers radiological environmental monitoring for WCGS for the period of January 1, 2019, through December 31, 2019.

This letter contains no commitments. If you have any questions concerning this matter, please contact me at (620) 364-4204.

Sincerely,

Ron Benham

Ron Benham

RDB/rlt

Enclosure

cc: S. A. Morris (NRC), w/e
N. O'Keefe (NRC), w/e
B. K. Singal (NRC), w/e
Senior Resident Inspector (NRC), w/e

Enclosure to RA 20-0042

Wolf Creek Generating Station
2019 Annual Radiological Environmental Operating Report

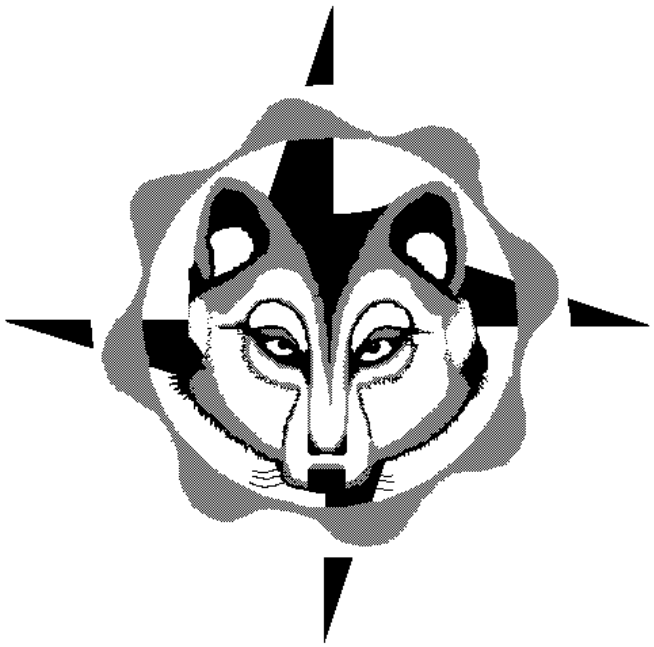
(151 pages including this page)

WOLF CREEK NUCLEAR OPERATING CORPORATION

WOLF CREEK GENERATING STATION

2019 ANNUAL RADIOLOGICAL

ENVIRONMENTAL OPERATING REPORT



March 26, 2020

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EXECUTIVE SUMMARY

Plant-related activation, corrosion, or fission products were not detected during 2019 in air particulate filters, radioiodine canisters, ground water, drinking water, broadleaf vegetation, shoreline sediment, crops, bottom sediment, aquatic vegetation, terrestrial vegetation or soil samples. Activation, corrosion or fission products attributable to plant operation were detected during 2019 in surface water, fish, and deer samples.

Nuclides detected in Radiological Environmental Monitoring Program (REMP) samples were below applicable Nuclear Regulatory Commission (NRC) reporting levels.

Based upon the REMP results, it was concluded station operations had no significant radiological impact on the health and safety of the public or the environment.

INTRODUCTION

The 2019 Annual Radiological Environmental Operating Report for Wolf Creek Generating Station (WCGS) covers the period from January 1 through December 31, 2019. WCGS is located in Coffey County, Kansas, approximately five miles northeast of Burlington, Kansas.

Fuel loading commenced at WCGS on March 12, 1985. The operational phase of the REMP began with initial criticality on May 22, 1985, and the first detectable quantities of radioactivity were reported in plant effluents in June 1985.

This report contains a description of the REMP conducted by Wolf Creek Nuclear Operating Corporation (WCNOC), a discussion of monitoring program results, the revisions or changes to the program, program deviations, the Interlaboratory Comparison Program and a comparison to the Radioactive Effluent Release Program. The Interlaboratory Comparison Program results, a summary of results in the NRC Branch Technical Position specified format, the individual sample results, and the Land Use Census Report are included as appendices.

I. PROGRAM DESCRIPTION

Radiological environmental monitoring samples were collected according to the schedule in WCGS procedure AP 07B-004, *Offsite Dose Calculation Manual (Radiological Environmental Monitoring Program)*. Radiological environmental monitoring program samples were collected by the WCGS Environmental Management group and were analyzed by Environmental, Inc. Landauer, Inc. processed the environmental optically stimulated luminescence (OSL) dosimeters. Table 1 identifies the exposure pathway/sample type, number of samples and sample locations, sample collection frequency, and the type and frequency of analysis. Table 2 lists the sample location identifiers, distances and directions from the plant. Samples in addition to those required by AP 07B-004 were also obtained and analyzed.

The following is a description of the sampling and analysis program by individual pathways.

A. Airborne Pathway

Low volume air sampling pumps with digital flow meters continuously sampled air through 47 mm glass fiber particulate filters and radioiodine canisters, respectively. The air particulate filters and radioiodine canisters were collected weekly. Gross beta analysis was performed weekly on the air particulate filters. Gamma isotopic analysis was also performed quarterly on

the air particulate filters. Radioiodine canisters were analyzed weekly for I-131.

Air samples were collected from six locations. The indicator locations sampled included 2, 18, 32, 37 and 49. A control location near the intersection of 20th Road and Yearling Road (location 53) was also sampled. Indicator sample locations are shown in Figure 1 and the control sample location is shown in Figure 5.

B. Direct Radiation Pathway

Optically stimulated luminescence (OSL) dosimeters were used continuously at 42 locations during the sample year to measure direct radiation. The OSLs were typically positioned roughly 3 to 4 feet above the ground in plastic thermostat boxes. Three OSLs were placed at each designated location. The OSLs were changed out quarterly and analyzed quarterly for gamma dose. Transit dose was measured and subtracted from the ambient dose. Indicator OSL sample locations are illustrated in Figure 2 and control sample locations are shown in Figure 5. Control sample locations were 39 (Beto Junction) and 53 (near the intersection of 20th Road and Yearling Road).

C. Waterborne Pathway

Gamma isotopic analysis was performed on the water samples. In addition to gamma isotopic analysis, analysis for I-131 was performed monthly on drinking water and quarterly on ground water samples. Gross beta analysis was performed monthly on drinking water samples. Tritium analysis was performed monthly for surface water and quarterly for drinking water. Tritium analysis was also performed quarterly on ground water samples. Four surface water samples from the Coffey County Lake Spillway (SP) location and four surface water samples from the John Redmond Reservoir (JRR) location were also analyzed for Fe-55. The waterborne pathway sample locations are shown in Figures 3 and 5.

Monthly grab samples of surface water were collected from the John Redmond Reservoir (JRR) control location and from the Coffey County Lake Spillway (SP) indicator location.

Quarterly grab samples of ground water were collected from seven wells. Six locations (C-10, C-49, F-1, G-2, J-1 and J-2) located hydrologically down gradient from the site were used as indicator sample locations. Location B-12 located hydrologically up gradient from the site was used as a control location.

Drinking water was sampled at the water treatment facilities in the towns of Iola (indicator sample location IO-DW) and Burlington (control sample location BW-15). The Iola facility is located downstream of the Neosho River-Wolf Creek confluence and the Burlington facility is located upstream of the Neosho River-Wolf Creek confluence. Composite samples were obtained monthly from automatic samplers at each location. The automatic drinking water samplers collected approximately 27 milliliters of water every two hours.

Shoreline sediments were sampled semiannually. Gamma isotopic analyses were performed on the shoreline sediment samples. Shoreline sediment sample locations were the Coffey County Lake discharge cove (DC) indicator location and the John Redmond Reservoir (JRR) control location.

D. Ingestion Pathway

Milk was not collected during the sample year. The Land Use Census did not identify any locations producing milk for human consumption within five miles of the plant.

Fish were sampled semiannually from the indicator sample location Coffey County Lake (CCL) and from the tail waters of John Redmond Reservoir (JRR) control sample location. These sample locations are identified in Figure 4. Gamma isotopic analyses were performed on the boneless meat portions of the fish. Several species of game fish and rough fish were sampled. Fish were also analyzed for tritium.

Broadleaf vegetation samples were collected monthly when available during the growing season. Indicator (A-3, B-1, H-2 and Q-6) location gardens (Figure 4) and a control (D-2) location garden (Figure 5) were sampled. Gamma isotopic analyses were performed on these samples.

Irrigated crop samples were obtained from indicator location (NR-D1) and non-irrigated samples from indicator location (NR-D2) downstream of the confluence of Wolf Creek and the Neosho River. Irrigated crops were also sampled from control location (NR-U1). Gamma isotopic analysis was performed on each sample. Crop sample locations are identified on Figure 5.

E. Additional Samples Collected (not required by AP 07B-004)

Bottom sediment samples were collected semiannually from indicator sample locations at the Discharge Cove (DC), and the control sample location at John Redmond Reservoir (JRR). Gamma isotopic analyses were performed on the bottom sediment samples. Two samples collected from indicator location (DC) were also analyzed for Fe-55. No samples were analyzed for Ni-63, Sr-89 and Sr-90 activity (Hard to Detect Metals). One shoreline sediment sample was collected from indicator sample location at Stringtown Cemetery (SC) as part of a cooperative sampling effort with the Kansas Department of Health and Environment (KDHE). The sample locations are identified on Figure 3.

Aquatic vegetation was collected from indicator locations at the Makeup Discharge Structure (MUDS), Environmental Education Area (EEA) and Stringtown Cemetery (SC). Gamma isotopic analyses were performed on the aquatic vegetation samples. These samples were collected as part of a cooperative sampling effort with the KDHE. The sample locations are identified on Figure 3.

Terrestrial vegetation (grass) was sampled from the Environmental Education Area (EEA) and the Makeup Discharge Structure (MUDS) indicator sample locations. Gamma isotopic analysis was performed on the grass samples. These samples were collected as part of a cooperative sampling effort with the KDHE. The sample locations are identified on Figure 4.

Soil was sampled from the Environmental Education Area (EEA) and Makeup Discharge Structure (MUDS). Gamma isotopic analysis was performed on the soil samples. These samples were collected as part of a cooperative sampling effort with the KDHE. The sample locations are identified on Figure 4.

Turkey was sampled from indicator sample location J4.0. Gamma isotopic analysis and tritium analysis was performed on the turkey sample. This sample was collected as part of a cooperative sampling effort with the KDHE. The sample location is identified on Figure 4.

Deer was sampled from indicator sample location J3.5. Gamma isotopic analysis and tritium analysis was performed on the turkey sample. This sample was collected as part of a cooperative sampling effort with the KDHE. The sample location is identified on Figure 4.

II. DISCUSSION OF RESULTS

Analysis results for pathways are summarized in Appendix B using the format described in Radiological Assessment Branch Technical Position, Revision 1, November 1979 (NRC Generic Letter 79-065). Results for individual samples are listed in Appendix C.

A. Airborne Pathway

Chart 1 graphically illustrates weekly gross beta results for the sample year. Chart 2 represents the gross beta historical airborne smoothed averages of indicator sample locations and control sample locations. Charts 1 and 2 demonstrate how closely the indicator and control sample locations tracked together. Chart 2 reveals a seasonal cyclic trend; the gross beta values peak in the winter months (December or January) and decrease to a low point in the spring months (May or June). This trend is expected and is attributed to seasonal meteorological changes, i.e., changes in prevailing winds and precipitation.

The gross beta results of 2019 were compared to pre-operational monitoring results of 1983 and 1984. The weekly gross beta analyses range for 1983 and 1984 was 0.0064 to 0.084 pCi/m^3. The 2019 weekly gross beta analyses range for indicator locations was 0.007 to 0.048 pCi/m^3. The 2019 weekly gross beta analyses range was within the 1983 and 1984 pre-operational range. Additionally, the annual mean for indicator locations for 2019 (0.023 pCi/m^3) was lower than the annual mean for 1983 (0.032 pCi/m^3).

The gross beta results for the indicator locations were also compared to the control location. The annual mean for indicator locations for 2019 (0.023 pCi/m^3) was the same as the annual mean of the control location (0.023 pCi/m^3). The indicator location with the highest gross beta annual mean was location 32, 37, and 49 (0.023 pCi/m^3) and was the same as the annual mean of the control location (0.023 pCi/m^3).

Naturally occurring Be-7 activity was detected, as was the case during pre-operational monitoring. In 1984, the range for Be-7 detected activity was 0.024 to 0.211 pCi/m^3 for indicator locations and the annual mean for indicator locations was 0.069 pCi/m^3. In 2019, the range for Be-7 detected activity was 0.070 to 0.121 pCi/m^3 for indicator locations and the annual mean for indicator locations was 0.090 pCi/m^3. The control location annual mean for Be-7 detected activity (0.092 pCi/m^3) was slightly higher than the annual mean of the indicator locations (0.090 pCi/m^3). The indicator location with the highest annual mean of detected Be-7 activity was location 2 (0.094 pCi/ m^3).

I-131 activity was not detected in the weekly analysis of radioiodine canisters at any location.

The AP 07B-004 required lower limits of detection were met. Plant-related activation, corrosion, or fission products were not detected during 2019 in air particulate filters and radioiodine canisters. No unusual trends were noted.

B. Direct Radiation Pathway

Quarterly OSL dosimeter results for each location are shown in Table 3. Measured values have been converted to a standardized 90-day quarter.

The annual mean of indicator sample locations in 2019 was 18.7 mR per standardized 90-day quarter. The annual mean of the control sample locations in 2019 was 17.1 mR per standardized 90-day quarter.

For pre-operational comparison, in 1981, the annual mean of indicator sample locations was 18.9 mR per standardized 90-day quarter and the annual mean for the control sample locations was 17.1 mR per standardized 90-day quarter. It should be noted WCGS changed from thermoluminescence dosimeters (TLD) to optically stimulated luminescence (OSL) dosimeters in 2008.

The indicator sample location with the highest annual mean was location 13 (18.7 mR per standardized 90-day quarter) which is slightly higher than the annual mean of the control sample locations (17.1 mR per standardized 90-day quarter).

Based upon Condition Report 00027489, improvements were made in measuring and subtracting transit dose in 2010. As expected, the OSL results increased during 2010 based on how transit dosimeters are handled. Chart 3 visibly displays the increase of the OSL results since 2010. Chart 3 also displays how closely the indicator and control location OSL dosimeter results are for 2018. Condition Report 00128355 was written to reduce data elimination based on standard deviation starting in Quarter 3 of 2018. In 2019 no change in trend was noted due to this change.

Chart 4 displays the TLD nearsite sample locations (1, 2, 7-9, 11-14, 18, 26, 27, 29, 30, 37 and 38) and the control sample locations (locations 39 and 48) for the preoperational years through 2007.

C. Waterborne Pathway

(1) Surface Water

Tritium, attributable to WCGS operation, was detected in surface water samples collected from the Coffey County Lake spillway (SP) indicator sample location. The annual mean for detected tritium activity at the SP location was 10,450 pCi/L and the range was 8,867 to 12,331 pCi/L. The detected tritium activity was below the 30,000 pCi/L AP 07B-004 reporting level. Chart 5 illustrates the yearly averages of surface water tritium data for the SP location. Chart 5 indicates the average tritium concentration of the SP location has from last year. Tritium activity was not detected in samples obtained from the John Redmond Reservoir (JRR) control sample location.

During pre-operational radiological environmental monitoring, measured radiological activity was not detected in surface water samples.

The AP 07B-004 required lower limits of detection were met. Radionuclides were not detected by the gamma isotopic analyses or by Fe-55 analyses.

Tritium was the only activity detected during 2019 in surface water samples and no unusual trends were noted.

(2) Ground Water

The AP 07B-004 required lower limits of detection were met for I-131, tritium and gamma isotopic analyses. Radioactivity was not detected in any ground water samples. No unusual trends were noted. Plant-related activation, corrosion or fission products were not detected during 2019 in ground water samples.

(3) Drinking Water

Gross beta activity was detected in drinking water samples collected from the indicator sample location and in samples collected from the control sample location. The annual mean of the indicator sample location gross beta activity (2.24 pCi/L) was slightly lower when compared to the annual mean of the control sample location gross beta activity (2.33 pCi/L). The 2019 annual means of gross beta activity for both the indicator and control sample locations were lower than those of the pre-operational monitoring year of 1984. In 1984, the annual mean of the indicator sample location gross beta activity was 7.5 pCi/L and the annual mean of the control sample location gross beta activity was 6.4 pCi/L.

Chart 6 illustrates the drinking water gross beta results for the last five years and how closely the gross beta results compared for the indicator and control sample locations.

No tritium was detected in the indicator sample location during 2019. No release limits were exceeded, and results were well below required detection limits. No other radionuclides were detected by the gamma isotopic analyses of the indicator or control location samples.

The AP 07B-004 required lower limits of detection were met. Plant-related activation, corrosion, or fission products were not detected during 2019 in drinking water samples and no unusual trends were noted.

(4) Shoreline Sediment

Naturally occurring K-40 was detected in shoreline sediment samples collected from the DC (indicator sample location) and JRR (control sample location). K-40 was also detected during pre-operational shoreline sediment monitoring.

No other radionuclides were detected in the DC or JRR shoreline sediment samples during 2019. The AP 07B-004 required lower limits of detection were met. Plant-related activation, corrosion, or fission products were not detected during 2019 in shoreline sediment samples and no unusual trends were noted.

D. Ingestion Pathway

(1) Milk

Milk was not collected during the sample year since no indicator locations within five miles of the plant were identified during the 2019 Land Use Census.

(2) Fish

Naturally occurring K-40 activity was detected in fish samples obtained from the Coffey County Lake (CCL) indicator sample location and in fish samples obtained from the JRR control sample location. K-40 activity was also detected during pre-operational fish monitoring.

Fish samples were also analyzed for tritium. Fish samples collected from Coffey County Lake had tritium activity detected annual mean (7,465 pCi/kg). The detected tritium activity was attributable to plant operation. An adult consuming 21 kilograms of fish, at the maximum measured tritium concentration (9,861 pCi/kg), would receive a committed effective dose equivalent of 0.013 mRem.

Tritium activity was not detected in the control location samples collected from JRR.

No other radionuclides were detected in fish samples during 2019. The AP 07B-004 required lower limits of detection were met and no unusual trends were noted.

(3) Broadleaf Vegetation

Gamma analyses of broadleaf vegetation samples obtained from indicator and control sample locations detected naturally occurring Be-7 and K-40. Be-7 and K-40 activity were also detected pre-operationally.

No other radionuclides were detected in broadleaf vegetation samples collected during the year. The AP 07B-004 required lower limits of detection were met. Plant-related activation, corrosion, or fission products were not detected during 2019 in broadleaf vegetation samples and no unusual trends were noted.

(4) Crop Samples

Gamma analysis detected naturally occurring K-40 activity to be present in the samples collected from the indicator sample locations and in the samples collected from the control sample location. K-40 activity was also detected during pre-operational crop monitoring. K-40 was the only activity detected in the crop samples.

The AP 07B-004 required lower limits of detection were met. Plant-related activation, corrosion, or fission products were not detected during 2019 in crop samples and no unusual trends were noted.

E. Additional Samples Collected (not required by AP 07B-004)

(1) Bottom Sediment

Gamma analysis detected naturally occurring K-40 activity to be present in the samples collected from the indicator sample locations and in the samples collected from the control sample location. K-40 activity was also detected during pre-operational bottom sediment monitoring.

Cs-137 activity was detected in one of two samples obtained from indicator location DC (38.9 pCi/kg). Cs-137 was not detected in two samples obtained from control location JRR.

Cs-137 activity was detected in pre-operational samples. The Cs-137 activity detected in 2019 indicator sample location bottom sediment samples was within the pre-operational range. Cs-137 activity detected in 1981 and 1982 was in the range of 79 to 953 pCi/kg. The decay corrected range of pre-operational Cs-137 activity detected is approximately 32 to 389 pCi/kg.

The detected Cs-137 activity in the samples collected from the indicator sample locations was likely due to fallout since the measured activity is within the decay corrected range of pre-operational Cs-137 detected activity.

Chart 7 plots the Cs-137 detected activity from the discharge cove indicator sample location and JRR control sample location bottom sediment samples. The detected Cs-137 activity measured from the discharge cove location reflects a decreasing trend. The Chart 7 trendline indicates Cs-137 activity detected at the JRR control location has also been decreasing. Chart 7 also displays that in recent years, the detected Cs-137 activity for the JRR and DC sample locations overlap.

Fe-55 activity was not detected in the two samples obtained from indicator sample locations.

No other radionuclides were detected in bottom sediment samples. Plant-related activation, corrosion, or fission products were not detected during 2019 in bottom sediment samples and no unusual trends were noted.

(2) Aquatic Vegetation

Gamma analyses of aquatic vegetation samples obtained from indicator sample locations detected naturally occurring Be-7 and K-40. Be-7 and K-40 activity were also detected during pre-operational monitoring.

No other radionuclides were detected in aquatic vegetation samples. Plant-related activation, corrosion, or fission products were not detected during 2019 in aquatic vegetation samples and no unusual trends were noted.

(3) Terrestrial Vegetation

Naturally occurring Be-7 and K-40 activity were detected in the terrestrial vegetation indicator location samples. No other radionuclides were detected in terrestrial vegetation. Plant-related activation, corrosion or fission products were not detected during 2019 in terrestrial vegetation and no unusual trends were noted.

(4) Soil

Naturally occurring K-40 activity was detected in the soil sample that was collected from the indicator location. K-40 activity was also detected during pre-operational soil monitoring.

Cs-137 activity was also detected in both indicator soil samples with a range of 95 -138 pCi/kg. Data was reviewed for soil samples collected pre-operationally. The detected Cs-137 activity range from February of 1985 was 255 to 2,160 pCi/kg. The decay corrected range of pre-operational Cs-137 activity detected in soil is approximately 104 to 882 pCi/kg. The detected Cs-137 activity in soil sampled in 2019 is below and within the decay corrected pre-operational range and is likely due to fallout.

Plant-related activation, corrosion, or fission products were not detected during 2019 in soil samples and no unusual trends were noted.

(5) Turkey (Ingestion Pathway)

Naturally occurring K-40 activity was detected in the turkey sample obtained from the indicator location. No tritium activity was detected in the turkey sample. No activity was attributable to plant operation.

(6) Deer (Ingestion Pathway)

Naturally occurring K-40 activity was detected in the deer sample obtained from the indicator location.

Tritium activity (786.0 pCi/kg) was also detected in the deer sample. The detected tritium activity was attributable to plant operation.

An adult consuming 72.6 kilograms of deer meat, at the measured tritium concentration (786.0 pCi/kg), would receive a committed effective dose equivalent of 0.004 mRem.

No other radionuclides were detected in the deer sample. No unusual trends were identified.

III. PROGRAM REVISIONS/CHANGES

No revisions or changes were made to AP 07B-004, *Offsite Dose Calculation Manual (Radiological Environmental Monitoring Program)* during 2019.

IV. PROGRAM DEVIATIONS

Air Samples

The following air sample locations failed to meet the requirement for "continuous sampler operation." As described in footnote (1) of procedure AP 07B-004, *Offsite Dose Calculation Manual (Radiological Environmental Monitoring Program)*, Table 5-1, deviations are permitted from the required sampling schedule due to malfunction of sampling equipment and other legitimate reasons.

Location	Sample Period	Percent Discrepancy/ Hours Unavailable	Explanation of Deviation/Comments Condition Report Number
37	4/22/2019 -4/29/2019	22.0% / 37 hrs.	Power Outage / Condition Report 00131943
53	8/12/2019- 8/19/2019	5.3% / 9 hrs.	Power Outage / Condition Report 00134834

Ground Water Protection

The following information is being provided in association with the Nuclear Energy Institute (NEI) Groundwater Protection Industry Initiative:

Describe offsite ground water or surface water sample results that exceeded the REMP reporting criteria that were voluntarily communicated to State/Local officials during the calendar year – None.

V. INTERLABORATORY COMPARISON PROGRAM

Environmental, Inc., Midwest Laboratory was contracted to perform radiological analysis of environmental samples for WCNOC. The laboratory participated in the intercomparison studies administered by Environmental Resource Associates, Inc. Appendix A is the Interlaboratory Comparison Program Results for Environmental, Inc., Midwest Laboratory. Intercomparison results, in-house spikes, blanks, duplicates and mixed analyte performance evaluation program results are also contained in Appendix A.

VI. COMPARISON TO THE RADIOACTIVE EFFLUENT RELEASE PROGRAM

As described in the section discussing radioisotopes found in fish from Coffey County Lake, dose that may be received as a result of tritium released from WCGS is comparable with the theoretical doses calculated by the Radioactive Effluent Release Program.

The theoretical doses calculated by the Radioactive Effluent Release Program assume a person drinks the water from Coffey County Lake and eats the fish from Coffey County Lake. Based upon these assumptions the dose to man from both pathways was calculated to be 0.314 mRem for 2019.

Using sample data obtained from the REMP, an adult drinking 2 liters per day of surface water from Coffey County Lake, using the average tritium activity (10,450 pCi/L), would receive a

committed effective dose equivalent of 0.477 mRem per year. For an adult eating 21 kg of fish per year from Coffey County Lake, using the average tritium activity (7,465 pCi/kg), would receive a committed effective dose equivalent of 0.010 mRem per year. Based upon the REMP results, the dose from both pathways was calculated to be 0.487 mRem per year.

It should be noted Coffey County Lake is not used as a drinking water source. Calculating the dose to man for tritium detected in the Coffey County Lake surface water is for comparison purposes only.

The tritium dose values are being compared on a qualitative basis. It is not expected that the annual doses, as calculated in the Radioactive Effluent Release Report, would compare directly to those calculated from the REMP. The Radioactive Effluent Release Report provides a “snap shot” of potential dose resulting from the year's releases. The REMP data indicates the accumulated result of releasing tritium into the lake since the start of plant operation.

TABLE 1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM DESCRIPTION
(SAMPLE COLLECTION SPECIFIED BY AP 07B-004)

EXPOSURE PATHWAY/ SAMPLE TYPE	NUMBER OF SAMPLES AND SAMPLE LOCATIONS	SAMPLE COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
AIRBORNE	**(See Figures 1 & 5)**		
Radioiodine and Particulates	Samples from six locations	Continuous sampler operation with sample collection weekly, or more frequently if required, by dust loading.	Analyze radioiodine canister weekly for I-131
	Samples from locations near the site boundary in three sectors having the highest calculated annual average D/Q and one supplemental location (Locations 2, 18, 37, or 49 on Figure 1)		Analyze particulate filter weekly for gross beta activity; perform quarterly gamma isotopic analysis composite (by location)
	Sample from the vicinity of a community having the highest calculated annual average D/Q (Location 32 on Figure 1, New Strawn)		
	Sample from a control location 9.5 to 18.5 miles distant in a low ranked D/Q sector (Location 53 on Figure 5)		

TABLE 1 (Cont.)

EXPOSURE PATHWAY/ SAMPLE TYPE	NUMBER OF SAMPLES AND SAMPLE LOCATIONS	SAMPLE COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
DIRECT RADIATION	**(See Figures 2 & 5)**		
	39 routine monitoring stations with two or more dosimeters measuring dose continuously, placed as follows: An inner ring of stations, one in each meteorological sector 0-3 mile range from the site (Locations 1, 7, 9, 11-13, 18, 26, 27, 29, 30, 37, 38, 46, & 49 on Figure 2). An outer ring of stations, one in each meteorological sector in the 3 to 5 mile range from the site (Locations 4, 5, 15-17, 19, 22-25, 32, 34-36, 50 & 51 on Figure 2). Four sectors [A, B, G & J] contain an additional station (Locations 2, 8, 14 & 20). The balance of the stations to be placed in special interest areas such as population centers (Locations 23, 32 & 52), nearby residences	Quarterly	Gamma dose quarterly

TABLE 1 (Cont.)

EXPOSURE PATHWAY/ SAMPLE TYPE	NUMBER OF SAMPLES AND SAMPLE LOCATIONS	SAMPLE COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
DIRECT RADIATION (cont.)	(many locations are near a residence), schools (Locations 23 & 52), Wilson Cadman Wildlife Education Area (44), CCL Public Fishing Area (46) and in two areas to serve as control stations 10-20 miles distant from the site (Locations 39 and 53 on Figure 5).		
WATERBORNE	(See Figure 3)		
Surface	One sample upstream (Location JRR on Figure 3) and one sample downstream (Location SP on Figure 3).	Monthly grab sample	Monthly gamma isotopic analysis and composite for tritium analysis quarterly
Ground	Samples from one or two sources only if likely to be affected. Indicator samples at locations hydrologically down-gradient of the site (Locations C-10, C-49, F-1, G-2, J-1 and J-2 on Figure 3); control sample at a location hydrologically upgradient of the site (Location B-12 on Figure 3).	Quarterly grab sample	Quarterly gamma isotopic analysis and tritium analysis

TABLE 1 (Cont.)

EXPOSURE PATHWAY/ SAMPLE TYPE	NUMBER OF SAMPLES AND SAMPLE LOCATIONS	SAMPLE COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
WATERBORNE (cont.)			
Drinking	Sample of municipal water supply at an indicator location downstream of the Neosho River-Wolf Creek confluence (Location IO-DW on Figure 5); control sample from location upstream of the Neosho River-Wolf Creek confluence (Location BW-15 on Figure 3).	Monthly Composite	Monthly gamma isotopic analysis and gross beta analysis of composite sample. Quarterly tritium analysis of composites.
Shoreline Sediment	One sample from the vicinity of Coffey County Lake discharge cove (Location DC on Figure 3); control sample from John Redmond Reservoir (Location JRR on Figure 3).	Semiannually	Semiannual gamma isotopic analysis
INGESTION	(See Figures 4 & 5)		
Milk	Samples from milking animals at three indicator locations within 5 miles of the site having the highest dose potential (currently there are no locations producing milk for human consumption within 5 miles of the site); one sample from a control location greater than 10 miles from the site if indicator locations are sampled.	Semimonthly April to November; monthly December-March	Gamma isotopic analysis and I-131 analysis of each sample

TABLE 1 (Cont.)

EXPOSURE PATHWAY/ SAMPLE TYPE	NUMBER OF SAMPLES AND SAMPLE LOCATIONS	SAMPLE COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
INGESTION (cont.)			
Fish	Indicator samples of 1 to 3 recreationally important species from Coffey County Lake; control samples of similar species from John Redmond Reservoir spillway (Figure 4).	Semiannually	Gamma isotopic analysis on edible portions
Broadleaf Vegetation	Samples of available broadleaf vegetation from two indicator locations (using the criteria from the "Land Use Census" section) with highest calculated annual average D/Q (Locations A-3 and Q-6 and alternate locations B-1, H-2, N-1 and R-2 on Figure 4); sample of similar broadleaf vegetation from a control location 9.5 to 18.5 miles distant in a low ranked D/Q sector (Location D-2 on Figure 5).	Monthly when available	Gamma isotopic analysis on edible portions
Irrigated Crops	Sample of crops irrigated with water from the Neosho River downstream of the Neosho River - Wolf Creek confluence (locations will vary from year to year, e.g., Location NR-D1 and NR-D2 on Figure 5).	At time of harvest	Gamma isotopic analysis on edible portions

TABLE 2
SAMPLE LOCATION IDENTIFIERS, DISTANCES (Miles) AND DIRECTIONS (Sectors)

Sample Type	Location Identifier	Distance from Reactor	Direction	Sector
Air Particulates and Radioiodine	2	2.7	N	A
	18	3.0	SSE	H
	32	3.1	WNW	P
	37	2.0	NNW	R
	49	0.8	NNE	B
	53	10.8	ENE	D
Dosimeters	1	1.4	N	A
	2	2.7	N	A
	4	4.0	NNE	B
	5	4.1	NE	C
	7	2.1	NE	C
	8	1.7	NNE	B
	9	2.0	ENE	D
	11	1.7	E	E
	12	1.9	ESE	F
	13	1.6	SE	G
	14	2.5	SE	G
	15	4.6	ESE	F
	16	4.3	E	E
	17	3.7	SE	G
	18	3.0	SSE	H
	19	3.9	SSE	H
	20	3.3	S	J
	22	3.9	SSW	K
	23	4.3	SW	L
	24	4.1	WSW	M
	25	3.4	W	N
	26	2.4	WSW	M
	27	2.2	SW	L
	29	2.7	SSW	K
	30	2.5	W	N
	32	3.1	WNW	P
	34	4.4	NW	Q
	35	4.6	NNW	R
	36	4.2	N	A
	37	2.0	NNW	R
	38	1.2	NW	Q
	39	13.1	N	A
	41	0.8	NNW	R
	42	0.8	SSE	H
	43	0.7	WNW	P
	44	3.0	NNW	R

TABLE 2 (Cont.)
SAMPLE LOCATION IDENTIFIERS, DISTANCES (Miles) AND DIRECTIONS (Sectors)

Sample Type	Location Identifier	Distance from Reactor	Direction	Sector
Dosimeters	46	1.6	WNW	P
	49	0.8	NNE	B
	50	3.6	ENE	D
	51	4.3	S	J
	52	3.6	SW	L
	53	10.8	ENE	D
Surface Water	JRR	3.7	W	N
	SP	3.2	SSE	H
Ground Water	B-12	1.9	NNE	B
	C-10	2.7	W	N
	C-49/L-49	2.8	SW	L
	F-1	2.5	ESE	F
	G-2	3.6	SE	G
	J-1	3.8	S	J
	J-2	4.3	S	J
Drinking Water	BW-15	3.9	SW	L
	IO-DW	26.1	SSE	H
Shoreline Sediment	DC	0.8	WNW	P
	EEA	3.0	NNW	R
	JRR	3.6	W	N
	SC	0.8	NNW	R
Fish	CCL	0.6	E to NNW	E to R
	JRR	3.7	W	N
Food/Garden	A-3	2.6	N	A
	B-1	0.8	NNE	B
	D-2	14.8	ENE	D
	H-2	3.0	SSE	H
	Q-6	2.4	NW	Q
Crops	NR-D1	8.9	S	J
	NR-D2	11.5	S	J
	NR-U1	4.0	SSW	K
Bottom Sediment	DC	0.9	WNW	P
	EEA	3.0	NNW	R
	ESW	0.5	E	E
	JRR	3.7	W	N
	MUDS	1.5	WNW	P
	UHS	0.6	E	E
Aquatic Vegetation	DC ALT	1.5	NW	Q
	EEA	3.0	NNW	R
	MUDS	1.5	WNW	P
	SC	0.8	NNW	R

TABLE 2 (Cont.)
SAMPLE LOCATION IDENTIFIERS, DISTANCES (Miles) AND DIRECTIONS (Sectors)

Sample Type	Location Identifier	Distance from Reactor	Direction	Sector
Terrestrial Vegetation	EEA	3.0	NNW	R
	MUDS	1.5	WNW	P
Soil	EEA	3.0	NNW	R
	MUDS	1.5	WNW	P
Meat (Turkey)	J4.0	4.0	S	J
Meat (Deer)	J3.5	3.5	S	J

TABLE 3
OSL Dosimeter Results
(mR/Standardized 90-day Quarter)

Location	Qtr. 1 (mR)	Qtr. 2 (mR)	Qtr. 3 (mR)	Qtr. 4 (mR)	Total Annual Exposure (mR)
1	18.0	19.4	17.4	18.2	73.0
2	14.4	15.8	17.4	17.0	64.6
4	18.4	16.8	18.7	15.8	69.7
5	15.0	16.4	17.1	13.7	62.2
7	15.0	16.2	17.3	17.6	66.1
8	19.1	17.2	18.3	17.6	72.2
9	15.0	16.6	16.6	14.0	62.2
11	17.7	19.5	17.9	18.2	73.3
12	16.0	17.5	16.6	17.3	67.4
13	16.7	20.5	19.9	17.6	74.7
14	16.7	20.8	17.2	15.5	70.2
15	17.4	15.9	17.6	12.8	63.7
16	16.4	15.3	17.9	12.8	62.4
17	17.0	18.6	18.2	14.9	68.7
18	17.0	17.9	15.6	13.1	63.6
19	18.4	16.9	19.5	14.3	69.1
20	14.7	16.0	17.6	14.0	62.3
22	19.0	20.5	17.9	14.9	72.3
23	18.7	17.1	18.7	15.2	69.7
24	15.4	17.8	17.7	14.9	65.8
25	15.0	16.1	15.8	14.0	60.9
26	14.7	18.7	16.7	11.3	61.4
27	13.0	17.4	18.7	14.3	63.4
29	14.4	16.4	14.4	12.5	57.7
30	14.4	18.1	19.0	15.2	66.7
32	17.0	18.1	15.8	11.9	62.8
34	18.7	20.4	19.0	14.6	72.7
35	17.4	17.8	16.4	13.7	65.3
36	18.0	17.8	18.7	13.7	68.2
37	16.7	14.8	17.1	12.2	60.8
38	17.4	21.7	17.4	13.7	70.2
39	17.4	17.4	15.1	12.8	62.7
41	18.4	18.1	17.7	14.3	68.5
42	11.5	11.4	12.6	8.3	43.8
43	11.5	13.3	14.6	7.4	46.8
44	15.7	19.4	15.8	13.7	64.6
46	18.4	16.8	17.4	13.4	66.0
49	14.4	13.6	15.6	11.9	55.5
50	17.7	20.4	20.4	14.6	73.1
51	18.0	20.1	18.0	15.8	71.9
52	18.0	18.1	17.7	16.7	70.5
53	18.7	20.7	18.0	16.4	73.8

FIGURE 1

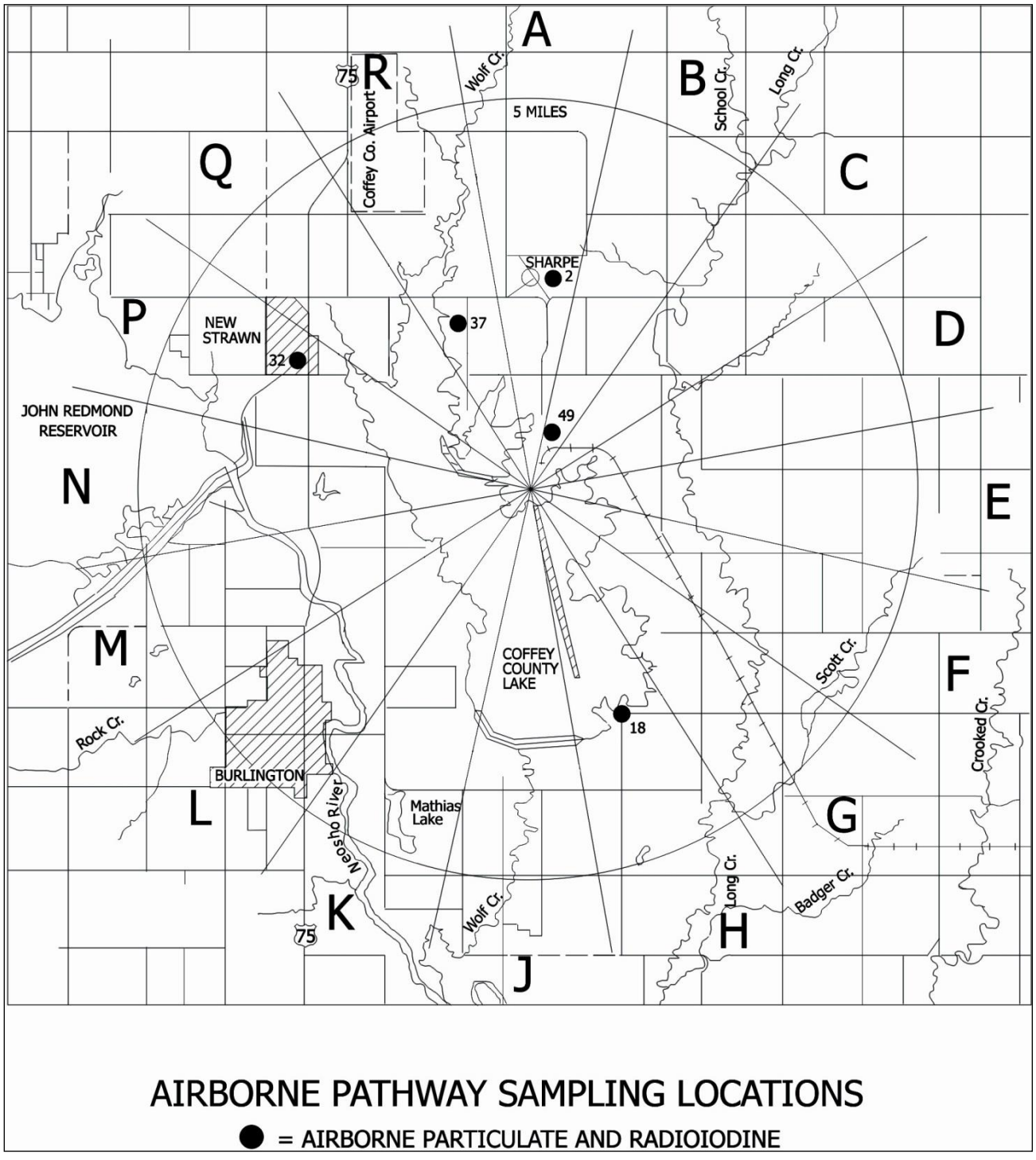
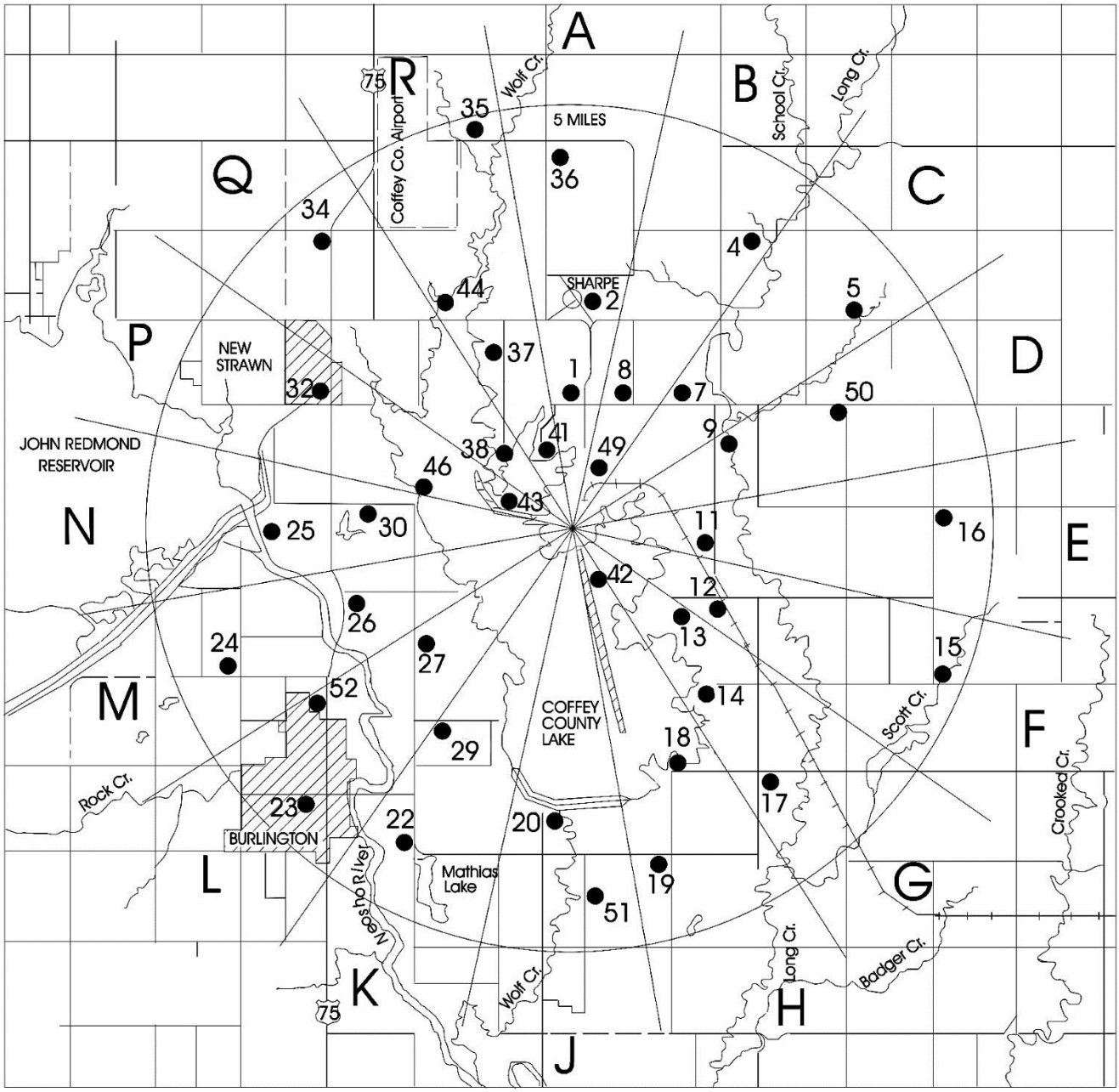

A
B
C
D
E
F
G
H
J
K
L
M
N
P
Q
R
75
Wolf Cr.
5 MILES
School Cr.
Long Cr.
Coffey Co. Airport
SHARPE
2
37
NEW STRAWN
32
JOHN REDMOND RESERVOIR
49
COFFEY COUNTY LAKE
18
Scott Cr.
Crooked Cr.
Rock Cr.
BURLINGTON
Neosho River
Mathias Lake
Badger Cr.
AIRBORNE PATHWAY SAMPLING LOCATIONS
● = AIRBORNE PARTICULATE AND RADIOIODINE

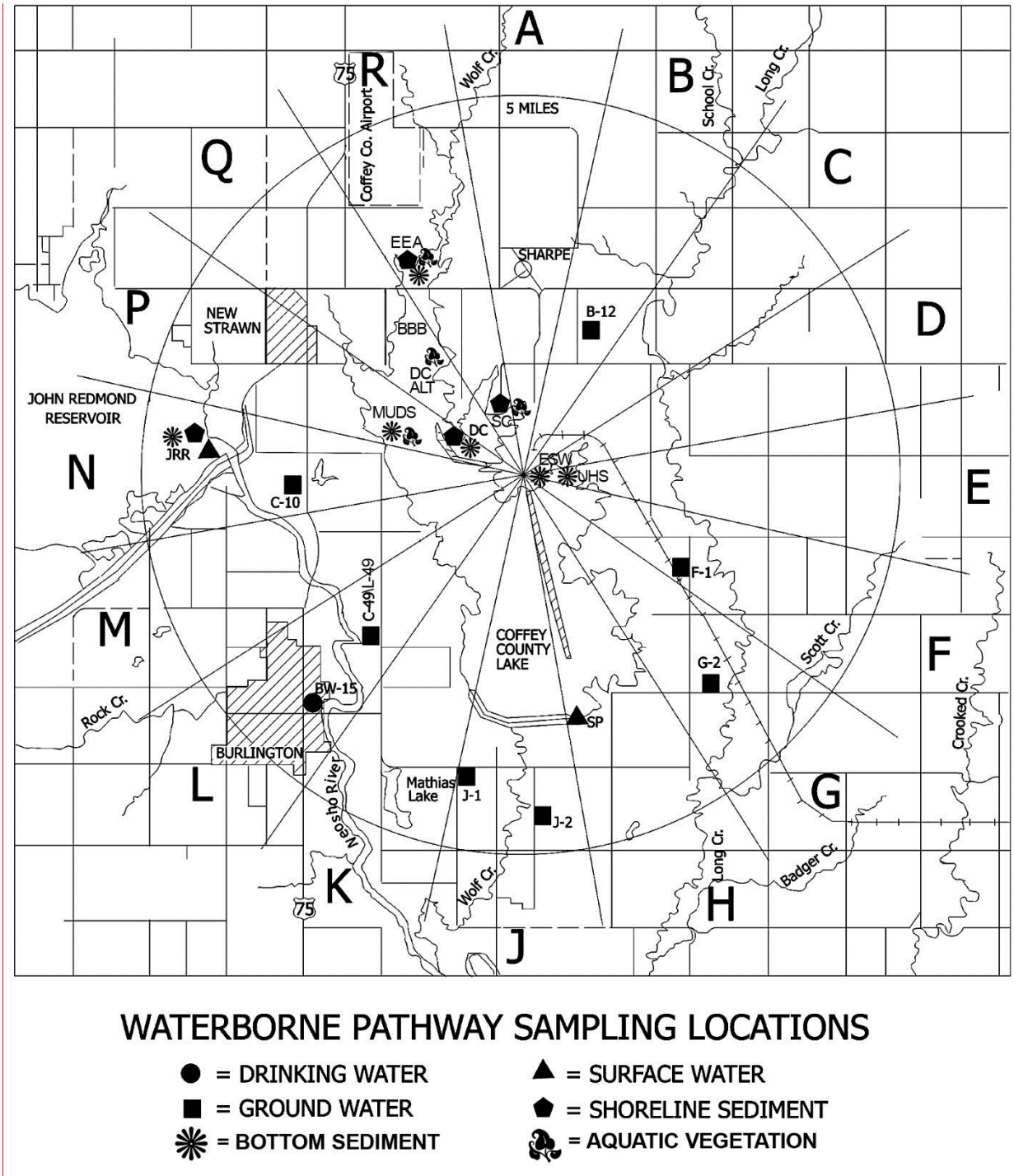
FIGURE 2



DIRECT RADIATION PATHWAY SAMPLING LOCATIONS

● = DOSIMETER LOCATIONS

FIGURE 3



WATERBORNE PATHWAY SAMPLING LOCATIONS

● = DRINKING WATER
▲ = SURFACE WATER
■ = GROUND WATER
⬟ = SHORELINE SEDIMENT
✳ = BOTTOM SEDIMENT
= AQUATIC VEGETATION

FIGURE 4

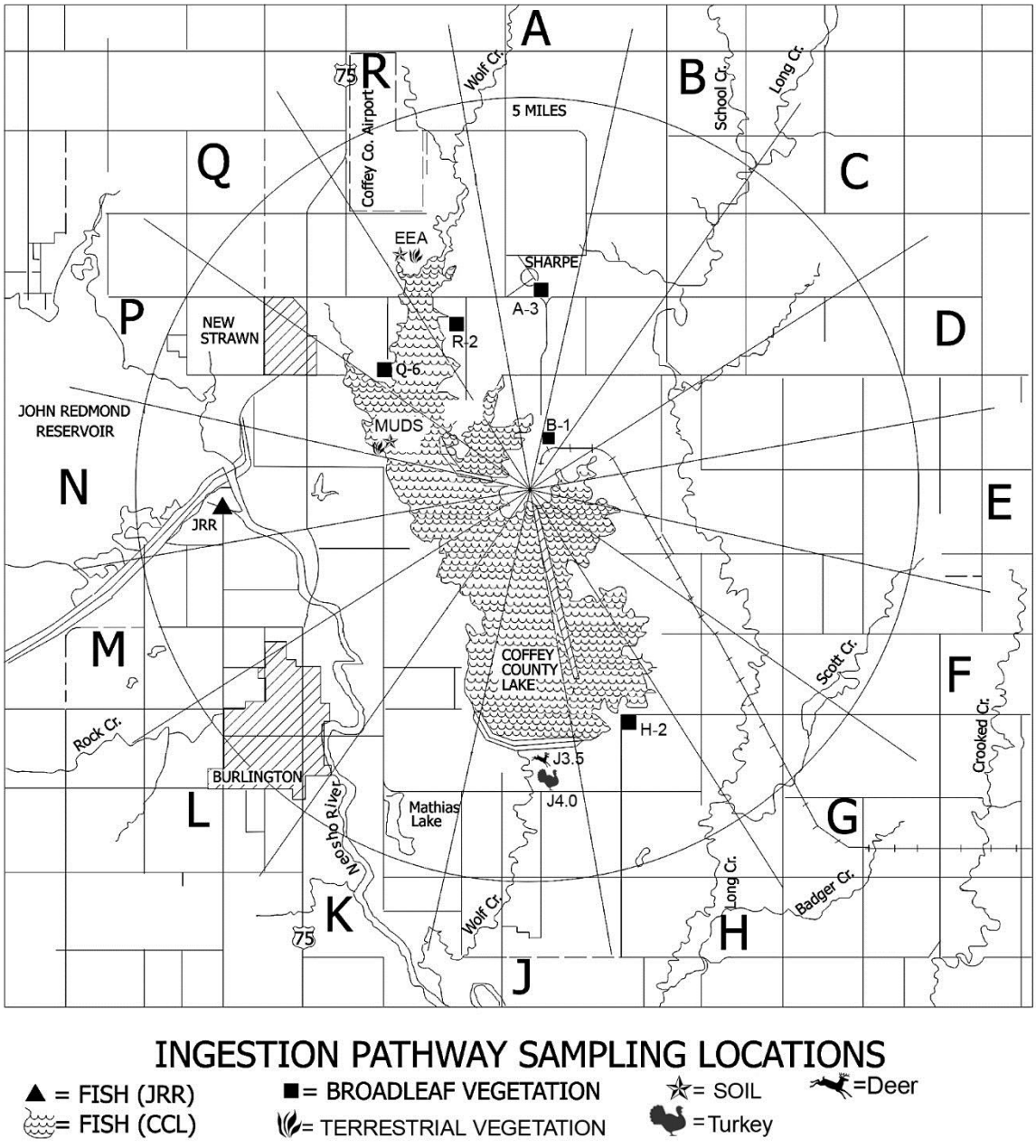

A
B
C
D
E
F
G
H
J
K
L
M
N
P
Q
R
75
Wolf Cr.
5 MILES
School Cr.
Long Cr.
Coffey Co. Airport
EEA
SHARPE
A-3
NEW STRAWN
R-2
Q-6
JOHN REDMOND RESERVOIR
MUDS
B-1
JRR
COFFEY COUNTY LAKE
Scott Cr.
Crooked Cr.
H-2
J3.5
J4.0
Rock Cr.
BURLINGTON
Neosho River
Mathias Lake
Badger Cr.
INGESTION PATHWAY SAMPLING LOCATIONS
▲ = FISH (JRR)
= FISH (CCL)
■ = BROADLEAF VEGETATION
= TERRESTRIAL VEGETATION
= SOIL
=Turkey
=Deer

FIGURE 5

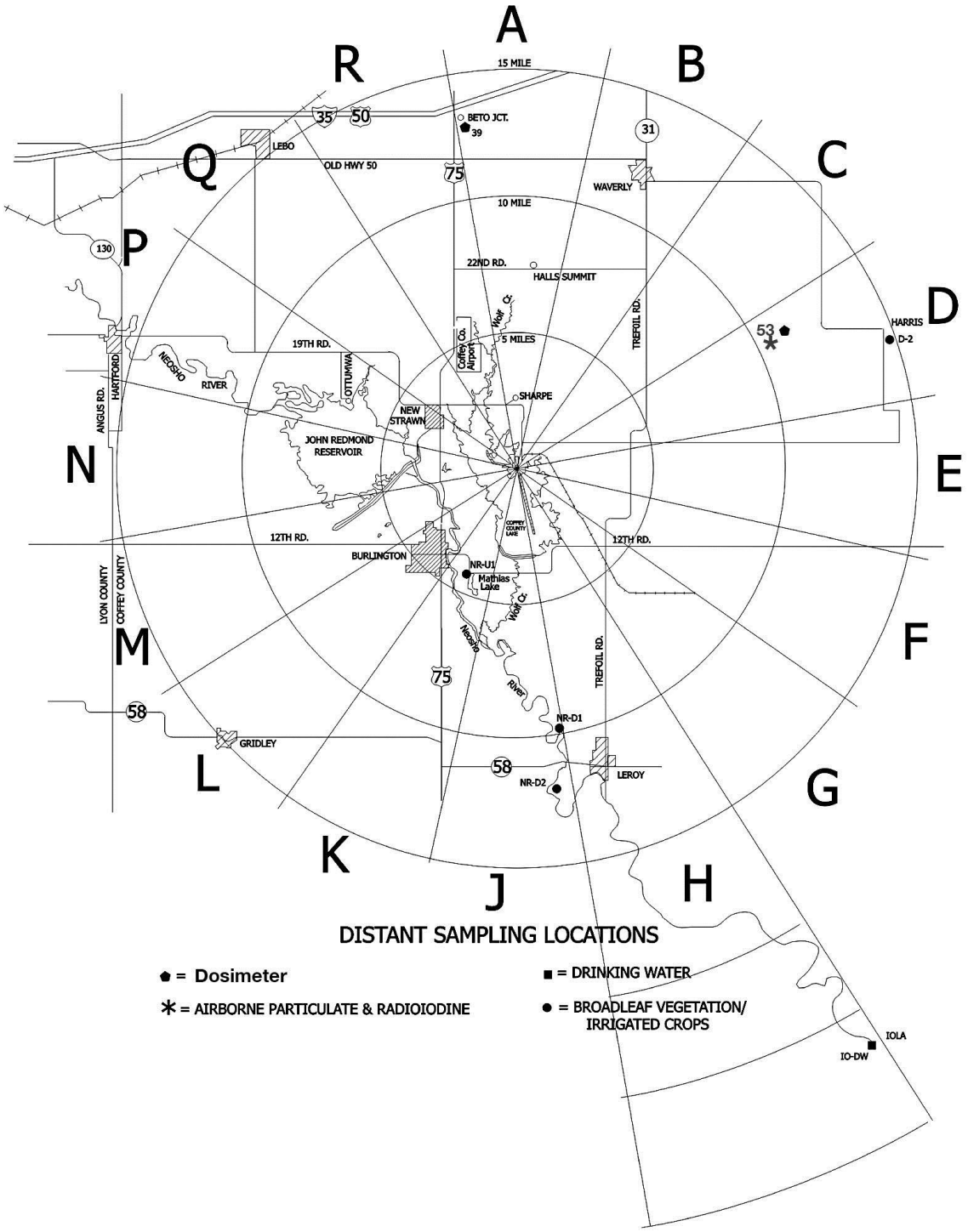

A
B
C
D
E
F
G
H
J
K
L
M
N
P
Q
R
15 MILE
10 MILE
5 MILES
BETO JCT.
39
LEBO
OLD HWY 50
WAVERLY
22ND RD.
HALLS SUMMIT
19TH RD.
12TH RD.
HARRIS
D-2
53
SHARPE
NEW STRAWN
JOHN REDMOND RESERVOIR
NEOSHO RIVER
OTTUMWA
HARTFORD
ANGUS RD.
LYON COUNTY
COFFEY COUNTY
BURLINGTON
Coffey Co. Airport
COFFEY COUNTY LAKE
Wolf Cr.
TREFOIL RD.
NR-U1
Mathias Lake
NR-D1
NR-D2
GRIDLEY
LEROY
IOLA
IO-DW
35
50
31
75
130
58
DISTANT SAMPLING LOCATIONS
= Dosimeter
= AIRBORNE PARTICULATE & RADIOIODINE
= DRINKING WATER
= BROADLEAF VEGETATION/ IRRIGATED CROPS

CHART 1

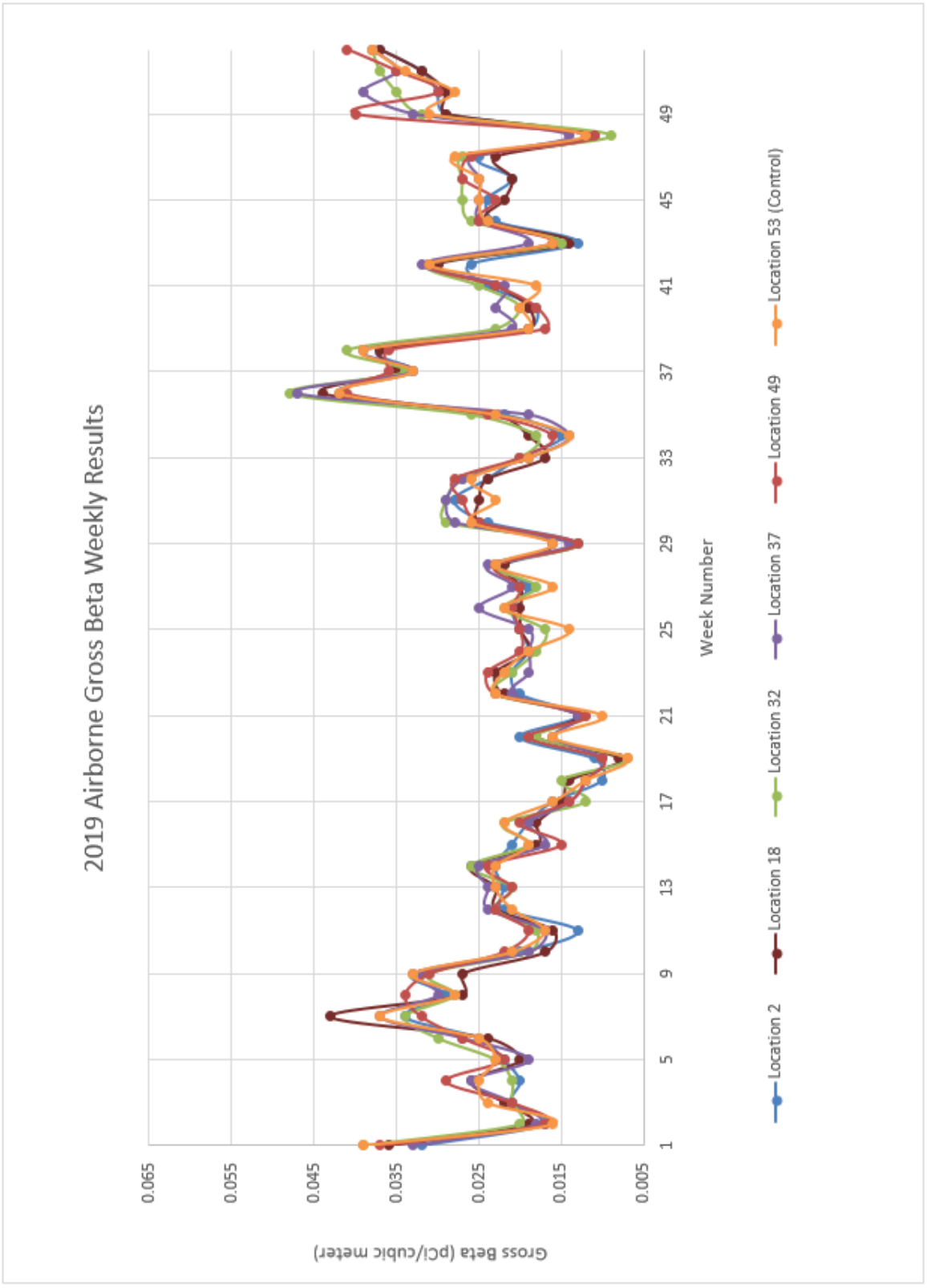

2019 Airborne Gross Beta Weekly Results
Gross Beta (pCi/cubic meter)
0.065
0.055
0.045
0.035
0.025
0.015
0.005
1
5
9
13
17
21
25
29
33
37
41
45
49
Week Number
Location 2
Location 18
Location 32
Location 37
Location 49
Location 53 (Control)

CHART 2

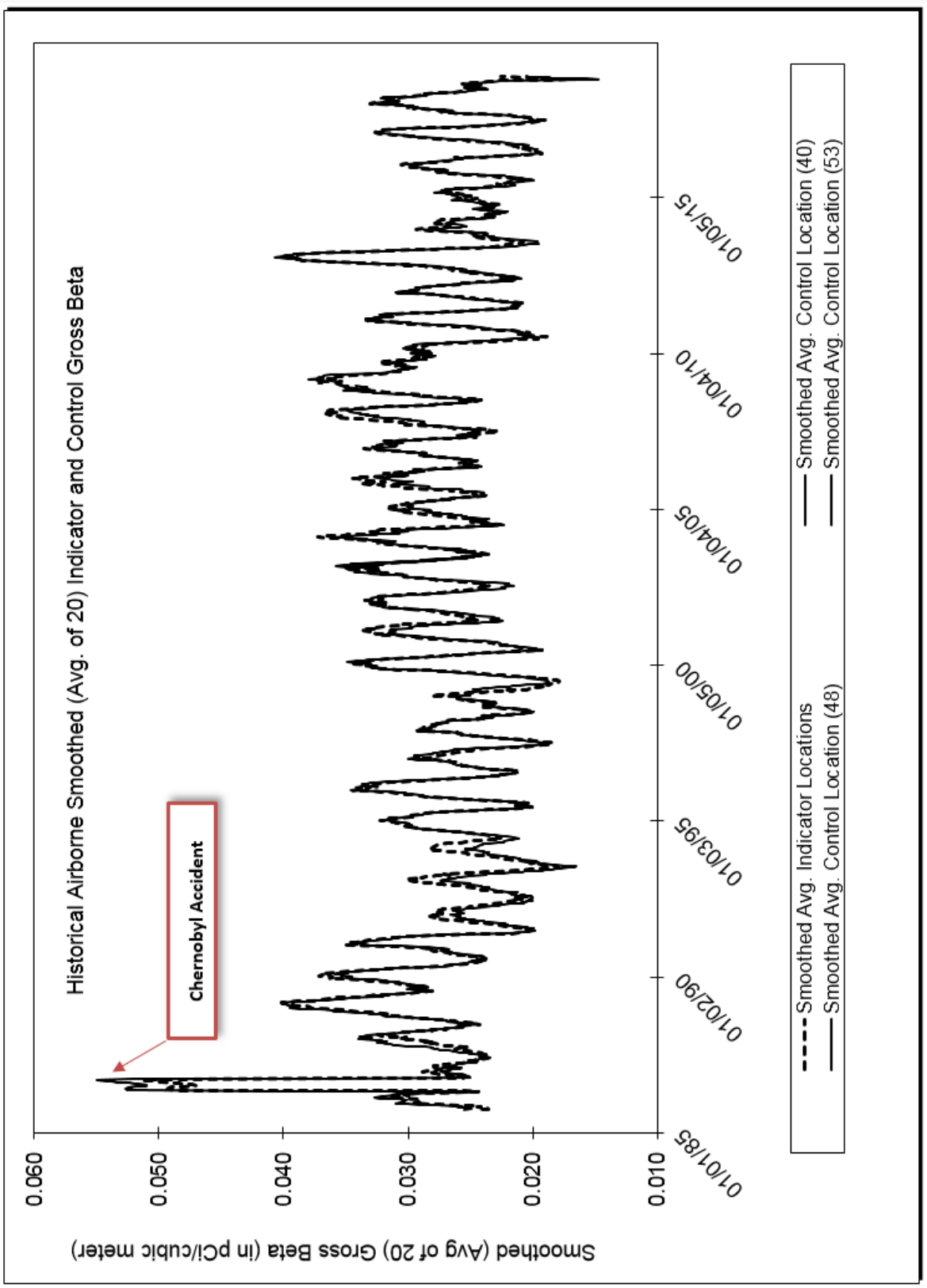

Historical Airborne Smoothed (Avg. of 20) Indicator and Control Gross Beta
Chernobyl Accident
Smoothed (Avg of 20) Gross Beta (in pCi/cubic meter)
0.060
0.050
0.040
0.030
0.020
0.010
01/01/85
01/02/90
01/03/95
01/05/00
01/04/05
01/04/10
01/05/15
Smoothed Avg. Indicator Locations
Smoothed Avg. Control Location (48)
Smoothed Avg. Control Location (40)
Smoothed Avg. Control Location (53)

CHART 3

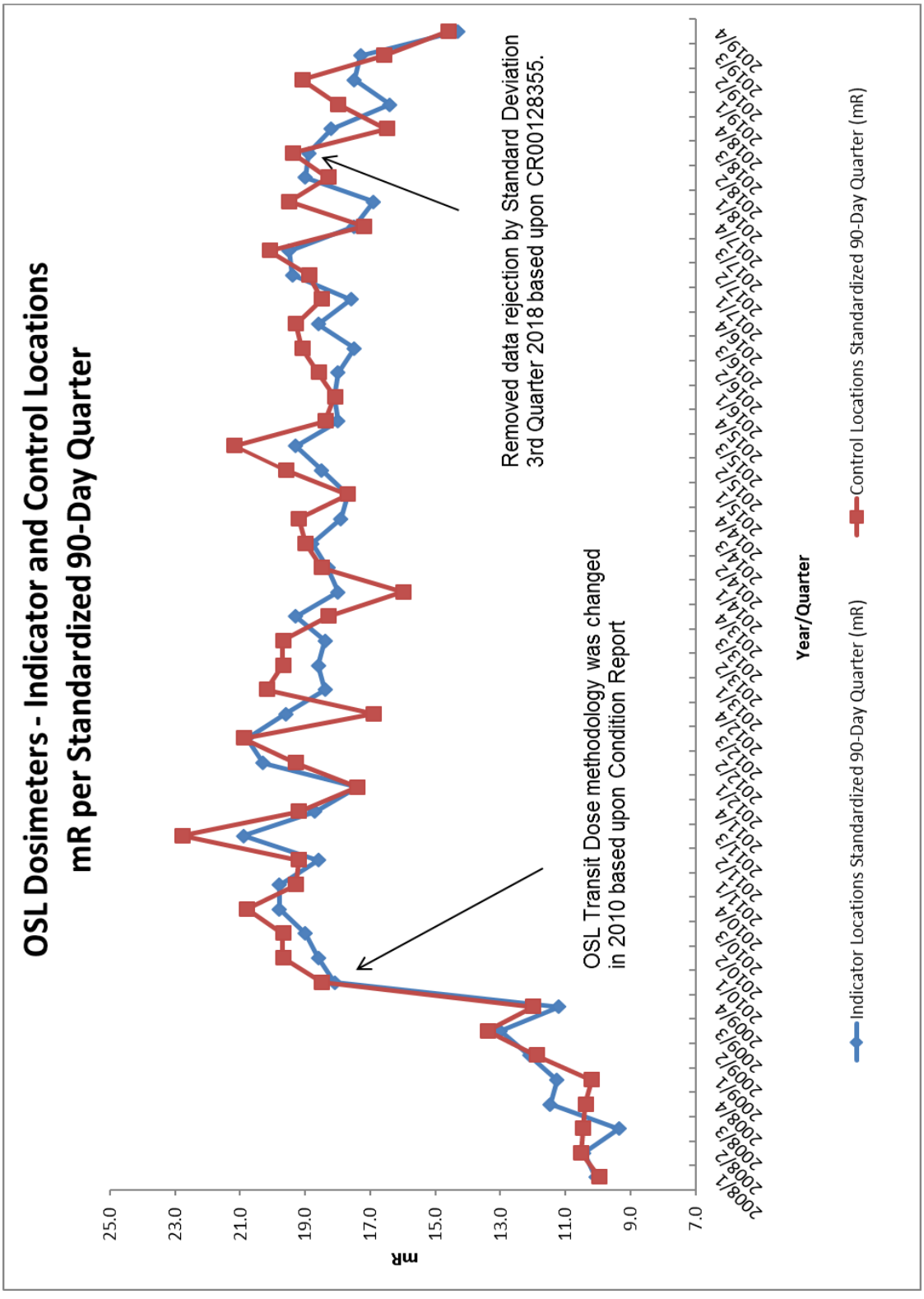

OSL Dosimeters - Indicator and Control Locations
mR per Standardized 90-Day Quarter
Removed data rejection by Standard Deviation
3rd Quarter 2018 based upon CR00128355.
OSL Transit Dose methodology was changed
in 2010 based upon Condition Report
mR
25.0
23.0
21.0
19.0
17.0
15.0
13.0
11.0
9.0
7.0
Year/Quarter
Indicator Locations Standardized 90-Day Quarter (mR)
Control Locations Standardized 90-Day Quarter (mR)

CHART 4

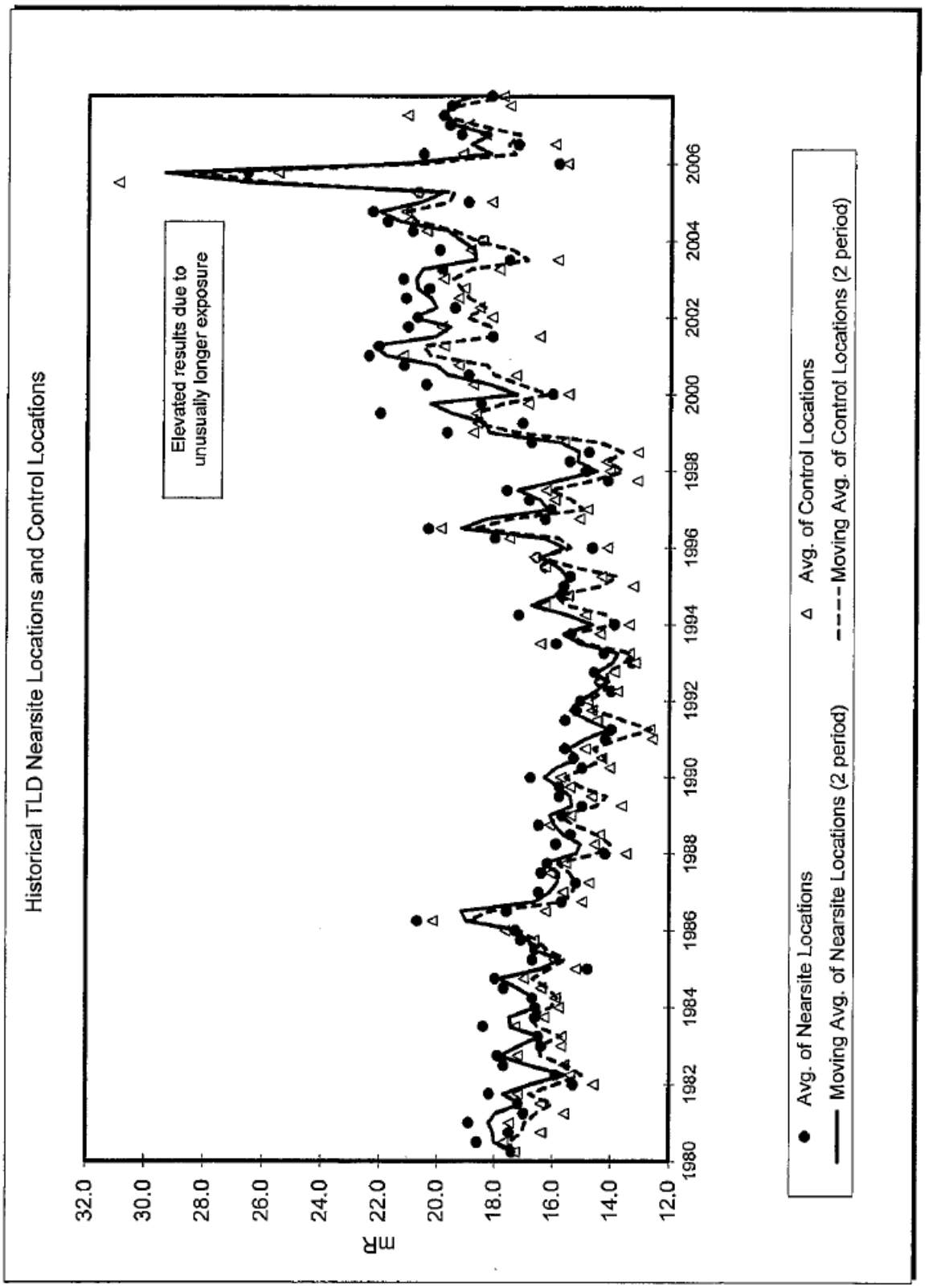

Historical TLD Nearsite Locations and Control Locations
Elevated results due to unusually longer exposure
mR
32.0
30.0
28.0
26.0
24.0
22.0
20.0
18.0
16.0
14.0
12.0
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
Avg. of Nearsite Locations
Moving Avg. of Nearsite Locations (2 period)
Avg. of Control Locations
Moving Avg. of Control Locations (2 period)

CHART 5

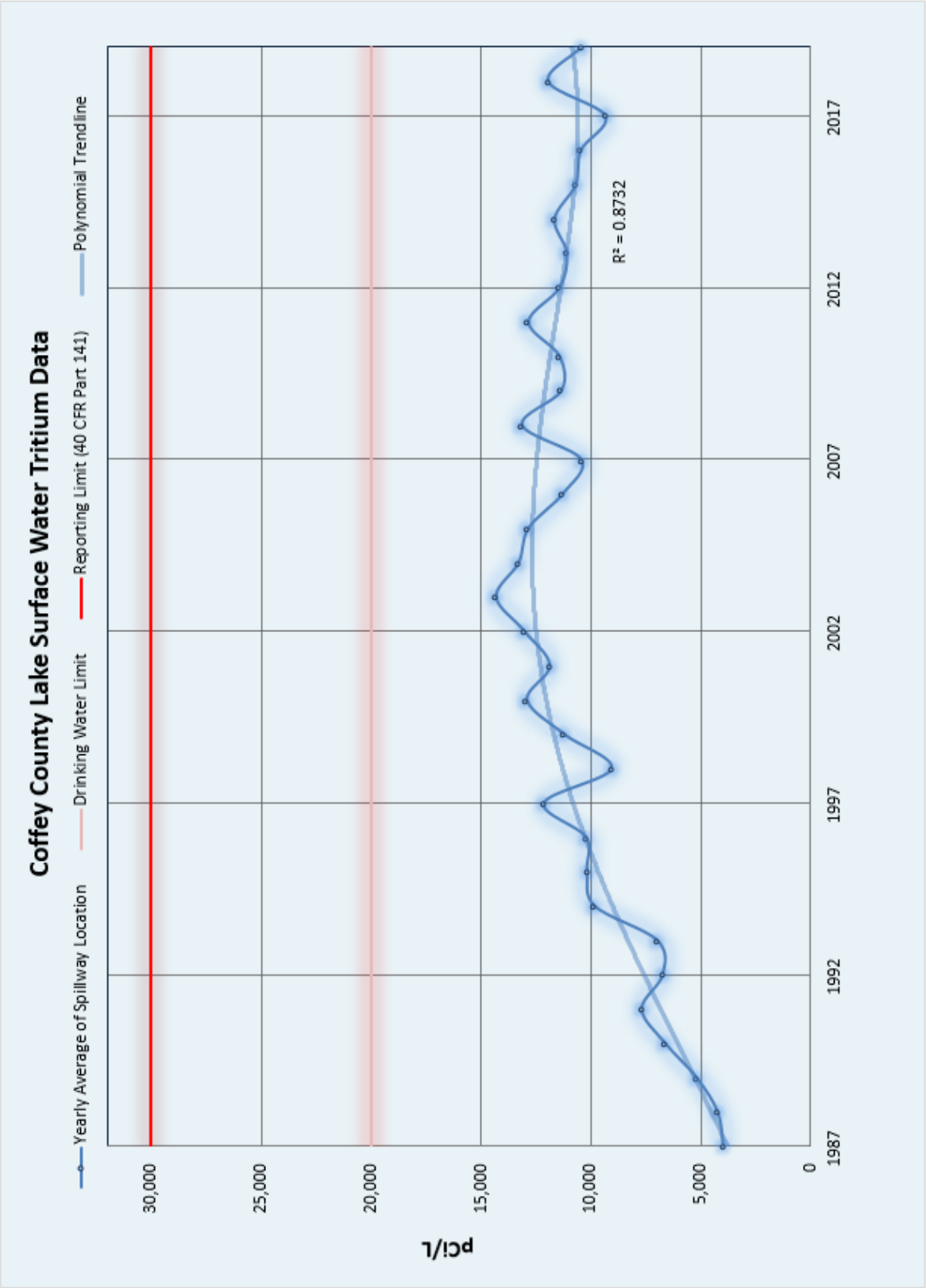

Coffey County Lake Surface Water Tritium Data
Yearly Average of Spillway Location
Drinking Water Limit
Reporting Limit (40 CFR Part 141)
Polynomial Trendline
R² = 0.8732
pCi/L
30,000
25,000
20,000
15,000
10,000
5,000
0
1987
1992
1997
2002
2007
2012
2017

CHART 6

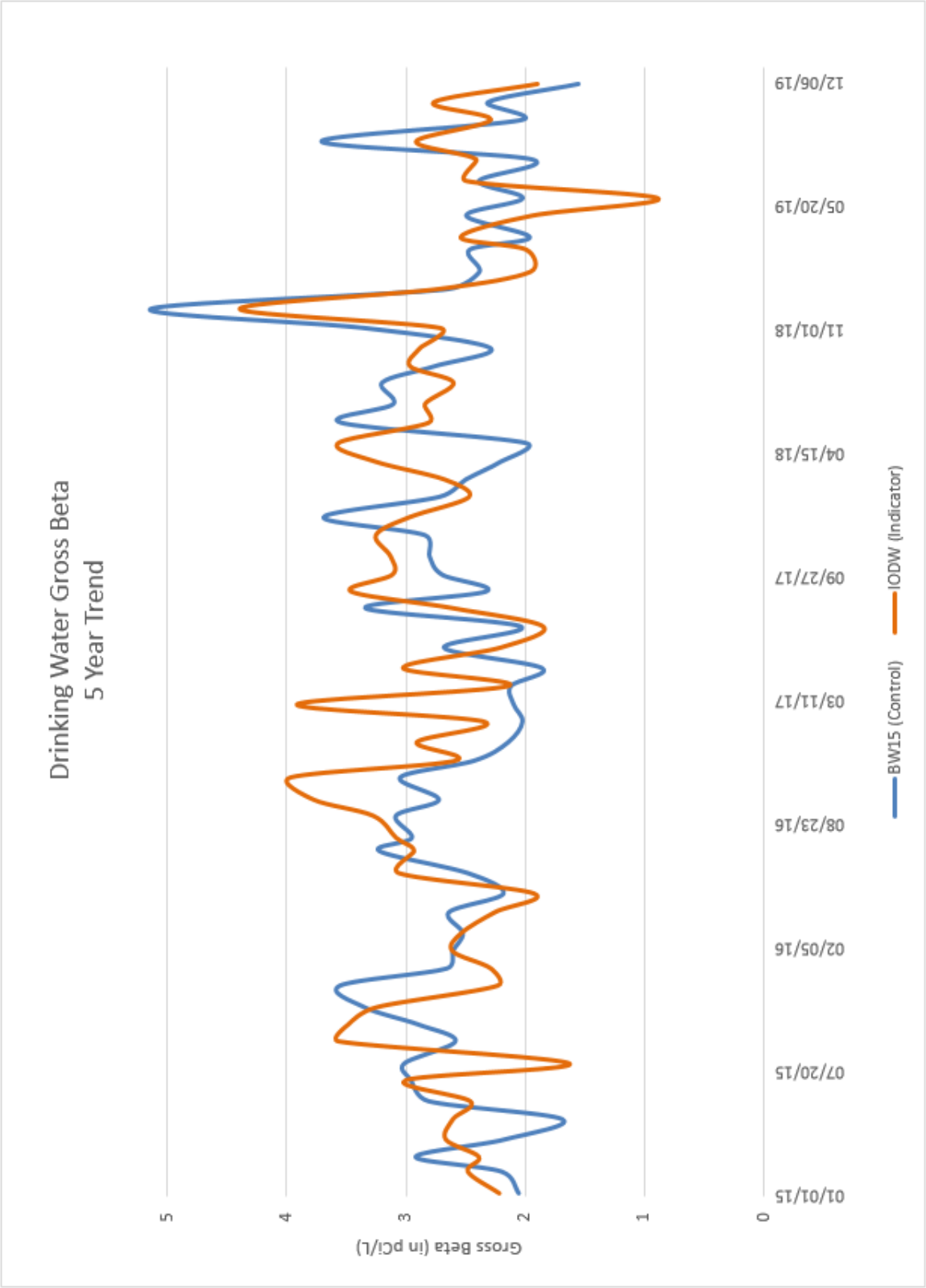
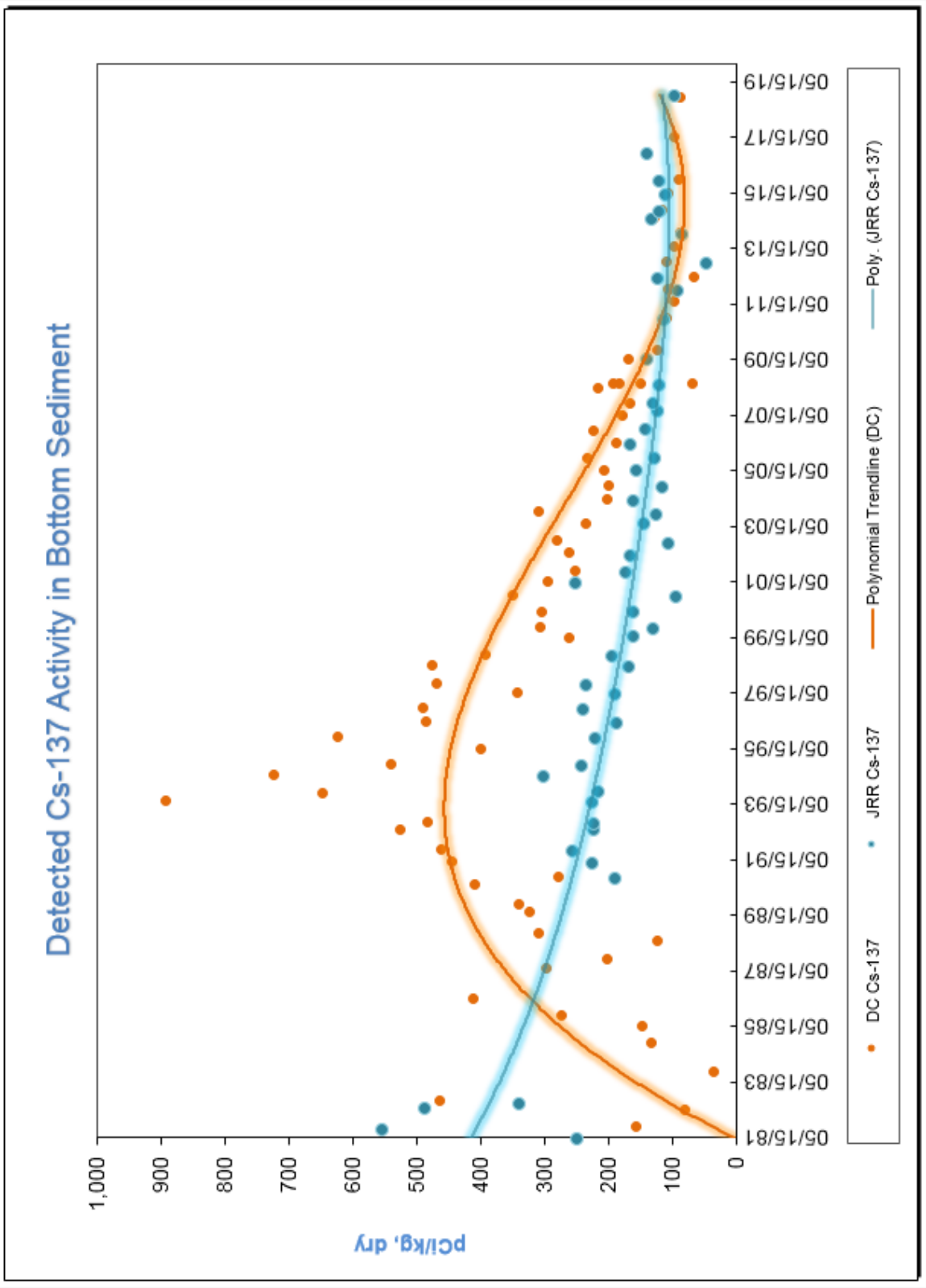

Drinking Water Gross Beta
5 Year Trend
Gross Beta (in pCi/L)
0
1
2
3
4
5
01/01/15
07/20/15
02/05/16
08/23/16
03/11/17
09/27/17
04/15/18
11/01/18
05/20/19
12/06/19
BW15 (Control)
IODW (Indicator)

CHART 7


Detected Cs-137 Activity in Bottom Sediment
pCi/kg, dry
1,000
900
800
700
600
500
400
300
200
100
0
05/15/81
05/15/83
05/15/85
05/15/87
05/15/89
05/15/91
05/15/93
05/15/95
05/15/97
05/15/99
05/15/01
05/15/03
05/15/05
05/15/07
05/15/09
05/15/11
05/15/13
05/15/15
05/15/17
05/15/19
DC Cs-137
JRR Cs-137
Polynomial Trendline (DC)
Poly. (JRR Cs-137)

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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, 2019 through December, 2019

Appendix A

Interlaboratory/ Intralaboratory Comparison Program Results

Environmental, Inc., Midwest Laboratory has participated in interlaboratory comparison (crosscheck) programs since the formulation of it's 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.

Results in Table A-2 were obtained through participation in the New York Department of Health Environmental Laboratory Approval Program (ELAP) PT

Table A-3 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-4 lists results of the analyses on in-house "spiked" samples for the past twelve months. All samples are prepared using NIST traceable sources. Data for previous years available upon request.

Table A-5 lists results of the analyses on in-house "blank" samples for the past twelve months. Data for previous years available upon request.

Table A-6 lists analytical results from the in-house "duplicate" program for the past twelve months. Acceptance is based on the each result being with 25% of the mean of the two results or the two sigma uncertanties of each result overlap.

The results in Table A-7 were obtained through participation in the Mixed Analyte Performance Evaluation Program.

Results in Table A-8 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 "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
ERW-71	1/7/2019	Ba-133	97.9 ± 4.5	99.5	84.1 - 109	Pass
ERW-71	1/7/2019	Cs-134	45.4 ± 3.1	49.1	39.5 - 54.0	Pass
ERW-71	1/7/2019	Cs-137	129 ± 6	125	112 - 140	Pass
ERW-71	1/7/2019	Co-60	98.1 ± 4.1	96.4	86.8 - 108	Pass
ERW-71	1/7/2019	Zn-65	80.4 ± 7.8	77.4	69.5 ± 93.2	Pass
ERW-73	1/7/2019	Gr. Alpha	22.2 ± 1.6	21.8	10.9 - 29.5	Pass
ERW-73	1/7/2019	Gr. Beta	46.4 ± 1.4	55.7	38.1 - 62.6	Pass
ERW-75	1/7/2019	Ra-226	7.19 ± 0.30	7.37	5.55 ± 8.72	Pass
ERW-75	1/7/2019	Ra-228	4.02 ± 0.70	4.28	2.48 - 5.89	Pass
ERW-75	1/7/2019	Uranium	50.2 ± 2.9	68.2	55.7 - 75.0	Fail[b]
ERW-77	1/7/2019	H-3	2,129 ± 158	2,110	1,740 - 2,340	Pass
ERW-397	2/11/2019	I-131	27.2 ± 1.0	25.9	25.1 - 30.6	Pass
ERW-1141	4/8/2019	Ra-226	7.58 ± 0.53	7.15	5.39 - 8.48	Pass
ERW-1141	4/8/2019	Ra-228	2.64 ± 0.79	2.94	1.54 - 4.35	Pass
ERW-1141	4/8/2019	Uranium	67.0 ± 0.9	55.9	45.6 - 61.5	Fail[c]
ERW-2471	7/8/2019	Ba-133	66.5 ± 4.0	66.9	55.8 - 73.6	Pass
ERW-2471	7/8/2019	Cs-134	29.6 ± 2.6	32.0	25.1 - 35.2	Pass
ERW-2471	7/8/2019	Cs-137	21.3 ± 3.6	21.4	17.6 - 26.7	Pass
ERW-2471	7/8/2019	Co-60	99.9 ± 4.4	95.1	85.6 - 107.0	Pass
ERW-2471	7/8/2019	Zn-65	43.7 ± 6.2	41.2	35.3 - 51.4	Pass
ERW-2473	7/8/2019	Gr. Alpha	41.7 ± 2.1	70.6	37.1 - 87.1	Pass
ERW-2473	7/8/2019	Gr. Beta	57.0 ± 1.6	63.9	44.2 - 70.5	Pass
ERW-2477	7/8/2019	Ra-226	16.2 ± 0.5	18.5	13.8 - 21.1	Pass
ERW-2477	7/8/2019	Ra-228	6.2 ± 0.8	8.2	5.2 - 10.3	Pass
ERW-2477	7/8/2019	Uranium	63.8 ± 3.6	68.3	55.8 - 75.1	Pass
ERW-2479	7/8/2019	H-3	8,630 ± 200	16,700	14,600 - 18,400	Fail[d]
ERW-2475	7/8/2019	I-131	33.6 ± 1.3	29.6	24.6 - 34.6	Pass

[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] In order to get to the root cause of the above "Fail" resolution the U-232 tracer was standardized using a known concentration of NIST U-238 solution. A duplicate analysis was performed and the results obtained were well within the acceptance range (Known value for Total Uranium=68.2 pCi/L, acceptance range of (55.7-75 pCi/L). The results obtained were 63.3 pCi/L and 66.0 pCi/L respectively.

[c] The standardized U-232 value utilized on ERA sample ERW-1141 above was found to be estimated high due to interferences in the U-238 solution causing ERW-1141 to fail the study. After performing U-isotopic chemistry on the NIST-Uranium solution to remove interferences a more accurate U-232 tracer concentration was obtained. The Uranium result in the subsequent ERA PT study was acceptable. See ERW-2477 Uranium result above.

[d] EIML's routine H-3 analysis does include a blank sample. The ERA provided blank was paired with a H-3 standard vial and EIML's blank was also paired with a standard vial. Inadvertently the efficiency was overestimated by a factor of 2. This understated the calculated results by half. The result of reanalysis (17,400 pCi/L) is within the control limits for the study.

TABLE A-2. Interlaboratory Comparison Crosscheck program, New York Department of Health (ELAP)[a].

Lab Code	Date	Analysis	Concentration (pCi/L) Laboratory Result	Assigned Value	Acceptance Limits	Acceptance
			Shipment 427R			
NYW-3472	9/17/2019	H-3	5250 ± 229	4991	4280 - 5490	Pass
NYW-3476	9/17/2019	Gross Alpha	18.0 ± 1.2	20.1	9.99 - 27.5	Pass
NYW-3476	9/17/2019	Gross Beta	22.7 ± 1.0	27.2	17.1 - 35.1	Pass
NYW-3478	9/17/2019	I-131	18.7 ± 1.8	15.6	12.8 - 19.3	Pass
NYW-3480	9/17/2019	Ra-226	5.02 ± 0.37	4.41	3.37 - 5.43	Pass
NYW-3480	9/17/2019	Ra-228	16.0 ± 1.9	18.3	12.3 - 21.9	Pass
NYW-3480	9/17/2019	Uranium	13.7 ± 0.9	13.9	11.0 - 15.7	Pass
NYW-3482	9/17/2019	Co-60	63.9 ± 4.0	63.0	56.7 - 71.8	Pass
NYW-3482	9/17/2019	Zn-65	108 ± 9	113	97.2 - 129	Pass
NYW-3482	9/17/2019	Ba-133	53.3 ± 4.3	61.9	51.4 - 68.2	Pass
NYW-3482	9/17/2019	Cs-134	47.2 ± 3.4	55.8	45.1 - 61.4	Pass
NYW-3482	9/17/2019	Cs-137	52.0 ± 4.6	53.8	48.4 - 62.0	Pass

[a] Results obtained by Environmental, Inc., Midwest Laboratory as a participant in the crosscheck program for proficiency testing in drinking water conducted by the New York Department of Health Laboratory Approval Program(NY ELAP).

TABLE A-3. Thermoluminescent Dosimetry, (TLD, $CaSO_4$: Dy Cards).[a]

				mrem		
Lab Code	Irradiation Date	Description	Delivered Dose	Reported[b] Dose	Performance[c] Quotient (P)	
Environmental, Inc.		Group 1				
2019-1	11/11/2019	Spike 1	126.0	128.3	0.02	
2019-1	11/11/2019	Spike 2	126.0	122.2	-0.03	
2019-1	11/11/2019	Spike 3	126.0	122.5	-0.03	
2019-1	11/11/2019	Spike 4	126.0	119.3	-0.05	
2019-1	11/11/2019	Spike 5	126.0	116.9	-0.07	
2019-1	11/11/2019	Spike 6	126.0	109.5	-0.13	
2019-1	11/11/2019	Spike 7	126.0	114.6	-0.09	
2019-1	11/11/2019	Spike 8	126.0	121.8	-0.03	
2019-1	11/11/2019	Spike 9	126.0	120.2	-0.05	
2019-1	11/11/2019	Spike 10	126.0	126.4	0.00	
2019-1	11/11/2019	Spike 11	126.0	125.0	-0.01	
2019-1	11/11/2019	Spike 12	126.0	109.0	-0.13	
2019-1	11/11/2019	Spike 13	126.0	123.4	-0.02	
2019-1	11/11/2019	Spike 14	126.0	118.2	-0.06	
2019-1	11/11/2019	Spike 15	126.0	134.3	0.07	
2019-1	11/11/2019	Spike 16	126.0	120.1	-0.05	
2019-1	11/11/2019	Spike 17	126.0	131.3	0.04	
2019-1	11/11/2019	Spike 18	126.0	120.4	-0.04	
2019-1	11/11/2019	Spike 19	126.0	121.1	-0.04	
2019-1	11/11/2019	Spike 20	126.0	122.8	-0.03	
Mean (Spike 1-20)				121.4	-0.04	Pass[d]
Standard Deviation (Spike 1-20)				6.2	0.05	Pass[d]

a TLD's were irradiated by the University of Wisconsin-Madison Radiation Calibration Laboratory following ANSI N13.37 protocol from a known air kerma rate. TLD's were read and the results were submitted by Environmental Inc. to the University of Wisconsin-Madison Radiation Calibration Laboratory for comparison to the delivered dose.

b Reported dose was converted from exposure (R) to Air Kerma (cGy) using a conversion of 0.876. Conversion from air kerma to ambient dose equivalent for Cs-137 at the reference dose point $H^*(10)K_a = 1.20$. mrem/cGy = 1000.

c Performance Quotient (P) is calculated as ((reported dose - conventially true value) ÷ conventially true value) where the conventially true value is the delivered dose.

d Acceptance is achieved when neither the absolute value of the mean of the P values, nor the standard deviation of the P values exceed 0.15.

TABLE A-3. Thermoluminescent Dosimetry, (TLD, $CaSO_4$: Dy Cards).[a]

Lab Code	Irradiation Date	Description	Delivered Dose (mrem)	Reported[b] Dose (mrem)	Performance[c] Quotient (P)	
Environmental, Inc.		Group 2				
2019-2	11/11/2019	Spike 21	79.0	78.8	0.00	
2019-2	11/11/2019	Spike 22	79.0	71.8	-0.09	
2019-2	11/11/2019	Spike 23	79.0	75.8	-0.04	
2019-2	11/11/2019	Spike 24	79.0	71.3	-0.10	
2019-2	11/11/2019	Spike 25	79.0	74.5	-0.06	
2019-2	11/11/2019	Spike 26	79.0	71.6	-0.09	
2019-2	11/11/2019	Spike 27	79.0	73.3	-0.07	
2019-2	11/11/2019	Spike 28	79.0	74.0	-0.06	
2019-2	11/11/2019	Spike 29	79.0	73.8	-0.07	
2019-2	11/11/2019	Spike 30	79.0	76.0	-0.04	
2019-2	11/11/2019	Spike 31	79.0	76.7	-0.03	
2019-2	11/11/2019	Spike 32	79.0	77.8	-0.02	
2019-2	11/11/2019	Spike 33	79.0	75.2	-0.05	
2019-2	11/11/2019	Spike 34	79.0	69.1	-0.13	
2019-2	11/11/2019	Spike 35	79.0	68.7	-0.13	
2019-2	11/11/2019	Spike 36	79.0	68.2	-0.14	
2019-2	11/11/2019	Spike 37	79.0	67.9	-0.14	
2019-2	11/11/2019	Spike 38	79.0	68.9	-0.13	
2019-2	11/11/2019	Spike 39	79.0	78.1	-0.01	
2019-2	11/11/2019	Spike 40	79.0	68.6	-0.13	
Mean (Spike 21-40)				73.0	-0.08	Pass[d]
Standard Deviation (Spike 21-40)				3.6	0.05	Pass[d]

a TLD's were irradiated by the University of Wisconsin-Madison Radiation Calibration Laboratory following ANSI N13.37 protocol from a known air kerma rate. TLD's were read and the results were submitted by Environmental Inc. to the University of Wisconsin-Madison Radiation Calibration Laboratory for comparison to the delivered dose.

b Reported dose was converted from exposure (R) to Air Kerma (cGy) using a conversion of 0.876. Conversion from air kerma to ambient dose equivalent for Cs-137 at the reference dose point $H^*(10)K_a = 1.20$. mrem/cGy = 1000.

c Performance Quotient (P) is calculated as ((reported dose - conventially true value) ÷ conventially true value) where the conventially true value is the delivered dose.

d Acceptance is achieved when neither the absolute value of the mean of the P values, nor the standard deviation of the P values exceed 0.15.

TABLE A-4. In-House "Spiked" Samples

Lab Code[b]	Date	Concentration[a] Analysis	Laboratory results 2s, n=1[c]	Known Activity	Control Limits[d]	Acceptance	Ratio Lab/Known
SPW-61	1/5/2019	Ra-226	13.4 ± 0.4	12.3	9.8 - 14.8	Pass	1.09
SPW-118	1/14/2019	H-3	15,463 ± 369	16,507	13,206 - 19,808	Pass	0.94
SPW-178	1/16/2019	Ra-228	17.7 ± 2.1	15.1	12.10 - 18.14	Pass	1.17
SPW-199	1/18/2019	Sr-90	17.6 ± 1.2	17.9	14.3 - 21.5	Pass	0.98
SPW-250	1/24/2019	Ni-63	356.3 ± 44.5	465	326 - 605	Pass	0.77
SPW-256	1/15/2019	Ra-226	12.0 ± 0.4	12.3	9.8 - 14.8	Pass	0.98
SPW-271	3/18/2019	H-3	22,035 ± 450	21,700	17,360 - 26,040	Pass	1.02
SPW-281	1/25/2019	Ra-226	11.6 ± 0.4	12.3	9.8 - 14.8	Pass	0.94
W-012119	4/29/2016	Cs-134	37.3 ± 10.6	36.2	29.0 - 43.4	Pass	1.03
W-012119	4/29/2016	Cs-137	82.7 ± 8.0	71.9	57.5 - 86.3	Pass	1.15
W-012319	4/29/2016	Cs-134	33.4 ± 10.1	36.2	25.3 - 47.1	Pass	0.92
W-012319	4/29/2016	Cs-137	79.1 ± 9.6	71.9	57.5 - 86.3	Pass	1.10
W-012519	4/29/2016	Cs-134	35.0 ± 7.7	36.2	29.0 - 43.4	Pass	0.97
W-012519	4/29/2016	Cs-137	79.2 ± 7.9	71.9	57.5 - 86.3	Pass	1.10
W-012919	4/29/2016	Cs-134	32.3 ± 8.3	36.2	29.0 - 43.4	Pass	0.89
W-012919	4/29/2016	Cs-137	82.3 ± 8.3	71.9	57.5 - 86.3	Pass	1.14
SPW-370	3/19/2019	H-3	21,689 ± 444	21,700	17,360 - 26,040	Pass	1.00
SPW-400	1/31/2019	Ra-226	11.6 ± 0.4	12.3	8.6 - 16.0	Pass	0.95
SPW-461	2/12/2019	Ra-226	11.1 ± 0.4	12.3	8.6 - 16.0	Pass	0.90
W-020619	4/26/2016	Cs-134	35.0 ± 14.9	36.2	29.0 - 43.4	Pass	0.97
W-020619	4/29/2016	Cs-137	72.8 ± 8.9	71.9	57.5 - 86.3	Pass	1.01
W-020819	4/26/2016	Cs-134	36.7 ± 8.6	36.2	29.0 - 43.4	Pass	1.01
W-020819	4/29/2016	Cs-137	76.7 ± 8.7	71.9	57.5 - 86.3	Pass	1.07
SPW-568	2/21/2019	Ra-226	10.3 ± 0.3	12.3	8.6 - 16.0	Pass	0.84
W-021319	4/29/2016	Cs-134	37.7 ± 11.5	36.2	29.0 - 43.4	Pass	1.04
W-021319	4/26/2016	Cs-137	75.8 ± 9.6	71.9	57.5 - 86.3	Pass	1.05
SPW-469	3/19/2019	H-3	21,696 ± 447	21,700	17,360 - 26,040	Pass	1.00
SPW-600	3/6/2019	H-3	20,710 ± 425	21,700	17,360 - 26,040	Pass	0.95
SPW-837	3/21/2019	Ra-228	11.7 ± 1.5	15.1	10.58 - 19.66	Pass	0.78
SPW-709	3/19/2019	H-3	20,369 ± 421	21,700	17,360 - 26,040	Pass	0.94
SPW-818	3/19/2019	H-3	20,457 ± 424	21,700	17,360 - 26,040	Pass	0.94
SPW-845	3/22/2019	U-234	15.1 ± 0.5	13.6	9.5 - 17.7	Pass	1.11
SPW-845	3/22/2019	U-238	15.3 ± 0.5	13.1	9.2 - 17.0	Pass	1.17
SPW-934	3/19/2019	H-3	20,487 ± 421	21,700	17,360 - 26,040	Pass	0.94
SPW-1061	3/1/2019	Ra-226	10.6 ± 0.3	12.3	8.6 - 16.0	Pass	0.86
SPW-1091	4/10/2019	H-3	20,323 ± 421	21,700	17,360 - 26,040	Pass	0.94
SPW-1093	4/8/2019	Ra-228	14.9 ± 1.9	15.1	10.6 - 19.6	Pass	0.98
SPW-1267	4/16/2019	H-3	20,302 ± 421	21,700	17,360 - 26,040	Pass	0.94
SPW-1339	4/18/2019	H-3	19,924 ± 417	21,700	17,360 - 26,040	Pass	0.92
SPW-1403[e]	4/25/2019	Gr. Alpha	56.7 ± 2.6	72.4	36.2 - 108.6	Pass	0.78
SPW-1403[e]	4/25/2019	Gr. Beta	43.2 ± 1.4	54.8	43.8 - 65.8	Fail	0.79
SPW-1427	4/26/2019	H-3	20,119 ± 418	21,700	15,190 - 28,210	Pass	0.93
SPW-1537	5/6/2019	Sr-90	19.9 ± 1.2	17.9	14.3 - 21.5	Pass	1.11
W-050719	4/29/2016	Cs-134	38.5 ± 9.0	36.2	29.0 - 43.4	Pass	1.06
W-050719	4/26/2016	Cs-137	85.2 ± 8.5	71.9	57.5 - 86.3	Pass	1.18
SPW-1582	5/9/2019	H-3	20,492 ± 423	21,700	15,190 - 28,210	Pass	0.94

TABLE A-4. In-House "Spiked" Samples

Lab Code[b]	Date	Analysis	Concentration[a] Laboratory results 2s, n=1[c]	Known Activity	Control Limits[d]	Acceptance	Ratio Lab/Known
W-050919	4/29/2016	Cs-134	37.4 ± 8.9	36.2	29.0 - 43.4	Pass	1.03
W-050919	4/26/2016	Cs-137	81.5 ± 7.8	71.9	57.5 - 86.3	Pass	1.13
SPW-1596	5/8/2019	Ra-228	14.1 ± 1.7	15.1	10.6 - 19.6	Pass	0.94
W-051419	4/29/2016	Cs-134	36.2 ± 11.7	36.2	29.0 - 43.4	Pass	1.00
W-051419	4/26/2016	Cs-137	75.8 ± 10.0	71.9	57.5 - 86.3	Pass	1.05
SPW-1676	5/17/2019	H-3	20,233 ± 420	21,700	15,190 - 28,210	Pass	0.93
SPW-1799	5/20/2019	H-3	20,428 ± 422	21,700	15,190 - 28,210	Pass	0.94
SPW-1858	5/28/2019	H-3	20,367 ± 522	21,700	15,190 - 28,210	Pass	0.94
SPW-1890	5/30/2019	H-3	20,206 ± 419	21,700	15,190 - 28,210	Pass	0.93
SPW-2014	5/31/2019	Ra-226	11.9 ± 0.3	12.3	8.6 - 16.0	Pass	0.97
SPW-2030	6/12/2019	Ni-63	377 ± 45	464.8	325 - 604	Pass	0.81
SPW-2093	6/18/2019	H-3	20,158 ± 418	21,700	17,360 - 26,040	Pass	0.93
W-062419	4/29/2016	Cs-134	33.0 ± 12.4	36.2	29.0 - 43.4	Pass	0.91
W-062419	4/26/2016	Cs-137	66.0 ± 10.4	71.9	57.5 - 86.3	Pass	0.92
SPW-2338	6/26/2019	H-3	20,032 ± 417	21,700	17,360 - 26,040	Pass	0.92
SPW-2552	7/1/2019	Gr. Alpha	20.4 ± 1.5	21.8	10.9 - 32.7	Pass	0.94
SPW-2552	7/1/2019	Gr. Beta	46.1 ± 1.3	55.7	44.6 - 66.8	Pass	0.83
W-072619	4/29/2016	Cs-134	36.3 ± 9.2	36.2	29.0 - 43.4	Pass	1.00
W-072619	4/26/2016	Cs-137	79.7 ± 7.6	71.9	57.5 - 86.3	Pass	1.11
SPW-3188	7/30/2019	Ra-226	11.9 ± 0.3	12.3	8.6 - 16.0	Pass	0.97
SPW-2947	8/9/2019	H-3	20,128 ± 425	21,700	17,360 - 26,040	Pass	0.93
SPW-3003	8/14/2019	H-3	20,588 ± 435	21,700	17,360 - 26,040	Pass	0.95
W-081519	4/26/2019	Cs-134	36.2 ± 9.2	36.2	29.0 - 43.4	Pass	1.00
W-081519	4/26/2019	Cs-137	78.1 ± 8.4	71.9	57.5 - 86.3	Pass	1.09
W-082119	4/26/2019	Cs-134	32.8 ± 9.1	36.2	29.0 - 43.4	Pass	0.91
W-082119	4/26/2019	Cs-137	79.1 ± 7.9	71.9	57.5 - 86.3	Pass	1.10
SPW-3151	8/26/2019	H-3	20,329 ± 428	21,700	17,360 - 26,040	Pass	0.94
W-082619	4/26/2019	Cs-134	33.3 ± 17.8	36.2	29.0 - 43.4	Pass	0.92
W-082619	4/26/2019	Cs-137	82.6 ± 13.2	71.9	57.5 - 86.3	Pass	1.15
W-082719	4/26/2019	Cs-134	33.9 ± 7.0	36.2	29.0 - 43.4	Pass	0.94
W-082719	4/26/2019	Cs-137	81.4 ± 6.0	71.9	57.5 - 86.3	Pass	1.13
SPW-3359	8/30/2019	Gr. Alpha	54.2 ± 0.3	72.4	36.2 - 108.6	Pass	0.75
SPW-3359	8/30/2019	Gr. Beta	59.7 ± 0.2	54.8	43.8 - 65.8	Pass	1.09
SPW-3323	9/6/2019	Ra-228	12.7 ± 1.8	15.1	10.6 - 19.6	Pass	0.84
W-091019	4/26/2019	Cs-134	31.0 ± 11.3	36.2	29.0 - 43.4	Pass	0.86
W-091019	4/26/2019	Cs-137	80.5 ± 10.0	71.9	57.5 - 86.3	Pass	1.12
SPW-3349	9/10/2019	H-3	19,851 ± 422	21,700	17,360 - 26,040	Pass	0.91
SPW-3410	9/13/2019	H-3	20,267 ± 431	21,700	17,360 - 26,040	Pass	0.93
W-091719	4/26/2019	Cs-134	39.3 ± 12.6	36.2	29.0 - 43.4	Pass	1.09
W-091719	4/26/2019	Cs-137	81.1 ± 9.9	71.9	57.5 - 86.3	Pass	1.13
SPW-3450	9/17/2019	H-3	20,036 ± 427	21,700	17,360 - 26,040	Pass	0.92
W-091919	9/19/2019	Cs-134	40.0 ± 10.7	36.2	29.0 - 43.4	Pass	1.10
W-091919	9/19/2019	Cs-137	71.0 ± 8.7	71.9	57.5 - 86.3	Pass	0.99
SPW-3569	8/28/2019	Ra-226	11.9 ± 0.3	12.3	8.6 - 16.0	Pass	0.97
SPW-3571	9/27/2019	H-3	21,026 ± 440	21,700	17,360 - 26,040	Pass	0.97

TABLE A-4. In-House "Spiked" Samples

Lab Code[b]	Date	Concentration[a] Analysis	Laboratory results 2s, n=1[c]	Known Activity	Control Limits[d]	Acceptance	Ratio Lab/Known
SPW-3615	10/1/2019	Ra-228	18.9 ± 2.5	14.9	10.4 - 19.3	Pass	1.27
SPW-3706	10/8/2019	H-3	20,082 ± 427	21,700	17,360 - 26,040	Pass	0.93
SPW-4093	10/14/2019	Gr. Alpha	20.8 ± 0.1	19.7	9.9 - 29.6	Pass	1.06
SPW-4093	10/14/2019	Gr. Beta	63.2 ± 0.1	61.1	48.9 - 73.3	Pass	1.03
SPW-4095	10/24/2019	H-3	20,684 ± 432	21,700	17,360 - 26,040	Pass	0.95
SPW-4144	9/26/2019	Ra-226	12.8 ± 0.3	12.3	8.6 - 16.0	Pass	1.04
W-091719	3/19/2018	H-3	22,291 ± 470	21,700	17,360 - 26,040	Pass	1.03
SPW-4239	10/30/2019	Ra-228	12.4 ± 1.8	14.9	10.4 - 19.3	Pass	0.84
SPW-4254	11/8/2019	H-3	20,187 ± 427	21,700	17,360 - 26,040	Pass	0.93
SPW-4368	11/14/2019	H-3	20,386 ± 429	21,700	17,360 - 26,040	Pass	0.94
SPW-4370	10/30/2019	Ra-226	12.8 ± 0.4	12.3	8.6 - 16.0	Pass	1.04
SPW-4472	11/21/2019	H-3	20,479 ± 432.0	21,700	17,360 - 26,040	Pass	0.94
SPW-4474	11/22/2019	Sr-90	18.9 ± 1.2	17.9	14.3 - 21.5	Pass	1.06
SPW-4602	12/5/2019	H-3	20,187 ± 429	21,700	17,360 - 26,040	Pass	0.93
W-121119	3/19/2018	H-3	22,734 ± 477	21,700	17,360 - 26,040	Pass	1.05
SPW-4663	12/11/2019	Ra-228	11.2 ± 1.6	14.9	10.4 - 19.3	Pass	0.75
SPW-4688	12/13/2019	H-3	20,506 ± 431	21,700	17,360 - 26,040	Pass	0.94
SPW-4734	11/15/2019	Ra-226	12.6 ± 0.3	12.3	8.6 - 16.0	Pass	1.02
SPW-4743	12/5/2019	Ra-226	10.0 ± 0.3	12.3	8.6 - 16.0	Pass	0.81
SPW-4745	12/19/2019	H-3	20,067 ± 427	21,700	17,360 - 26,040	Pass	0.92
SPW-4889	12/19/2019	Ra-226	9.3 ± 0.3	12.3	8.6 - 16.0	Pass	0.76
SPW-4636	12/27/2019	Tc-99	94.3 ± 8.2	90.3	72.2 - 108.4	Pass	1.04
SPW-4899	1/3/2020	H-3	20,386 ± 432	21,700	17,360 - 26,040	Pass	0.94

[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] Control limits are listed in Attachment A of this report.

[e] The LCS sample was prepared from an Environmental Resource Associates (ERA) sample of known activity. While the analysis did satisfy the acceptance criteria of the ERA study from which it was sourced, it did not satisfy EIML's internal LCS acceptance criteria. An investigation is in process to determine the reason for the low bias and to evaluate the acceptance criteria.

NOTE: For fish, gelatin is used for the spike matrix. For vegetation, cabbage is used for the spike matrix.

TABLE A-5. In-House "Blank" Samples

Lab Code[b]	Sample Type	Date	Analysis[c]	Concentration[a]		
				Laboratory results (4.66σ)		Acceptance
				LLD	Activity[d]	Criteria (4.66 σ)
SPW-5449	Water	1/7/2019	Gr. Alpha	0.76	-0.30 ± 0.52	2
SPW-5449	Water	1/7/2019	Gr. Beta	0.42	0.19 ± 0.31	4
SPW-34	Water	1/7/2019	I-131	0.36	0.13 ± 0.18	1
SPW-60	Water	11/5/2018	Ra-226	0.03	0.15 ± 0.03	2
SPW-119	Water	1/14/2019	H-3	148	42 ± 80	200
SPW-177	Water	1/16/2019	Ra-228	0.93	-0.10 ± 0.42	2
SPW-198	Water	1/18/2019	Sr-89	0.67	0.25 ± 0.50	5
SPW-198	Water	1/18/2019	Sr-90	0.67	-0.16 ± 0.29	1
SPW-249	Water	1/24/2019	Ni-63	67	31 ± 41	200
SPW-255	Water	1/15/2019	Ra-226	0.04	0.16 ± 0.03	2
SPW-280	Water	1/25/2019	Ra-226	0.06	-0.09 ± 0.14	2
SPW-399	Water	1/31/2019	Ra-226	0.03	0.15 ± 0.03	2
SPW-460	Water	2/12/2019	Ra-226	0.03	0.15 ± 0.02	2
SPW-567	Water	2/21/2019	Ra-226	0.03	0.13 ± 0.02	2
SPW-844	Water	3/22/2019	U-234	0.19	0.04 ± 0.14	1
SPW-844	Water	3/22/2019	U-238	0.19	0.00 ± 0.11	1
SPW-836	Water	3/21/2019	Ra-228	0.74	0.53 ± 0.41	2
SPW-1060	Water	3/31/2019	Ra-226	0.04	-0.02 ± 0.03	2
SPW-1090	Water	4/10/2019	H-3	155	-14 ± 72	200
SPW-1092	Water	4/8/2019	Ra-228	0.82	0.75 ± 0.46	2
SPW-1266	Water	4/16/2019	H-3	152	67 ± 74	200
SPW-1338	Water	4/18/2019	H-3	152	66 ± 79	200
SPW-1386	Water	4/8/2019	Ra-226	0.03	0.09 ± 0.03	2
SPW-1426	Water	4/26/2019	H-3	156	34 ± 75	200
SPW-1536	Water	5/6/2019	Sr-89	0.66	-0.07 ± 0.45	5
SPW-1536	Water	5/6/2019	Sr-90	0.59	-0.10 ± 0.26	1
SPW-1581	Water	5/9/2019	H-3	147	73 ± 77	200
SPW-1644	Water	4/22/2019	Ra-226	0.02	0.15 ± 0.02	2
SPW-1675	Water	5/17/2019	H-3	154	-30 ± 71	200
SPW-1798	Water	5/20/2019	H-3	149	24 ± 73	200
SPW-1857	Water	5/28/2019	H-3	150	54 ± 74	200
SPW-1889	Water	5/30/2019	H-3	152	45 ± 73	200
SPW-2013	Water	5/31/2019	Ra-226	0.01	0.13 ± 0.02	2
SPW-2029	Water	6/12/2019	Ni-63	66	10 ± 40	200
SPW-2092	Water	6/18/2019	H-3	154	-42 ± 70	200
SPW-2237	Water	6/26/2019	H-3	150	-9 ± 69	200
SPW-2107	Water	6/18/2019	I-131	0.16	0.04 ± 0.09	1
SPW-2152	Water	6/19/2019	I-131	0.16	0.04 ± 0.09	1

TABLE A-5. In-House "Blank" Samples

Lab Code[b]	Sample Type	Date	Analysis[c]	Concentration[a]		
				Laboratory results (4.66σ)		Acceptance
				LLD	Activity[d]	Criteria (4.66 σ)
SPW-3187	Water	7/30/2019	Ra-226	0.02	0.17 ± 0.02	2
SPW-2924	Water	8/6/2019	Sr-89	0.71	-0.06 ± 0.57	5
SPW-2924	Water	8/6/2019	Sr-90	0.59	0.08 ± 0.28	1
SPW-2946	Water	8/9/2019	H-3	152	33 ± 72	200
SPW-3002	Water	8/14/2019	H-3	152	-22 ± 74	200
SPW-3150	Water	8/26/2019	H-3	151	115 ± 77	200
SPW-3358	Water	8/30/2019	Gr. Alpha	0.44	-0.08 ± 0.30	2
SPW-3358	Water	8/30/2019	Gr. Beta	0.72	-0.31 ± 0.49	4
SPW-3568	Water	8/28/2019	Ra-226	0.03	0.16 ± 0.03	2
SPW-3322	Water	9/6/2019	Ra-228	0.82	0.46 ± 0.43	2
SPW-3348	Water	9/10/2019	H-3	150	107 ± 76	200
SPW-3409	Water	9/13/2019	H-3	154	133 ± 79	200
SPW-3449	Water	9/17/2019	H-3	147	102 ± 79	200
SPW-3570	Water	9/27/2019	H-3	151	70 ± 77	200
SPW-3614	Water	10/1/2019	Ra-228	1.29	1.03 ± 0.73	2
SPW-3705	Water	10/8/2019	H-3	147	107 ± 77	200
SPW-4238	Water	10/30/2019	Ra-228	0.99	0.58 ± 0.52	2
SPW-4253	Water	11/8/2019	H-3	151	80 ± 76	200
SPW-4367	Water	11/14/2019	H-3	154	42 ± 74	200
SPW-4369	Water	10/30/2016	Ra-226	0.03	0.14 ± 0.03	2
SPW-4471	Water	11/21/2019	H-3	155	81 ± 77	200
SPW-4474	Water	11/21/2019	C-14	12	0 ± 7	200
SPW-4476	Water	11/22/2019	Sr-89	0.62	0.23 ± 0.45	5
SPW-4476	Water	11/22/2019	Sr-90	0.57	-0.16 ± 0.24	1
SPW-4601	Water	12/5/2019	H-3	155	28 ± 74	200
SPW-4635	Water	12/9/2019	Tc-99	12	-6 ± 7	20
SPW-4662	Water	12/17/2019	Ra-228	0.77	0.55 ± 0.42	2
SPW-4687	Water	12/13/2019	H-3	150	143 ± 78	200
SPW-4733	Water	11/15/2019	Ra-226	0.03	0.13 ± 0.03	2
SPW-4742	Water	12/5/2019	Ra-226	0.04	0.10 ± 0.10	2
SPW-4744	Water	12/19/2019	H-3	151	119 ± 81	200
SPW-4888	Water	12/19/2019	Ra-226	0.03	0.15 ± 0.02	2
SPW-4898	Water	1/3/2020	H-3	159	19 ± 78	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-6. In-House "Duplicate" Samples

			Concentration[a]			
Lab Code[b]	Date	Analysis	First Result	Second Result	Averaged Result	Acceptance
AP-5499,5500	1/2/2019	Fe-55	941 ± 220	1027 ± 226	984 ± 158	Pass
AP-5499,5500	1/2/2019	Sr-89	20.2 ± 7.3	14.9 ± 5.7	17.5 ± 4.7	Pass
AP-5499,5500	1/2/2019	Ni-63	12.1 ± 8.5	15.6 ± 8.5	13.8 ± 6.0	Pass
CF-20,21	1/2/2019	Gr. Beta	10.0 ± 0.2	10.7 ± 0.2	10.3 ± 0.2	Pass
CF-20,21	1/2/2019	Sr-90	0.005 ± 0.002	0.005 ± 0.002	0.005 ± 0.001	Pass
CF-20,21	1/2/2019	Be-7	0.27 ± 0.09	0.29 ± 0.08	0.28 ± 0.06	Pass
CF-20,21	1/2/2019	K-40	6.69 ± 0.34	6.83 ± 0.34	6.76 ± 0.24	Pass
SG-211,212	1/21/2019	Ra-226	7.94 ± 1.15	8.50 ± 1.11	9.79 ± 0.19	Pass
SG-211,212	1/21/2019	Ac-228	4.46 ± 0.37	4.63 ± 0.43	4.55 ± 0.28	Pass
WW-324,325	2/4/2019	Gr. Alpha	0.68 ± 0.44	0.49 ± 0.46	0.59 ± 0.32	Pass
WW-324,325	2/4/2019	Gr. Beta	1.80 ± 0.55	2.95 ± 0.63	2.37 ± 0.42	Pass
W-345,346	2/4/2019	H-3	245 ± 84	277 ± 85	261 ± 60	Pass
WW-797,798	3/5/2019	H-3	165 ± 80	222 ± 83	193 ± 58	Pass
WW-648,649	3/8/2019	H-3	587 ± 101	630 ± 102	608 ± 72	Pass
SW-713,714	3/14/2019	H-3	326 ± 90	254 ± 86	290 ± 62	Pass
AP-1241,1242	4/2/2019	Be-7	0.097 ± 0.018	0.108 ± 0.020	0.103 ± 0.013	Pass
AP-1285,1286	4/3/2019	Be-7	0.080 ± 0.014	0.078 ± 0.012	0.079 ± 0.009	Pass
AP-1306,1307	4/3/2019	Be-7	0.085 ± 0.009	0.096 ± 0.011	0.090 ± 0.007	Pass
AP-1327,1328	4/3/2019	Be-7	0.078 ± 0.010	0.079 ± 0.011	0.078 ± 0.007	Pass
AP-1327,1328	4/3/2019	K-40	0.012 ± 0.007	0.021 ± 0.010	0.017 ± 0.006	Pass
AP-2119,2120	4/3/2019	Be-7	0.276 ± 0.098	0.265 ± 0.116	0.270 ± 0.076	Pass
AP-2225,2226	4/3/2019	Be-7	0.231 ± 0.128	0.208 ± 0.123	0.220 ± 0.089	Pass
CF-820,821	4/3/2019	K-40	6.39 ± 0.30	6.63 ± 0.37	6.51 ± 0.24	Pass
WW-648,649	4/5/2019	H-3	587 ± 101	630 ± 102	608 ± 72	Pass
WW-1043,1044	4/5/2019	H-3	666 ± 121	662 ± 121	664 ± 86	Pass
SW-1087,1088	4/8/2019	H-3	9,997 ± 300	10,330 ± 305	10,164 ± 214	Pass
WW-1198,1199	4/9/2019	H-3	562 ± 99	640 ± 102	601 ± 71	Pass
LW-1503,1504	4/25/2019	Gr. Beta	1.09 ± 0.55	1.46 ± 0.57	1.27 ± 0.39	Pass
WW-1789,1790	5/7/2019	H-3	366 ± 90	400 ± 92	383 ± 64	Pass
SG-2269,2270	5/7/2019	Pb-214	39.1 ± 0.5	40.3 ± 0.5	39.7 ± 0.4	Pass
SG-2269,2270	5/7/2019	Ac-228	53.2 ± 1.0	57.1 ± 1.0	55.2 ± 0.7	Pass
DW-10049,10050	5/7/2019	Ra-226	1.31 ± 0.13	1.66 ± 0.15	1.49 ± 0.10	Pass
DW-10049,10050	5/7/2019	Ra-228	1.24 ± 0.52	1.33 ± 0.53	1.29 ± 0.37	Pass
WW-1690A,B	5/8/2019	H-3	325 ± 89	303 ± 93	314 ± 64	Pass
S-1812,1813	5/16/2019	K-40	22.0 ± 0.9	23.3 ± 1.0	22.6 ± 0.7	Pass
S-1812,1813	5/16/2019	Cs-137	0.05 ± 0.03	0.07 ± 0.04	0.06 ± 0.02	Pass
DW-10053,10054	5/22/2019	Gr. Alpha	0.93 ± 0.63	1.14 ± 0.72	1.04 ± 0.48	Pass
DW-10053,10054	5/22/2019	Gr. Beta	1.43 ± 0.62	1.13 ± 0.59	1.28 ± 0.43	Pass
W-2053,2054	5/29/2019	H-3	1572 ± 135	1470 ± 131	1521 ± 94	Pass

TABLE A-6. In-House "Duplicate" Samples

			Concentration[a]			
Lab Code[b]	Date	Analysis	First Result	Second Result	Averaged Result	Acceptance
G-1989,1990	6/3/2019	Be-7	0.80 ± 0.18	0.72 ± 0.15	0.76 ± 0.12	Pass
G-1989,1990	6/3/2019	K-40	6.15 ± 0.51	5.98 ± 0.46	6.07 ± 0.34	Pass
G-1989,1990	6/3/2019	Gr. Beta	7.24 ± 0.19	7.00 ± 0.19	7.12 ± 0.13	Pass
WW-2204,2205	6/6/2019	H-3	3861 ± 194	3722 ± 191	3792 ± 136	Pass
S-2031,2032	6/10/2019	Pb-214	5.16 ± 0.19	4.75 ± 0.22	4.96 ± 0.15	Pass
S-2031,2032	6/10/2019	Ac-228	3.81 ± 0.31	3.63 ± 0.33	3.72 ± 0.23	Pass
S-2010,2011	6/10/2019	Pb-214	1.48 ± 0.10	1.05 ± 0.11	1.27 ± 0.07	Pass
F-2140,2141	6/12/2019	K-40	1.01 ± 0.28	1.39 ± 0.32	1.20 ± 0.21	Pass
S-2162,2163	6/12/2019	Pb-214	0.65 ± 0.06	0.54 ± 0.05	0.60 ± 0.04	Pass
S-2162,2163	6/12/2019	Ac-228	0.46 ± 0.10	0.44 ± 0.08	0.45 ± 0.07	Pass
S-2162,2163	6/12/2019	K-40	4.22 ± 0.49	3.81 ± 0.41	4.02 ± 0.32	Pass
S-2162,2163	6/12/2019	Tl-208	0.09 ± 0.02	0.10 ± 0.02	0.09 ± 0.01	Pass
S-2162,2163	6/12/2019	Pb-212	0.34 ± 0.03	0.26 ± 0.03	0.30 ± 0.02	Pass
SWT-2355,2356	6/25/2019	Gr. Beta	1.12 ± 0.57	1.24 ± 0.56	1.18 ± 0.40	Pass
AP-2689,2690	6/28/2019	Be-7	0.089 ± 0.020	0.075 ± 0.018	0.082 ± 0.013	Pass
AP-2710,2711	7/1/2019	Be-7	0.091 ± 0.010	0.097 ± 0.010	0.094 ± 0.007	Pass
AP-2731,2732	7/2/2019	Be-7	0.073 ± 0.013	0.072 ± 0.011	0.072 ± 0.009	Pass
DW-10062,10063	7/5/2019	Ra-226	4.10 ± 0.30	4.03 ± 0.30	4.07 ± 0.21	Pass
DW-10062,10063	7/5/2019	Ra-228	1.95 ± 0.60	2.31 ± 0.62	2.13 ± 0.43	Pass
AP-70818,70819	7/8/2019	Gr. Beta	0.021 ± 0.004	0.023 ± 0.004	0.022 ± 0.003	Pass
XW-2459,2460	7/10/2019	H-3	304 ± 92	234 ± 89	269 ± 64	Pass
VE-2516,2517	7/10/2019	Be-7	0.63 ± 0.16	0.52 ± 0.19	0.58 ± 0.12	Pass
VE-2516,2517	7/10/2019	K-40	6.50 ± 0.47	6.81 ± 0.54	6.66 ± 0.36	Pass
AP-71518A,B	7/15/2019	Gr. Beta	0.022 ± 0.004	0.025 ± 0.004	0.023 ± 0.003	Pass
VE-2668,2669	7/16/2019	K-40	3.84 ± 0.27	3.74 ± 0.26	3.79 ± 0.19	Pass
DW-10076,10077	7/16/2019	Gr. Alpha	3.01 ± 0.92	4.13 ± 0.91	3.57 ± 0.65	Pass
DW-10073,10074	7/16/2019	Ra-226	1.57 ± 0.18	1.51 ± 0.21	1.54 ± 0.14	Pass
DW-10073,10074	7/16/2019	Ra-228	1.29 ± 0.56	1.48 ± 0.57	1.385 ± 0.40	Pass
AP-72218A,B	7/22/2019	Gr. Beta	0.013 ± 0.004	0.016 ± 0.004	0.015 ± 0.003	Pass
G-2752,2753	7/23/2019	K-40	4.53 ± 0.42	4.47 ± 0.46	4.50 ± 0.31	Pass
G-2752,2753	7/23/2019	Be-7	1.98 ± 0.29	1.96 ± 0.29	1.97 ± 0.20	Pass
AP-2800,2801	7/25/2019	Be-7	0.208 ± 0.090	0.321 ± 0.147	0.264 ± 0.086	Pass
AP-72918A,B	7/29/2019	Gr. Beta	0.026 ± 0.005	0.025 ± 0.005	0.025 ± 0.003	Pass
VE-2840,2841	7/31/2019	K-40	3.94 ± 0.38	3.99 ± 0.47	3.96 ± 0.30	Pass
AP-2903,2904	8/1/2019	Be-7	0.198 ± 0.102	0.228 ± 0.102	0.213 ± 0.072	Pass
P-2882,2983	8/1/2019	H-3	265 ± 85	327 ± 88	296 ± 61	Pass
SG-2926,2927	8/5/2019	Pb-214	9.07 ± 0.39	8.82 ± 0.39	8.95 ± 0.28	Pass
SG-2926,2927	8/5/2019	Ac-228	9.00 ± 0.76	8.58 ± 0.72	8.79 ± 0.52	Pass
AV-2993,2994	8/9/2019	Gr. Beta	1.22 ± 0.19	1.28 ± 0.21	1.25 ± 0.14	Pass
AV-2993,2994	8/9/2019	K-40	3.12 ± 0.36	3.14 ± 0.35	3.13 ± 0.25	Pass

TABLE A-6. In-House "Duplicate" Samples

			Concentration[a]			
Lab Code[b]	Date	Analysis	First Result	Second Result	Averaged Result	Acceptance
DW-10088,10089	8/9/2019	Ra-228	0.60 ± 0.50	1.20 ± 0.50	0.90 ± 0.35	Pass
DW-10088,10089	8/9/2019	Ra-226	1.40 ± 0.20	0.94 ± 0.20	1.17 ± 0.14	Pass
VE-3016,3017	8/12/2019	Be-7	0.39 ± 0.12	0.47 0.28	0.43 0.15	Pass
VE-3016,3017	8/12/2019	K-40	6.13 ± 0.41	6.24 0.64	6.18 0.38	Pass
G-3600,3601	8/12/2019	Be-7	4.42 ± 0.33	4.35 0.27	4.39 0.21	Pass
WW-3100,3101	8/14/2019	H-3	480 ± 96	401 ± 92	441 ± 66	Pass
MI-3211,3212	8/27/2019	K-40	1862 ± 131	1923 ± 136	1893 ± 94	Pass
MI-3211,3212	8/27/2019	Sr-90	0.90 ± 0.33	0.56 ± 0.29	0.73 ± 0.22	Pass
LW-3512,3513	8/30/2019	Gr. Beta	0.79 ± 0.50	1.39 ± 0.58	1.09 ± 0.38	Pass
DW-10100,10101	9/5/2019	Ra-226	0.50 ± 0.11	0.57 0.12	0.54 ± 0.08	Pass
DW-10100,10101	9/5/2019	Ra-228	3.38 ± 0.82	2.54 1.03	2.96 ± 0.66	Pass
DW-10111,10112	9/23/2019	Gr. Alpha	1.72 ± 0.73	1.41 0.68	1.57 ± 0.50	Pass
DW-10115,10116	9/25/2019	Ra-228	3.65 ± 0.80	2.76 0.68	3.21 ± 0.52	Pass
DW-10115,10116	9/25/2019	Ra-226	2.99 ± 0.23	2.74 0.25	2.87 ± 0.17	Pass
WW-3793,3794	10/8/2019	Gr. Beta	3.75 ± 1.18	4.34 1.20	4.05 ± 0.84	Pass
BS-3879,3880	10/9/2019	Pb-214	0.60 ± 0.03	0.65 ± 0.05	0.63 ± 0.03	Pass
BS-3879,3880	10/9/2019	Ra-226	1.27 ± 0.14	1.15 ± 0.14	1.21 ± 0.10	Pass
BS-3879,3880	10/9/2019	K-40	11.05 ± 0.29	10.69 ± 0.30	10.87 ± 0.21	Pass
BS-3879,3880	10/9/2019	Pb-212	0.58 ± 0.02	0.55 ± 0.02	0.56 ± 0.01	Pass
BS-3879,3880	10/9/2019	Tl-208	0.21 ± 0.02	0.21 ± 0.01	0.21 ± 0.01	Pass
BS-3879,3880	10/9/2019	Bi-212	0.75 ± 0.17	0.62 ± 0.17	0.68 ± 0.12	Pass
BS-3879,3880	10/9/2019	Bi-214	0.57 ± 0.02	0.52 ± 0.06	0.54 ± 0.03	Pass
BS-4161,4162	10/29/2019	K-40	15.3 ± 0.6	15.3 ± 0.7	15.3 ± 0.5	Pass
BS-4161,4162	10/29/2019	Ra-226	2.16 ± 0.35	2.27 ± 0.78	2.22 ± 0.43	Pass
DW-10126,10127	10/22/2019	Ra-228	0.85 ± 0.58	1.19 ± 0.62	1.02 ± 0.42	Pass
DW-10129,10130	10/22/2019	Gr. Alpha	1.44 ± 0.96	3.06 ± 0.95	2.25 ± 0.68	Pass
SG-4071	10/22/2019	Ac-228	2.10 ± 0.16	2.16 ± 0.20	2.13 ± 0.13	Pass
SPSG-4071,4072	10/22/2019	Pb-214	1.61 ± 0.10	1.29 ± 0.08	1.45 ± 0.06	Pass
SS-3900,3901	10/15/2019	Bi-212	0.29 ± 0.14	0.19 ± 0.12	0.24 ± 0.09	Pass
WW-4291,4292	11/5/2019	H-3	481 ± 97	528 ± 97	505 ± 68	Pass
DW-10139,10140	11/6/2019	Ra-228	2.61 ± 0.62	2.26 ± 0.63	2.44 ± 0.44	Pass
DW-10139,10140	11/6/2019	Ra-226	1.49 ± 0.17	1.32 ± 0.19	1.41 ± 0.13	Pass
WW-4270,4271	11/6/2019	H-3	112 ± 78	165 ± 81	139 ± 56	Pass
S-4312,4313	11/7/2019	K-40	20.2 ± 0.8	23.0 ± 0.9	21.6 ± 0.6	Pass
AP-4379,4380	11/12/2019	Be-7	0.133 ± 0.075	0.134 ± 0.073	0.134 ± 0.052	Pass
S-4422,4223	11/13/2019	Pb-214	1.22 ± 0.09	1.28 ± 0.10	1.25 ± 0.07	Pass
S-4422,4423	11/13/2019	Ac-228	1.14 ± 0.15	1.21 ± 0.17	1.18 ± 0.11	Pass
WW-4556,4557	11/13/2019	H-3	438 ± 96	482 ± 98	460 ± 69	Pass
SO-5024,5025	11/14/2019	K-40	6.60 ± 0.54	6.26 ± 0.58	6.43 ± 0.40	Pass
MI-4443,4444	11/18/2019	K-40	1304 ± 114	1340 ± 109	1322 ± 79	Pass

TABLE A-6. In-House "Duplicate" Samples

			Concentration[a]			
Lab Code[b]	Date	Analysis	First Result	Second Result	Averaged Result	Acceptance
SW-4492,4493	11/19/2019	H-3	188 ± 87	264 ± 97	226 ± 65	Pass
WW-4577,4578	11/21/2019	H-3	212 ± 83	232 ± 84	222 ± 59	Pass
AP-4514,4515	11/21/2019	Be-7	0.130 ± 0.055	0.193 ± 0.112	0.162 ± 0.062	Pass
SWT-4598,4599	11/26/2019	Gr. Beta	1.43 ± 0.57	1.14 ± 0.54	1.28 ± 0.39	Pass
AP-120218A,B	12/2/2019	Gr. Beta	0.009 ± 0.004	0.013 ± 0.004	0.011 ± 0.003	Pass
S-4644,4645	12/4/2019	Pb-214	1.01 ± 0.09	0.91 ± 0.09	0.96 ± 0.06	Pass
S-4644,4645	12/4/2019	Ac-228	0.85 ± 0.15	0.96 ± 0.16	0.91 ± 0.11	Pass
AP-121618A,B	12/16/2019	Gr. Beta	0.028 ± 0.005	0.030 ± 0.005	0.029 ± 0.003	Pass
S-4735,4736	12/16/2019	Pb-214	9.33 ± 0.38	9.45 ± 0.27	9.39 ± 0.23	Pass
S-4735,4736	12/16/2019	Ac-228	13.4 ± 0.7	14.9 ± 0.7	14.1 ± 0.5	Pass
AP-122318A,B	12/23/2019	Gr. Beta	0.034 ± 0.005	0.035 ± 0.005	0.035 ± 0.003	Pass
AP-123018A,B	12/30/2019	Gr. Beta	0.037 ± 0.005	0.037 ± 0.005	0.037 ± 0.004	Pass

Note: Duplicate analyses are performed on every twentieth sample received in-house. 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] CH (Charcoal Canister), DW (Drinking Water), E (Egg), F (Fish), G (Grass), LW (Lake Water), 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), VE (Vegetation), W Water (Water), WW (Well Water).

TABLE A-7. 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-609	2/1/2019	Gross Alpha	0.16 ± 0.03	0.528	0.158 - 0.898	Pass
MAAP-609	2/1/2019	Gross Beta	1.09 ± 0.07	0.948	0.474 - 1.422	Pass
MAW-550	2/1/2019	Gross Alpha	0.73 ± 0.06	0.84	0.25 - 1.43	Pass
MAW-550	2/1/2019	Gross Beta	2.26 ± 0.06	2.33	1.17 - 3.50	Pass
MASO-605	2/1/2019	Am-241	38.89 ± 5.92	49.9	34.9 ± 64.9	Pass
MASO-605	2/1/2019	Cs-134	0.45 ± 2.52	0.0	NA [c]	Pass
MASO-605	2/1/2019	Cs-137	1273.1 ± 13.0	1164	815 - 1513	Pass
MASO-605	2/1/2019	Co-57	0.46 ± 1.1	0.0	NA [c]	Pass
MASO-605	2/1/2019	Co-60	857.96 ± 8.52	855.0	599 - 1112	Pass
MASO-605	2/1/2019	Mn-54	1,138.0 ± 13.5	1027	719 - 1335	Pass
MASO-605	2/1/2019	Zn-65	730.92 ± 16.48	668	468 - 868	Pass
MASO-605	2/1/2019	K-40	676 ± 47	585	410 - 761	Pass
MASO-605	2/1/2019	Sr-90	0.0007 ± 0.0007	0.000	NA [c]	Pass
MASO-605	2/1/2019	Pu-238	78.15 ± 6.11	71.0	49.7 - 92.3	Pass
MASO-605	2/1/2019	Pu-239/240	65.00 ± 5.4	59.8	41.9 - 77.7	Pass
MASO-605	2/1/2019	U-234	65 ± 13	56	39 - 73	Pass
MASO-605	2/1/2019	U-238	237 ± 23	205	144 - 267	Pass
MAW-613	2/1/2019	Am-241	0.46 ± 0.03	0.582	0.407 - 0.757	Pass
MAW-613	2/1/2019	Cs-134	5.49 ± 0.18	5.99	4.19 - 7.79	Pass
MAW-613	2/1/2019	Cs-137	0.089 ± 0.080	0	NA [c]	Pass
MAW-613	2/1/2019	Co-57	10.87 ± 0.24	10.00	7.0 - 13.0	Pass
MAW-613	2/1/2019	Co-60	6.78 ± 0.19	6.7	4.7 - 8.7	Pass
MAW-613	2/1/2019	Mn-54	8.98 ± 0.17	8.4	5.9 - 10.9	Pass
MAW-613	2/1/2019	Zn-65	0.096 ± 0.141	0	NA [c]	Pass
MAW-613	2/1/2019	Fe-55	0.004 ± 4.00	0	NA [c]	Pass
MAW-613	2/1/2019	Ni-63	5.54 ± 1.52	5.8	4.1 - 7.5	Pass
MAW-613	2/1/2019	Sr-90	6.02 ± 0.53	6.35	4.45 - 8.26	Pass
MAW-613	2/1/2019	Pu-238	0.315 ± 0.088	0.451	0.316 - 0.586	Fail[e]
MAW-613	2/1/2019	Pu-239/240	0.07 ± 0.07	0.005	NA [d]	Pass
MAW-613	2/1/2019	U-234	0.96 ± 0.07	0.800	0.56 ± 1.04	Pass
MAW-613	2/1/2019	U-238	0.94 ± 0.07	0.810	0.57 ± 1.05	Pass
MAAP-611	2/1/2019	Cs-134	0.185 ± 0.025	0.216	0.151 - 0.281	Pass
MAAP-611	2/1/2019	Cs-137	0.288 ± 0.045	0.290	0.203 - 0.377	Pass
MAAP-611	2/1/2019	Co-57	0.369 ± 0.033	0.411	0.288 - 0.534	Pass
MAAP-611	2/1/2019	Co-60	0.333 ± 0.045	0.340	0.238 - 0.442	Pass
MAAP-611	2/1/2019	Mn-54	0.546 ± 0.058	0.547	0.383 - 0.711	Pass
MAAP-611	2/1/2019	Zn-65	0.025 ± 0.0348	0	NA [c]	Pass
MAAP-611	2/1/2019	Sr-90	1.34 ± 0.13	0.662	0.463 - 0.861	Fail[f]
MAAP-611	2/1/2019	U-234	4.14 ± 0.97	0.106	0.074 - 0.138	Fail[f]
MAAP-611	2/1/2019	U-238	3.89 ± 0.94	0.110	0.077 - 0.143	Fail[f]
MAW-601	2/1/2019	I-129	0.56 ± 0.08	0.616	0.431 - 0.801	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
MAVE-607	2/1/2019	Cs-134	2.33 ± 0.10	2.44	1.71 - 3.17	Pass
MAVE-607	2/1/2019	Cs-137	2.62 ± 0.13	2.30	1.61 - 2.99	Pass
MAVE-607	2/1/2019	Co-57	2.39 ± 0.11	2.07	1.45 - 2.69	Pass
MAVE-607	2/1/2019	Co-60	0.046 ± 0.04	0	NA [c]	Pass
MAVE-607	2/1/2019	Mn-54	0.031 ± 0.04	0	NA [c]	Pass
MAVE-607	2/1/2019	Sr-90	0.013 ± 0.022	0	NA [c]	Pass
MAAP-3299	8/1/2019	Gross Alpha	0.13 ± 0.03	0.528	0.158 - 0.898	Fail[g]
MAAP-3299	8/1/2019	Gross Beta	1.06 ± 0.07	0.937	0.469 - 1.406	Pass
MAW-3252	8/1/2019	Gross Alpha	0.93 ± 0.06	1.06	0.32 - 1.80	Pass
MAW-3252	8/1/2019	Gross Beta	3.03 ± 0.07	3.32	1.66 - 4.98	Pass
MASO-3297	8/19/2019	Cs-134	881.98 ± 9.03	1020	714 - 1326	Pass
MASO-3297	8/19/2019	Cs-137	871.50 ± 10.83	789	552 - 1026	Pass
MASO-3297	8/19/2019	Co-57	-1.72 ± 3.01	0	NA [c]	Pass
MASO-3297	8/19/2019	Co-60	783.69 ± 8.21	760	532 - 988	Pass
MASO-3297	8/19/2019	Mn-54	834.48 ± 11.29	745	522 - 969	Pass
MASO-3297	8/19/2019	Zn-65	-3.01 ± 5.27	0	NA [c]	Pass
MASO-3297	8/19/2019	K-40	662.91 ± 42.65	555	389 - 722	Pass
MAW-3240	8/1/2019	Cs-134	-0.08 ± 0.06	0	NA [c]	Pass
MAW-3240	8/1/2019	Cs-137	18.48 ± 0.90	18.4	12.9 - 23.9	Pass
MAW-3240	8/1/2019	Co-57	14.68 ± 0.52	15.6	10.9 - 20.3	Pass
MAW-3240	8/1/2019	Co-60	8.67 ± 0.39	8.8	6.2 - 11.4	Pass
MAW-3240	8/1/2019	Mn-54	20.72 ± 0.93	20.6	14.4 - 26.8	Pass
MAW-3240	8/1/2019	Zn-65	20.52 ± 1.05	20.3	14.200 - 26.400	Pass
MAW-3240	8/1/2019	K-40	5.11 ± 0.68	0	NA [c]	Fail
MAW-3240	8/1/2019	H-3	179.52 ± 3.32	175	123 - 228	Pass
MAW-3240	8/1/2019	U-234	1.11 ± 0.04	1.07	0.75 - 1.39	Pass
MAW-3240	8/1/2019	U-238	1.08 ± 0.04	1.05	0.74 - 1.37	Pass
MAVE-3295	8/1/2019	Cs-134	0.02 ± 0.02	0	NA [c]	Pass
MAVE-3295	8/1/2019	Cs-137	3.38 ± 0.32	3.28	2.30 - 4.26	Pass
MAVE-3295	8/1/2019	Co-57	4.99 ± 0.51	4.57	3.20 - 5.94	Pass
MAVE-3295	8/1/2019	Co-60	5.29 ± 0.39	5.30	3.71 - 6.89	Pass
MAVE-3295	8/1/2019	Mn-54	4.73 ± 0.45	4.49	3.14 - 5.84	Pass
MAVE-3295	8/1/2019	Zn-65	3.10 ± 0.31	2.85	2.00 - 3.71	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), 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] Provided in the series for "sensitivity evaluation". MAPEP does not provide control limits.

[e] Past results have been acceptable so will watch to see if a trend develops.

[f] An erroneous volume conversion caused some incorrect values to be submitted. If the conversion had been performed properly the results in Bq/sample would have been (Sr-90: 0.671 ± 0.066) and (U-234: 0.153 ± 0.036) and (U-238: 0.144 ± 0.035). This result had been included in the Uranium investigation. See footnote "C" on Table A-1.

[g] The lab will adopt a MAPEP specific gross alpha/beta filter calibration as discussed in the MAPEP test instructions. Utilizing a MAPEP specific calibration, the result in Bq/sample (0.39 ± 0.09 Bq/total) which passes the MAPEP acceptance criteria.

TABLE A-8. Interlaboratory Comparison Crosscheck Program, Environmental Resource Associates (ERA)[a].

MRAD-30 Study

Lab Code [b]	Concentration [a]					
	Date	Analysis	Laboratory Result	ERA Value [c]	Control Limits [d]	Acceptance
ERAP-846	3/18/2019	Am-241	19.1	18.7	13.3 - 24.9	Pass
ERAP-846	3/18/2019	Cs-134	612	721	468 - 884	Pass
ERAP-846	3/18/2019	Cs-137	679	634	521 - 832	Pass
ERAP-846	3/18/2019	Co-60	93.7	93.8	79.7 - 119	Pass
ERAP-846	3/18/2019	Fe-55	612	718	262 - 1150	Pass
ERAP-846	3/18/2019	Mn-54	< 0.5	< 50.0	0.00 - 50.0	Pass
ERAP-846	3/18/2019	Zn-65	1500	1380	1130 - 2110	Pass
ERAP-846	3/18/2019	Pu-238	34.0	33.8	25.5 - 41.5	Pass
ERAP-846	3/18/2019	Pu-239	64.9	67.0	50.1 - 80.8	Pass
ERAP-846	3/18/2019	Sr-90	199	181	114 - 246	Pass
ERAP-846	3/18/2019	U-234[e]	29.0	18.2	13.5 - 21.3	Fail
ERAP-846	3/18/2019	U-238[e]	28.6	18.1	13.7 - 21.6	Fail
ERAP-848	3/18/2019	Gross Alpha	48.4	50.3	26.3 - 82.9	Pass
ERAP-848	3/18/2019	Gross Beta	95.5	78.6	47.7 - 119	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.

[e] Failure traced to an over-estimated U-232 tracer value. Tracer has been re-standardized. (See footnote "c" on Table A-1).

Appendix B

Summary Tables in the format of NRC Radiological Assessment Branch Technical Position
Revision 1, November 1979

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Name of Facility: Wolf Creek Generating Station Docket No.: 50-482

Location of Facility: Coffey County, Kansas Reporting Period: Annual 2019

Medium of Pathway Sampled (Unit of Measurement)	Analysis and Total Number of Analysis Performed	ODCM Lower Limit of Detection (LLD)	All Indicator Locations ** Mean (f) ** Range	Indicator Location with Highest Annual Mean Name Distance and Direction	 ** Mean (f) ** Range	Control Locations ** Mean (f) ** Range	Number of Nonroutine Reported Measurements **
Air Particulate (pCi/m^3)	Gross Beta (318)	0.01	0.023 (265/265) (0.007 - 0.048)	32,37, & 49 3.1 miles WNW 2.0 miles NNW 0.8 miles NNE	0.023 (53/53) (0.010 - 0.047)	Station 53 0.023 (53/53) (0.007 - 0.042)	0
Air Radioiodine (pCi/m^3)	Gamma (24) Be-7	-	0.090 (20/20) (0.070 - 0.121)	2 2.7 miles N	0.094 (4/4) (0.071 - 0.121)	0.092 (4/4) (0.072 - 0.122)	0
	I-131 (318)	0.07	- (0/265)	N/A	N/A	Station 53 - (0/53)	0
Direct Radiation Dosimeters (mR per std. 90-day Qtr.)	Gamma Dose (168)	-	18.7 (160/160) (7.4 - 21.7)	13 1.6 miles SE	18.7 (4/4) (16.7 - 20.5)	Stations 39 & 53 17.1 (8/8) (12.8 - 20.7)	0
Surface Water (pCi/l)	Gamma (24)		- (0/12)	N/A	N/A	JRR - (0/12)	0
	Tritium (24)	3,000	10,450 (12/12) (8,867 - 12,331)	SP 3.2 miles SSE	10,450 (12/12) (8,867 - 12,331)	- (0/12)	0
	Fe-55 (8)	-	- (0/4)	N/A	N/A	- (0/4)	0
Ground Water (pCi/l)	I-131 (32)	1	- (0/28)	N/A	N/A	B-12 - (0/4)	0
	Gamma (32)		- (0/28)	N/A	N/A	- (0/4)	0
	Tritium (32)	2,000	- (0/28)	N/A	N/A	- (0/4)	0

** Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses (f)

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Drinking Water (pCi/l)	I-131 (24)	1	- (0/12)	N/A	N/A	BW-15 - (0/12)	0
	Gross Beta (24)	4	2.2 (12/12) (0.9 - 2.9)	IO-DW 26.1 miles SSE	2.2 (12/12) (0.9 - 2.9)	2.3 (12/12) (1.6 - 3.7)	0
	Gamma (24)		- (0/12)	N/A	N/A	- (0/12)	0
	Tritium (8)	2,000	- (0/4)	N/A	- (1/4)	- (0/4)	0
Shoreline Sediment (pCi/kg dry)	Gamma (4)					JRR	
	K-40	-	8,152 (2/2) (5,672 - 8,941)	DC 0.8 miles WNW	7,306 (2/2) (5,672 - 8,941)	10,641 (2/2) (10,012 - 11,270)	0
	Cs-137	180	196.8 (1/2) (196.8 - 196.8))	DC 0.8 miles WNW	196.8 (1/2) (196.8 - 196.8))	147.7 (1/2) (147.7 - 147.7)	0
Fish – Flesh (pCi/kg wet)	Gamma (28)					JRR	
	K-40	-	3,792 (11/11) (3,213 - 4,478)	CCL 0.6 miles E to NNW	3,792 (11/11) (3,213 - 4,478)	3,898 (10/10) (2,585 - 4,540)	0
	Tritium (28)	-	7,465 (11/11) (5,106 - 9,861)	CCL 0.6 miles E to NNW	7,465 (11/11) (5,106 - 9,861)	- (0/10)	0

** Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses (f)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Name of Facility: Wolf Creek Generating Station Docket No.: 50-482

Location of Facility: Coffey County, Kansas Reporting Period: Annual 2019

Medium of Pathway Sampled (Unit of Measurement)	Analysis and Total Number of Analysis Performed	ODCM Lower Limit of Detection (LLD)	All Indicator Locations ** Mean (f) ** Range	Indicator Location with Highest Annual Mean Name Distance and Direction	** Mean (f) ** Range	Control Locations ** Mean (f) ** Range	Number of Nonroutine Reported Measurements **
Food and Garden (pCi/kg wet)	Gamma (26)					D-2	
	Be-7	-	1,722 (20/20) (722 - 2,903)	H-2 3.0 miles SSE	1,893 (6/6) (1,499 - 2,903)	2,014 (6/6) (963 - 3,357)	0
	K-40	-	6,221 (20/20) (4,420 - 8,746)	A-3 2.6 miles N	1,599 (3/3) (5,087 - 6,901)	7,127 (6/6) (3,981 - 9,246)	0
Crops (pCi/kg wet)	Gamma (3)					NR-D1	
	K-40	-	15,589 (2/2) (14,592-16,586)	NR-D2 11.5 miles S	16,586 (1/1) (16,586-16,586)	13,801 (1/1) (13,801 - 13,801)	0
Bottom Sediment (pCi/kg dry)	Gamma (4)					JRR	
	K-40	-	9,945 (2/2) (9,277 - 12,836)	DC 0.9 miles WNW	9,945 (2/2) (9,277 - 12,836)	11,991 (2/2) (11,146 - 12,836)	0
	Cs-137	-	39 (1/2) (39 - 39)	DC 0.9 miles WNW	39 (1/2) (39 - 39)	- (0/2)	0
	Fe-55 (2)	-	- (0/2)	N/A	N/A	No Control	0

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Aquatic Vegetation (pCi/kg wet)	Gamma (3)					No Control	
	Be-7	-	124 (3/3) (69 - 193)	DC 0.9 miles WNW	193 (1/1) (193 - 193)	-	0
	K-40	-	2,363 (3/3) (1,854 - 3,125)	DC 0.9 miles WNW	3,125 (1/1) (3,125 - 3,125)	-	0
	Cs-137	-	- (0/4)	N/A	N/A	-	0
Terrestrial Vegetation (pCi/kg wet)	Gamma (2)					No Control	
	Be-7	-	3,833 (2/2) (2,654 - 5,012)	MUDS 1.5 miles WNW	5,012 (1/1) (5,012 - 5,012)	-	0
	K-40	-	6,925 (2/2) (6,145 - 7,704)	EEA 3.0 miles NNW	7,704 (1/1) (7,704 - 7,704)	-	0
Soil (pCi/kg dry)	Gamma (2)					No Control	
	K-40	-	11,179 (2/2) (10,567-11,791)	MUDS 1.5 miles WNW	11,791 (1/1) (11,791-11,791)	-	0
	Cs-137	-	116 (2/2) (95 - 138)	EEA 3.0 miles NNW	138 (1/1) (138 - 138)	-	0
Deer/Turkey (pCi/kg wet)	Gamma (2)					No Control	
	K-40	-	2,816 (2/2) (2,771 - 2,861)	J4.0 4.0 miles S	2,861(1/1) (2,861 - 2,861)	-	0

** Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses (f)

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Medium of Pathway Sampled (Unit of Measurement)	Analysis and Total Number of Analysis Performed	ODCM Lower Limit of Detection (LLD)	All Indicator Locations ** Mean (f) ** Range	Indicator Location with Highest Annual Mean Name Distance and Direction	** Mean (f) ** Range	Control Locations ** Mean (f) ** Range	Number of Nonroutine Reported Measurements **
	Tritium	-	786 (1/2)	A2.0 2.0 miles N	786 (1/1) (786 - 786)	No Control	0

** Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses (f)

APPENDIX C

INDIVIDUAL SAMPLE RESULTS

Air Particulate Filters and Radioiodine Canisters

Location: 002

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)			I-131 Concentration (pCi/m3)		Duplicate Analysis
31-Dec-18	07-Jan-19	308	0.032	+/-	0.005	<	0.016	
07-Jan-19	15-Jan-19	362	0.017	+/-	0.004	<	0.006	
15-Jan-19	22-Jan-19	303	0.021	+/-	0.004	<	0.008	
15-Jan-19	22-Jan-19	303	0.021	+/-	0.004			Duplicate
22-Jan-19	28-Jan-19	266	0.020	+/-	0.005	<	0.010	
28-Jan-19	04-Feb-19	299	0.022	+/-	0.004	<	0.015	
04-Feb-19	11-Feb-19	306	0.025	+/-	0.004	<	0.067	
11-Feb-19	18-Feb-19	307	0.034	+/-	0.004	<	0.008	
18-Feb-19	25-Feb-19	296	0.029	+/-	0.004	<	0.010	
25-Feb-19	04-Mar-19	314	0.033	+/-	0.004	<	0.007	
04-Mar-19	11-Mar-19	287	0.020	+/-	0.005	<	0.019	
11-Mar-19	18-Mar-19	282	0.013	+/-	0.004	<	0.015	
18-Mar-19	25-Mar-19	292	0.022	+/-	0.005	<	0.008	
25-Mar-19	01-Apr-19	296	0.022	+/-	0.004	<	0.005	
01-Apr-19	08-Apr-19	294	0.023	+/-	0.004	<	0.016	
08-Apr-19	15-Apr-19	316	0.021	+/-	0.004	<	0.009	
15-Apr-19	22-Apr-19	287	0.019	+/-	0.004	<	0.011	
22-Apr-19	29-Apr-19	303	0.016	+/-	0.004	<	0.008	
29-Apr-19	06-May-19	296	0.010	+/-	0.004	<	0.007	
06-May-19	13-May-19	312	0.011	+/-	0.004	<	0.017	
13-May-19	20-May-19	298	0.020	+/-	0.004	<	0.013	
20-May-19	28-May-19	316	0.013	+/-	0.004	<	0.013	
28-May-19	03-Jun-19	259	0.020	+/-	0.005	<	0.021	
03-Jun-19	10-Jun-19	298	0.021	+/-	0.004	<	0.014	
10-Jun-19	19-Jun-19	384	0.019	+/-	0.003	<	0.008	
19-Jun-19	24-Jun-19	216	0.020	+/-	0.005	<	0.013	
24-Jun-19	01-Jul-19	299	0.021	+/-	0.004	<	0.011	
01-Jul-19	08-Jul-19	297	0.019	+/-	0.004	<	0.007	
08-Jul-19	15-Jul-19	299	0.022	+/-	0.004	<	0.008	
15-Jul-19	22-Jul-19	304	0.013	+/-	0.004	<	0.008	
22-Jul-19	29-Jul-19	294	0.024	+/-	0.004	<	0.007	
29-Jul-19	05-Aug-19	284	0.028	+/-	0.005	<	0.011	
05-Aug-19	12-Aug-19	309	0.024	+/-	0.004	<	0.010	
12-Aug-19	19-Aug-19	309	0.020	+/-	0.004	<	0.010	
19-Aug-19	26-Aug-19	306	0.015	+/-	0.004	<	0.008	
26-Aug-19	03-Sep-19	352	0.022	+/-	0.004	<	0.007	
03-Sep-19	09-Sep-19	255	0.042	+/-	0.005	<	0.009	
09-Sep-19	16-Sep-19	299	0.033	+/-	0.004	<	0.013	
16-Sep-19	23-Sep-19	296	0.037	+/-	0.005	<	0.009	
23-Sep-19	30-Sep-19	303	0.019	+/-	0.004	<	0.008	
30-Sep-19	08-Oct-19	348	0.018	+/-	0.004	<	0.007	

Air Particulate Filters and Radioiodine Canisters

Location: 002

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)	I-131 Concentration (pCi/m3)	Duplicate Analysis
08-Oct-19	14-Oct-19	254	0.024 +/- 0.005	< 0.011	
08-Oct-19	14-Oct-19	254	0.021 +/- 0.005		Duplicate
14-Oct-19	21-Oct-19	299	0.026 +/- 0.005	< 0.012	
21-Oct-19	28-Oct-19	307	0.013 +/- 0.004	< 0.009	
28-Oct-19	05-Nov-19	341	0.023 +/- 0.004	< 0.009	
05-Nov-19	11-Nov-19	262	0.024 +/- 0.005	< 0.010	
11-Nov-19	18-Nov-19	299	0.021 +/- 0.004	< 0.011	
18-Nov-19	25-Nov-19	310	0.025 +/- 0.004	< 0.008	
25-Nov-19	02-Dec-19	312	0.012 +/- 0.004	< 0.015	
02-Dec-19	09-Dec-19	298	0.029 +/- 0.005	< 0.010	
09-Dec-19	16-Dec-19	308	0.030 +/- 0.005	< 0.008	
16-Dec-19	23-Dec-19	300	0.032 +/- 0.005	< 0.017	
23-Dec-19	30-Dec-19	296	0.037 +/- 0.005	< 0.013	
30-Dec-19	07-Jan-20	344	0.019 +/- 0.004	< 0.012	
30-Dec-19	07-Jan-20	344	0.020 +/- 0.004		Duplicate

Air Particulate Filters and Radioiodine Canisters

Location: 018

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)	I-131 Concentration (pCi/m3)	Duplicate Analysis
31-Dec-18	07-Jan-19	310	0.036 +/- 0.005	< 0.016	
07-Jan-19	15-Jan-19	360	0.019 +/- 0.004	< 0.006	
15-Jan-19	22-Jan-19	303	0.022 +/- 0.004	< 0.008	
22-Jan-19	28-Jan-19	269	0.026 +/- 0.005	< 0.010	
28-Jan-19	04-Feb-19	299	0.020 +/- 0.004	< 0.015	
28-Jan-19	04-Feb-19	299	0.020 +/- 0.004		Duplicate
04-Feb-19	11-Feb-19	304	0.024 +/- 0.004	< 0.040	
11-Feb-19	18-Feb-19	310	0.043 +/- 0.005	< 0.007	
18-Feb-19	25-Feb-19	286	0.027 +/- 0.004	< 0.011	
25-Feb-19	04-Mar-19	298	0.027 +/- 0.004	< 0.007	
04-Mar-19	11-Mar-19	288	0.017 +/- 0.004	< 0.019	
11-Mar-19	18-Mar-19	297	0.016 +/- 0.004	< 0.014	
11-Mar-19	18-Mar-19	297	0.020 +/- 0.004		Duplicate
18-Mar-19	25-Mar-19	298	0.023 +/- 0.005	< 0.008	
18-Mar-19	25-Mar-19	298	0.019 +/- 0.004		Duplicate
25-Mar-19	01-Apr-19	297	0.023 +/- 0.004	< 0.005	
01-Apr-19	08-Apr-19	293	0.026 +/- 0.004	< 0.016	
08-Apr-19	15-Apr-19	300	0.018 +/- 0.004	< 0.009	
15-Apr-19	22-Apr-19	298	0.018 +/- 0.004	< 0.010	
22-Apr-19	29-Apr-19	301	0.015 +/- 0.004	< 0.008	
22-Apr-19	29-Apr-19	301	0.015 +/- 0.004		Duplicate
29-Apr-19	06-May-19	297	0.014 +/- 0.004	< 0.007	
06-May-19	13-May-19	303	0.008 +/- 0.004	< 0.018	
13-May-19	20-May-19	289	0.018 +/- 0.004	< 0.013	
20-May-19	28-May-19	338	0.013 +/- 0.004	< 0.012	
28-May-19	03-Jun-19	256	0.022 +/- 0.005	< 0.021	
03-Jun-19	10-Jun-19	297	0.023 +/- 0.004	< 0.014	
10-Jun-19	19-Jun-19	379	0.019 +/- 0.003	< 0.008	
19-Jun-19	24-Jun-19	218	0.020 +/- 0.005	< 0.013	
24-Jun-19	01-Jul-19	298	0.020 +/- 0.004	< 0.011	
01-Jul-19	08-Jul-19	300	0.020 +/- 0.004	< 0.007	
08-Jul-19	15-Jul-19	301	0.022 +/- 0.004	< 0.008	
08-Jul-19	15-Jul-19	301	0.025 +/- 0.004		Duplicate
15-Jul-19	22-Jul-19	299	0.016 +/- 0.004	< 0.009	
15-Jul-19	22-Jul-19	299	0.016 +/- 0.004		Duplicate
22-Jul-19	29-Jul-19	297	0.025 +/- 0.004	< 0.007	
29-Jul-19	05-Aug-19	300	0.025 +/- 0.005	< 0.010	
05-Aug-19	12-Aug-19	300	0.024 +/- 0.004	< 0.010	
12-Aug-19	19-Aug-19	297	0.017 +/- 0.004	< 0.011	
19-Aug-19	26-Aug-19	309	0.019 +/- 0.004	< 0.008	
26-Aug-19	03-Sep-19	354	0.023 +/- 0.004	< 0.007	

Air Particulate Filters and Radioiodine Canisters

Location: 018

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)	I-131 Concentration (pCi/m3)	Duplicate Analysis
26-Aug-19	03-Sep-19	354	0.021 +/- 0.004		Duplicate
03-Sep-19	09-Sep-19	258	0.044 +/- 0.005	< 0.009	
09-Sep-19	16-Sep-19	303	0.035 +/- 0.004	< 0.013	
16-Sep-19	23-Sep-19	302	0.037 +/- 0.005	< 0.009	
23-Sep-19	30-Sep-19	302	0.019 +/- 0.004	< 0.008	
23-Sep-19	30-Sep-19	302	0.017 +/- 0.004		Duplicate
30-Sep-19	08-Oct-19	343	0.019 +/- 0.004	< 0.007	
30-Sep-19	08-Oct-19	343	0.022 +/- 0.004		Duplicate
08-Oct-19	14-Oct-19	259	0.023 +/- 0.005	< 0.010	
14-Oct-19	21-Oct-19	296	0.030 +/- 0.005	< 0.012	
14-Oct-19	21-Oct-19	296	0.029 +/- 0.005		Duplicate
21-Oct-19	28-Oct-19	308	0.014 +/- 0.004	< 0.009	
28-Oct-19	05-Nov-19	350	0.024 +/- 0.004	< 0.009	
05-Nov-19	11-Nov-19	264	0.022 +/- 0.005	< 0.010	
11-Nov-19	18-Nov-19	301	0.021 +/- 0.004	< 0.011	
11-Nov-19	18-Nov-19	301	0.023 +/- 0.004		Duplicate
18-Nov-19	25-Nov-19	305	0.023 +/- 0.004	< 0.009	
25-Nov-19	02-Dec-19	315	0.011 +/- 0.004	< 0.015	
02-Dec-19	09-Dec-19	300	0.029 +/- 0.005	< 0.010	
09-Dec-19	16-Dec-19	310	0.029 +/- 0.005	< 0.008	
16-Dec-19	23-Dec-19	307	0.032 +/- 0.005	< 0.016	
23-Dec-19	30-Dec-19	300	0.037 +/- 0.005	< 0.013	
23-Dec-19	30-Dec-19	300	0.037 +/- 0.005		Duplicate
30-Dec-19	07-Jan-20	340	0.019 +/- 0.004	< 0.012	

Air Particulate Filters and Radioiodine Canisters

Location: 032

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)			I-131 Concentration (pCi/m3)		Duplicate Analysis
31-Dec-18	07-Jan-19	247	0.039	+/-	0.006	<	0.020	
07-Jan-19	15-Jan-19	358	0.020	+/-	0.004	<	0.006	
15-Jan-19	22-Jan-19	299	0.021	+/-	0.004	<	0.008	
22-Jan-19	28-Jan-19	265	0.021	+/-	0.005	<	0.010	
28-Jan-19	04-Feb-19	306	0.023	+/-	0.004	<	0.015	
04-Feb-19	11-Feb-19	301	0.030	+/-	0.004	<	0.022	
11-Feb-19	18-Feb-19	306	0.034	+/-	0.004	<	0.008	
18-Feb-19	25-Feb-19	292	0.028	+/-	0.004	<	0.010	
25-Feb-19	04-Mar-19	298	0.031	+/-	0.005	<	0.007	
04-Mar-19	11-Mar-19	284	0.019	+/-	0.005	<	0.019	
11-Mar-19	18-Mar-19	301	0.018	+/-	0.004	<	0.014	
18-Mar-19	25-Mar-19	300	0.023	+/-	0.004	<	0.008	
25-Mar-19	01-Apr-19	303	0.021	+/-	0.004	<	0.005	
01-Apr-19	08-Apr-19	289	0.026	+/-	0.005	<	0.017	
08-Apr-19	15-Apr-19	301	0.019	+/-	0.004	<	0.009	
15-Apr-19	22-Apr-19	303	0.022	+/-	0.004	<	0.010	
15-Apr-19	22-Apr-19	303	0.021	+/-	0.004			Duplicate
22-Apr-19	29-Apr-19	306	0.012	+/-	0.004	<	0.008	
29-Apr-19	06-May-19	298	0.015	+/-	0.004	<	0.007	
06-May-19	13-May-19	305	0.007	+/-	0.004	<	0.018	
13-May-19	20-May-19	300	0.018	+/-	0.004	<	0.012	
20-May-19	28-May-19	339	0.012	+/-	0.004	<	0.012	
28-May-19	03-Jun-19	263	0.023	+/-	0.005	<	0.021	
03-Jun-19	10-Jun-19	301	0.021	+/-	0.004	<	0.014	
10-Jun-19	19-Jun-19	384	0.018	+/-	0.003	<	0.008	
19-Jun-19	24-Jun-19	220	0.017	+/-	0.005	<	0.013	
24-Jun-19	01-Jul-19	295	0.022	+/-	0.004	<	0.011	
01-Jul-19	08-Jul-19	299	0.018	+/-	0.004	<	0.007	
08-Jul-19	15-Jul-19	302	0.023	+/-	0.004	<	0.008	
15-Jul-19	22-Jul-19	296	0.013	+/-	0.004	<	0.009	
22-Jul-19	29-Jul-19	298	0.029	+/-	0.005	<	0.007	
29-Jul-19	05-Aug-19	278	0.029	+/-	0.005	<	0.011	
29-Jul-19	05-Aug-19	278	0.028	+/-	0.005			Duplicate
05-Aug-19	12-Aug-19	300	0.027	+/-	0.005	<	0.010	
12-Aug-19	19-Aug-19	299	0.020	+/-	0.004	<	0.011	
19-Aug-19	26-Aug-19	300	0.018	+/-	0.004	<	0.008	
26-Aug-19	03-Sep-19	347	0.026	+/-	0.004	<	0.007	
03-Sep-19	09-Sep-19	255	0.048	+/-	0.006	<	0.009	
09-Sep-19	16-Sep-19	301	0.034	+/-	0.004	<	0.013	
16-Sep-19	23-Sep-19	299	0.041	+/-	0.005	<	0.009	
23-Sep-19	30-Sep-19	302	0.023	+/-	0.004	<	0.008	

Air Particulate Filters and Radioiodine Canisters

Location: 032

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)	I-131 Concentration (pCi/m3)	Duplicate Analysis
30-Sep-19	08-Oct-19	345	0.020 +/- 0.004	< 0.007	
08-Oct-19	14-Oct-19	259	0.025 +/- 0.005	< 0.010	
14-Oct-19	21-Oct-19	301	0.031 +/- 0.005	< 0.012	
21-Oct-19	28-Oct-19	306	0.015 +/- 0.004	< 0.009	
28-Oct-19	05-Nov-19	348	0.026 +/- 0.004	< 0.009	
28-Oct-19	05-Nov-19	348	0.023 +/- 0.004		Duplicate
05-Nov-19	11-Nov-19	267	0.027 +/- 0.005	< 0.010	
11-Nov-19	18-Nov-19	349	0.027 +/- 0.004	< 0.010	
18-Nov-19	25-Nov-19	303	0.027 +/- 0.005	< 0.009	
18-Nov-19	25-Nov-19	303	0.027 +/- 0.005		Duplicate
25-Nov-19	02-Dec-19	309	0.009 +/- 0.004	< 0.015	
25-Nov-19	02-Dec-19	309	0.013 +/- 0.004		Duplicate
02-Dec-19	09-Dec-19	297	0.032 +/- 0.005	< 0.010	
09-Dec-19	16-Dec-19	321	0.035 +/- 0.005	< 0.007	
16-Dec-19	23-Dec-19	303	0.037 +/- 0.005	< 0.017	
23-Dec-19	30-Dec-19	336	0.038 +/- 0.005	< 0.012	
30-Dec-19	07-Jan-20	339	0.019 +/- 0.004	< 0.012	

Air Particulate Filters and Radioiodine Canisters

Location: 037

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)			I-131 Concentration (pCi/m3)		Duplicate Analysis
31-Dec-18	07-Jan-19	309	0.033	+/-	0.005	<	0.016	
07-Jan-19	15-Jan-19	356	0.018	+/-	0.004	<	0.006	
15-Jan-19	22-Jan-19	307	0.021	+/-	0.004	<	0.007	
22-Jan-19	28-Jan-19	270	0.026	+/-	0.005	<	0.010	
28-Jan-19	04-Feb-19	303	0.019	+/-	0.004	<	0.015	
04-Feb-19	11-Feb-19	314	0.027	+/-	0.004	<	0.025	
11-Feb-19	18-Feb-19	311	0.037	+/-	0.004	<	0.007	
11-Feb-19	18-Feb-19	311	0.043	+/-	0.005			Duplicate
18-Feb-19	25-Feb-19	292	0.030	+/-	0.004	<	0.010	
25-Feb-19	04-Mar-19	318	0.032	+/-	0.004	<	0.006	
04-Mar-19	11-Mar-19	285	0.019	+/-	0.005	<	0.019	
11-Mar-19	18-Mar-19	298	0.017	+/-	0.004	<	0.014	
18-Mar-19	25-Mar-19	299	0.024	+/-	0.005	<	0.008	
25-Mar-19	01-Apr-19	303	0.024	+/-	0.004	<	0.005	
01-Apr-19	08-Apr-19	291	0.025	+/-	0.004	<	0.016	
08-Apr-19	15-Apr-19	309	0.017	+/-	0.004	<	0.009	
15-Apr-19	22-Apr-19	296	0.019	+/-	0.004	<	0.010	
22-Apr-19	29-Apr-19	236	0.014	+/-	0.005	<	0.010	
29-Apr-19	06-May-19	296	0.012	+/-	0.004	<	0.007	
06-May-19	13-May-19	308	0.010	+/-	0.004	<	0.017	
06-May-19	13-May-19	308	0.009	+/-	0.004			Duplicate
13-May-19	20-May-19	286	0.016	+/-	0.004	<	0.013	
20-May-19	28-May-19	334	0.013	+/-	0.004	<	0.012	
28-May-19	03-Jun-19	263	0.021	+/-	0.005	<	0.021	
28-May-19	03-Jun-19	263	0.022	+/-	0.005			Duplicate
03-Jun-19	10-Jun-19	293	0.019	+/-	0.004	<	0.014	
03-Jun-19	10-Jun-19	293	0.021	+/-	0.004			Duplicate
10-Jun-19	19-Jun-19	386	0.019	+/-	0.003	<	0.008	
19-Jun-19	24-Jun-19	209	0.019	+/-	0.006	<	0.014	
24-Jun-19	01-Jul-19	302	0.025	+/-	0.005	<	0.011	
01-Jul-19	08-Jul-19	297	0.021	+/-	0.004	<	0.007	
01-Jul-19	08-Jul-19	297	0.023	+/-	0.004			Duplicate
08-Jul-19	15-Jul-19	300	0.024	+/-	0.004	<	0.008	
15-Jul-19	22-Jul-19	296	0.014	+/-	0.004	<	0.009	
22-Jul-19	29-Jul-19	303	0.028	+/-	0.004	<	0.006	
29-Jul-19	05-Aug-19	281	0.029	+/-	0.005	<	0.011	
05-Aug-19	12-Aug-19	297	0.027	+/-	0.005	<	0.010	
12-Aug-19	19-Aug-19	286	0.019	+/-	0.005	<	0.011	
19-Aug-19	26-Aug-19	309	0.014	+/-	0.004	<	0.008	
26-Aug-19	03-Sep-19	351	0.019	+/-	0.004	<	0.007	
03-Sep-19	09-Sep-19	262	0.047	+/-	0.005	<	0.008	

Air Particulate Filters and Radioiodine Canisters

Location: 037

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)	I-131 Concentration (pCi/m3)	Duplicate Analysis
09-Sep-19	16-Sep-19	304	0.033 +/- 0.004	< 0.013	
16-Sep-19	23-Sep-19	299	0.039 +/- 0.005	< 0.009	
23-Sep-19	30-Sep-19	301	0.021 +/- 0.004	< 0.008	
30-Sep-19	08-Oct-19	315	0.023 +/- 0.004	< 0.008	
08-Oct-19	14-Oct-19	265	0.022 +/- 0.005	< 0.010	
14-Oct-19	21-Oct-19	296	0.032 +/- 0.005	< 0.012	
21-Oct-19	28-Oct-19	307	0.019 +/- 0.004	< 0.009	
28-Oct-19	05-Nov-19	349	0.025 +/- 0.004	< 0.009	
05-Nov-19	11-Nov-19	261	0.025 +/- 0.005	< 0.010	
11-Nov-19	18-Nov-19	305	0.025 +/- 0.004	< 0.011	
18-Nov-19	25-Nov-19	317	0.026 +/- 0.004	< 0.008	
25-Nov-19	02-Dec-19	316	0.014 +/- 0.004	< 0.015	
02-Dec-19	09-Dec-19	291	0.033 +/- 0.005	< 0.010	
09-Dec-19	16-Dec-19	308	0.039 +/- 0.005	< 0.008	
16-Dec-19	23-Dec-19	303	0.035 +/- 0.005	< 0.017	
23-Dec-19	30-Dec-19	296	0.038 +/- 0.005	< 0.013	
30-Dec-19	07-Jan-20	346	0.018 +/- 0.004	< 0.012	

Air Particulate Filters and Radioiodine Canisters

Location: 049

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)			I-131 Concentration (pCi/m3)		Duplicate Analysis
31-Dec-18	07-Jan-19	313	0.037	+/-	0.005	<	0.016	
31-Dec-18	07-Jan-19	313	0.032	+/-	0.005			Duplicate
07-Jan-19	15-Jan-19	362	0.017	+/-	0.004	<	0.006	
07-Jan-19	15-Jan-19	362	0.017	+/-	0.004			Duplicate
15-Jan-19	22-Jan-19	305	0.021	+/-	0.004	<	0.007	
22-Jan-19	28-Jan-19	273	0.029	+/-	0.005	<	0.009	
28-Jan-19	04-Feb-19	306	0.022	+/-	0.004	<	0.015	
04-Feb-19	11-Feb-19	315	0.027	+/-	0.004	<	0.032	
11-Feb-19	18-Feb-19	315	0.032	+/-	0.004	<	0.007	
18-Feb-19	25-Feb-19	284	0.034	+/-	0.005	<	0.011	
25-Feb-19	04-Mar-19	314	0.031	+/-	0.004	<	0.007	
04-Mar-19	11-Mar-19	288	0.022	+/-	0.005	<	0.019	
11-Mar-19	18-Mar-19	296	0.019	+/-	0.004	<	0.014	
18-Mar-19	25-Mar-19	300	0.023	+/-	0.004	<	0.008	
25-Mar-19	01-Apr-19	300	0.021	+/-	0.004	<	0.005	
01-Apr-19	08-Apr-19	290	0.024	+/-	0.004	<	0.016	
08-Apr-19	15-Apr-19	303	0.015	+/-	0.004	<	0.009	
08-Apr-19	15-Apr-19	303	0.018	+/-	0.004			Duplicate
15-Apr-19	22-Apr-19	301	0.020	+/-	0.004	<	0.010	
22-Apr-19	29-Apr-19	306	0.014	+/-	0.004	<	0.008	
29-Apr-19	06-May-19	301	0.012	+/-	0.004	<	0.007	
06-May-19	13-May-19	303	0.010	+/-	0.004	<	0.018	
13-May-19	20-May-19	301	0.019	+/-	0.004	<	0.012	
20-May-19	28-May-19	340	0.012	+/-	0.004	<	0.012	
28-May-19	03-Jun-19	259	0.023	+/-	0.005	<	0.021	
03-Jun-19	10-Jun-19	298	0.024	+/-	0.004	<	0.014	
10-Jun-19	19-Jun-19	368	0.020	+/-	0.004	<	0.009	
19-Jun-19	24-Jun-19	216	0.020	+/-	0.005	<	0.013	
24-Jun-19	01-Jul-19	293	0.021	+/-	0.004	<	0.011	
01-Jul-19	08-Jul-19	299	0.020	+/-	0.004	<	0.007	
08-Jul-19	15-Jul-19	298	0.023	+/-	0.004	<	0.008	
15-Jul-19	22-Jul-19	303	0.013	+/-	0.004	<	0.008	
22-Jul-19	29-Jul-19	300	0.025	+/-	0.004	<	0.007	
29-Jul-19	05-Aug-19	302	0.027	+/-	0.005	<	0.010	
05-Aug-19	12-Aug-19	293	0.028	+/-	0.005	<	0.010	
12-Aug-19	19-Aug-19	295	0.020	+/-	0.005	<	0.011	
19-Aug-19	26-Aug-19	304	0.016	+/-	0.004	<	0.008	
26-Aug-19	03-Sep-19	349	0.024	+/-	0.004	<	0.007	
03-Sep-19	09-Sep-19	258	0.041	+/-	0.005	<	0.009	
09-Sep-19	16-Sep-19	303	0.036	+/-	0.005	<	0.013	
16-Sep-19	23-Sep-19	299	0.036	+/-	0.005	<	0.009	

Air Particulate Filters and Radioiodine Canisters

Location: 049

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)	I-131 Concentration (pCi/m3)	Duplicate Analysis
23-Sep-19	30-Sep-19	396	0.017 +/- 0.003	< 0.006	
30-Sep-19	08-Oct-19	351	0.018 +/- 0.004	< 0.007	
08-Oct-19	14-Oct-19	262	0.023 +/- 0.005	< 0.010	
14-Oct-19	21-Oct-19	302	0.031 +/- 0.005	< 0.012	
21-Oct-19	28-Oct-19	312	0.016 +/- 0.004	< 0.009	
28-Oct-19	05-Nov-19	352	0.025 +/- 0.004	< 0.009	
05-Nov-19	11-Nov-19	260	0.023 +/- 0.005	< 0.010	
11-Nov-19	18-Nov-19	320	0.027 +/- 0.004	< 0.010	
18-Nov-19	25-Nov-19	303	0.026 +/- 0.005	< 0.009	
25-Nov-19	02-Dec-19	309	0.011 +/- 0.004	< 0.015	
02-Dec-19	09-Dec-19	301	0.040 +/- 0.005	< 0.010	
09-Dec-19	16-Dec-19	310	0.030 +/- 0.005	< 0.008	
16-Dec-19	23-Dec-19	322	0.035 +/- 0.005	< 0.016	
23-Dec-19	30-Dec-19	304	0.041 +/- 0.005	< 0.013	
30-Dec-19	07-Jan-20	344	0.020 +/- 0.004	< 0.012	

Air Particulate Filters and Radioiodine Canisters

Location: 053

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)			I-131 Concentration (pCi/m3)		Duplicate Analysis
31-Dec-18	07-Jan-19	324	0.039	+/-	0.005	<	0.015	
07-Jan-19	15-Jan-19	360	0.016	+/-	0.004	<	0.006	
15-Jan-19	22-Jan-19	303	0.024	+/-	0.004	<	0.008	
22-Jan-19	28-Jan-19	276	0.025	+/-	0.005	<	0.009	
28-Jan-19	04-Feb-19	304	0.023	+/-	0.004	<	0.015	
04-Feb-19	11-Feb-19	310	0.025	+/-	0.004	<	0.033	
11-Feb-19	18-Feb-19	305	0.037	+/-	0.005	<	0.008	
18-Feb-19	25-Feb-19	290	0.028	+/-	0.004	<	0.010	
25-Feb-19	04-Mar-19	308	0.033	+/-	0.005	<	0.007	
04-Mar-19	11-Mar-19	284	0.021	+/-	0.005	<	0.019	
11-Mar-19	18-Mar-19	297	0.017	+/-	0.004	<	0.014	
18-Mar-19	25-Mar-19	302	0.021	+/-	0.004	<	0.008	
25-Mar-19	01-Apr-19	303	0.023	+/-	0.004	<	0.005	
25-Mar-19	01-Apr-19	303	0.019	+/-	0.004			Duplicate
01-Apr-19	08-Apr-19	288	0.023	+/-	0.004	<	0.017	
08-Apr-19	15-Apr-19	308	0.019	+/-	0.004	<	0.009	
15-Apr-19	22-Apr-19	302	0.022	+/-	0.004	<	0.010	
22-Apr-19	29-Apr-19	305	0.016	+/-	0.004	<	0.008	
29-Apr-19	06-May-19	296	0.012	+/-	0.004	<	0.007	
29-Apr-19	06-May-19	296	0.012	+/-	0.004			Duplicate
06-May-19	13-May-19	302	0.007	+/-	0.004	<	0.018	
13-May-19	20-May-19	303	0.016	+/-	0.004	<	0.012	
20-May-19	28-May-19	334	0.010	+/-	0.004	<	0.012	
28-May-19	03-Jun-19	256	0.023	+/-	0.005	<	0.021	
03-Jun-19	10-Jun-19	300	0.022	+/-	0.004	<	0.014	
10-Jun-19	19-Jun-19	379	0.019	+/-	0.003	<	0.008	
19-Jun-19	24-Jun-19	223	0.014	+/-	0.005	<	0.013	
24-Jun-19	01-Jul-19	290	0.022	+/-	0.005	<	0.011	
01-Jul-19	08-Jul-19	298	0.016	+/-	0.004	<	0.007	
08-Jul-19	15-Jul-19	295	0.023	+/-	0.004	<	0.008	
15-Jul-19	22-Jul-19	293	0.016	+/-	0.004	<	0.009	
22-Jul-19	29-Jul-19	289	0.026	+/-	0.005	<	0.007	
22-Jul-19	29-Jul-19	289	0.025	+/-	0.005			Duplicate
29-Jul-19	05-Aug-19	299	0.023	+/-	0.005	<	0.010	
05-Aug-19	12-Aug-19	291	0.026	+/-	0.005	<	0.010	
12-Aug-19	19-Aug-19	273	0.019	+/-	0.005	<	0.012	
19-Aug-19	26-Aug-19	306	0.014	+/-	0.004	<	0.008	
19-Aug-19	26-Aug-19	306	0.014	+/-	0.004			Duplicate
26-Aug-19	03-Sep-19	339	0.023	+/-	0.004	<	0.007	
03-Sep-19	09-Sep-19	256	0.042	+/-	0.005	<	0.009	
09-Sep-19	16-Sep-19	301	0.033	+/-	0.004	<	0.013	

Air Particulate Filters and Radioiodine Canisters

Location: 053

Collection StartDate	Collection EndDate	Volume m3	Gross Beta Concentration (pCi/m3)			I-131 Concentration (pCi/m3)		Duplicate Analysis
16-Sep-19	23-Sep-19	295	0.039	+/-	0.005	<	0.009	
23-Sep-19	30-Sep-19	303	0.019	+/-	0.004	<	0.008	
30-Sep-19	08-Oct-19	336	0.020	+/-	0.004	<	0.007	
08-Oct-19	14-Oct-19	264	0.018	+/-	0.005	<	0.010	
14-Oct-19	21-Oct-19	301	0.031	+/-	0.005	<	0.012	
21-Oct-19	28-Oct-19	307	0.016	+/-	0.004	<	0.009	
28-Oct-19	05-Nov-19	349	0.024	+/-	0.004	<	0.009	
05-Nov-19	11-Nov-19	265	0.025	+/-	0.005	<	0.010	
11-Nov-19	18-Nov-19	298	0.025	+/-	0.005	<	0.011	
18-Nov-19	25-Nov-19	311	0.028	+/-	0.005	<	0.008	
25-Nov-19	02-Dec-19	310	0.012	+/-	0.004	<	0.015	
02-Dec-19	09-Dec-19	303	0.031	+/-	0.005	<	0.010	
09-Dec-19	16-Dec-19	305	0.028	+/-	0.005	<	0.008	
09-Dec-19	16-Dec-19	305	0.030	+/-	0.005			Duplicate
16-Dec-19	23-Dec-19	304	0.034	+/-	0.005	<	0.017	
16-Dec-19	23-Dec-19	304	0.035	+/-	0.005			Duplicate
23-Dec-19	30-Dec-19	300	0.038	+/-	0.005	<	0.013	
30-Dec-19	07-Jan-20	341	0.019	+/-	0.004	<	0.012	

Quarterly Air Particulates - Gamma

Location: 002

01-Apr-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.086	+/-	0.015
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.002
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

01-Jul-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.121	+/-	0.020
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.003
CO-60		<	0.001
ZN-65		<	0.003
ZR-NB-95		<	0.002
CS-134		<	0.001
CS-137		<	0.001

30-Sep-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.097	+/-	0.017
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.002
CO-60		<	0.001
ZN-65		<	0.002
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

30-Dec-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.071	+/-	0.013
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.001
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

***Duplicate Analysis**

Quarterly Air Particulates - Gamma

Location: 018

01-Apr-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.078	+/-	0.013
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.001
CO-60		<	0.001
ZN-65		<	0.002
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

01-Jul-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.099	+/-	0.019
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.002
CO-60		<	0.001
ZN-65		<	0.004
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

30-Sep-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.073	+/-	0.014
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.002
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

30-Dec-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.070	+/-	0.019
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.002
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

***Duplicate Analysis**

Quarterly Air Particulates - Gamma

Location: 032

01-Apr-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.090	+/-	0.015
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.001
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

01-Jul-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.104	+/-	0.018
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.002
CO-60		<	0.001
ZN-65		<	0.002
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

30-Sep-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.088	+/-	0.016
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.002
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

30-Dec-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.087	+/-	0.022
MN-54		<	0.002
CO-58		<	0.001
FE-59		<	0.004
CO-60		<	0.001
ZN-65		<	0.004
ZR-NB-95		<	0.003
CS-134		<	0.002
CS-137		<	0.001

***Duplicate Analysis**

Quarterly Air Particulates - Gamma

Location: 037

01-Apr-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.084	+/-	0.016
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.002
CO-60		<	0.001
ZN-65		<	0.002
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

01-Jul-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.101	+/-	0.018
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.001
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

30-Sep-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.088	+/-	0.016
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.001
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.002
CS-134		<	0.001
CS-137		<	0.001

30-Dec-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.090	+/-	0.019
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.002
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

***Duplicate Analysis**

Quarterly Air Particulates - Gamma

Location: 049

01-Apr-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.095	+/-	0.015
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.001
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

01-Jul-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.114	+/-	0.020
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.002
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

30-Sep-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.088	+/-	0.017
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.003
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

30-Dec-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.072	+/-	0.015
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.003
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.002
CS-134		<	0.001
CS-137		<	0.001

***Duplicate Analysis**

Quarterly Air Particulates - Gamma

Location: 053

01-Apr-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.087	+/-	0.016
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.001
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

01-Jul-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.122	+/-	0.019
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.002
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

30-Sep-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.085	+/-	0.015
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.002
CO-60		<	0.001
ZN-65		<	0.002
ZR-NB-95		<	0.001
CS-134		<	0.001
CS-137		<	0.001

30-Dec-19

Nuclide	Concentration (pCi/m3)		
BE-7	0.072	+/-	0.016
MN-54		<	0.001
CO-58		<	0.001
FE-59		<	0.002
CO-60		<	0.001
ZN-65		<	0.001
ZR-NB-95		<	0.002
CS-134		<	0.001
CS-137		<	0.001

***Duplicate Analysis**

Exposure Pathway - Waterborne
Surface Water
Location: JRR

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
10-Jan-19	SURFACE WATER	MN-54	<	2.7	
10-Jan-19	SURFACE WATER	CO-58	<	1.9	
10-Jan-19	SURFACE WATER	FE-59	<	5.0	
10-Jan-19	SURFACE WATER	CO-60	<	3.5	
10-Jan-19	SURFACE WATER	ZN-65	<	3.5	
10-Jan-19	SURFACE WATER	ZR-NB-95	<	2.4	
10-Jan-19	SURFACE WATER	I-131	<	4.8	
10-Jan-19	SURFACE WATER	CS-134	<	3.8	
10-Jan-19	SURFACE WATER	CS-137	<	3.1	
10-Jan-19	SURFACE WATER	BA-LA-140	<	2.4	
10-Jan-19	SURFACE WATER	H-3	<	177.0	
26-Feb-19	SURFACE WATER	MN-54	<	3.1	
26-Feb-19	SURFACE WATER	CO-58	<	2.3	
26-Feb-19	SURFACE WATER	FE-59	<	2.8	
26-Feb-19	SURFACE WATER	CO-60	<	1.9	
26-Feb-19	SURFACE WATER	ZN-65	<	4.9	
26-Feb-19	SURFACE WATER	ZR-NB-95	<	3.3	
26-Feb-19	SURFACE WATER	I-131	<	4.4	
26-Feb-19	SURFACE WATER	CS-134	<	3.1	
26-Feb-19	SURFACE WATER	CS-137	<	2.3	
26-Feb-19	SURFACE WATER	BA-LA-140	<	2.6	
26-Feb-19	SURFACE WATER	H-3	<	157.0	
26-Feb-19	SURFACE WATER	FE-55	<	69.0	
11-Mar-19	SURFACE WATER	MN-54	<	3.7	
11-Mar-19	SURFACE WATER	CO-58	<	5.5	
11-Mar-19	SURFACE WATER	FE-59	<	7.7	
11-Mar-19	SURFACE WATER	CO-60	<	3.2	
11-Mar-19	SURFACE WATER	ZN-65	<	5.6	
11-Mar-19	SURFACE WATER	ZR-NB-95	<	4.2	
11-Mar-19	SURFACE WATER	I-131	<	6.0	
11-Mar-19	SURFACE WATER	CS-134	<	4.8	
11-Mar-19	SURFACE WATER	CS-137	<	4.9	
11-Mar-19	SURFACE WATER	BA-LA-140	<	2.3	
11-Mar-19	SURFACE WATER	H-3	<	154.0	
08-Apr-19	SURFACE WATER	MN-54	<	3.0	
08-Apr-19	SURFACE WATER	CO-58	<	2.3	
08-Apr-19	SURFACE WATER	FE-59	<	4.7	
08-Apr-19	SURFACE WATER	CO-60	<	2.4	

Exposure Pathway - Waterborne
Surface Water
Location: JRR

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
08-Apr-19	SURFACE WATER	ZN-65	<	3.6	
08-Apr-19	SURFACE WATER	ZR-NB-95	<	2.1	
08-Apr-19	SURFACE WATER	I-131	<	5.4	
08-Apr-19	SURFACE WATER	CS-134	<	3.8	
08-Apr-19	SURFACE WATER	CS-137	<	3.4	
08-Apr-19	SURFACE WATER	BA-LA-140	<	1.6	
08-Apr-19	SURFACE WATER	H-3	<	152.0	
13-May-19	SURFACE WATER	MN-54	<	2.8	Duplicate
13-May-19	SURFACE WATER	MN-54	<	2.0	
13-May-19	SURFACE WATER	CO-58	<	2.9	Duplicate
13-May-19	SURFACE WATER	CO-58	<	2.7	
13-May-19	SURFACE WATER	FE-59	<	3.2	Duplicate
13-May-19	SURFACE WATER	FE-59	<	3.6	
13-May-19	SURFACE WATER	CO-60	<	2.8	Duplicate
13-May-19	SURFACE WATER	CO-60	<	1.4	
13-May-19	SURFACE WATER	ZN-65	<	3.6	Duplicate
13-May-19	SURFACE WATER	ZN-65	<	3.6	
13-May-19	SURFACE WATER	ZR-NB-95	<	2.7	Duplicate
13-May-19	SURFACE WATER	ZR-NB-95	<	2.1	
13-May-19	SURFACE WATER	I-131	<	6.4	Duplicate
13-May-19	SURFACE WATER	I-131	<	4.4	
13-May-19	SURFACE WATER	CS-134	<	3.2	Duplicate
13-May-19	SURFACE WATER	CS-134	<	3.9	
13-May-19	SURFACE WATER	CS-137	<	3.2	Duplicate
13-May-19	SURFACE WATER	CS-137	<	2.5	
13-May-19	SURFACE WATER	BA-LA-140	<	2.0	Duplicate
13-May-19	SURFACE WATER	BA-LA-140	<	1.8	
13-May-19	SURFACE WATER	H-3	<	154.0	Duplicate
13-May-19	SURFACE WATER	H-3	<	154.0	
13-May-19	SURFACE WATER	FE-55	<	61.0	Duplicate
13-May-19	SURFACE WATER	FE-55	<	61.0	
10-Jun-19	SURFACE WATER	MN-54	<	2.6	
10-Jun-19	SURFACE WATER	CO-58	<	3.5	
10-Jun-19	SURFACE WATER	FE-59	<	3.3	
10-Jun-19	SURFACE WATER	CO-60	<	1.7	
10-Jun-19	SURFACE WATER	ZN-65	<	5.4	
10-Jun-19	SURFACE WATER	ZR-NB-95	<	3.3	
10-Jun-19	SURFACE WATER	I-131	<	11.7	

Exposure Pathway - Waterborne
Surface Water
Location: JRR

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
10-Jun-19	SURFACE WATER	CS-134	<	3.2	
10-Jun-19	SURFACE WATER	CS-137	<	2.7	
10-Jun-19	SURFACE WATER	BA-LA-140	<	4.0	
10-Jun-19	SURFACE WATER	H-3	<	154.0	
10-Jul-19	SURFACE WATER	MN-54	<	3.7	
10-Jul-19	SURFACE WATER	CO-58	<	4.4	
10-Jul-19	SURFACE WATER	FE-59	<	8.6	
10-Jul-19	SURFACE WATER	CO-60	<	3.2	
10-Jul-19	SURFACE WATER	ZN-65	<	8.6	
10-Jul-19	SURFACE WATER	ZR-NB-95	<	4.4	
10-Jul-19	SURFACE WATER	I-131	<	5.8	
10-Jul-19	SURFACE WATER	CS-134	<	4.6	
10-Jul-19	SURFACE WATER	CS-137	<	4.0	
10-Jul-19	SURFACE WATER	BA-LA-140	<	5.4	
10-Jul-19	SURFACE WATER	H-3	<	159.0	
12-Aug-19	SURFACE WATER	MN-54	<	1.7	
12-Aug-19	SURFACE WATER	CO-58	<	1.9	
12-Aug-19	SURFACE WATER	FE-59	<	5.2	
12-Aug-19	SURFACE WATER	CO-60	<	1.5	
12-Aug-19	SURFACE WATER	ZN-65	<	2.9	
12-Aug-19	SURFACE WATER	ZR-NB-95	<	2.3	
12-Aug-19	SURFACE WATER	I-131	<	3.1	
12-Aug-19	SURFACE WATER	CS-134	<	2.9	
12-Aug-19	SURFACE WATER	CS-137	<	2.7	
12-Aug-19	SURFACE WATER	BA-LA-140	<	2.2	
12-Aug-19	SURFACE WATER	H-3	<	152.0	
12-Aug-19	SURFACE WATER	FE-55	<	69.0	
16-Sep-19	SURFACE WATER	MN-54	<	3.3	
16-Sep-19	SURFACE WATER	CO-58	<	5.3	
16-Sep-19	SURFACE WATER	FE-59	<	7.1	
16-Sep-19	SURFACE WATER	CO-60	<	3.8	
16-Sep-19	SURFACE WATER	ZN-65	<	7.0	
16-Sep-19	SURFACE WATER	ZR-NB-95	<	2.8	
16-Sep-19	SURFACE WATER	I-131	<	5.9	
16-Sep-19	SURFACE WATER	CS-134	<	4.6	
16-Sep-19	SURFACE WATER	CS-137	<	3.1	
16-Sep-19	SURFACE WATER	BA-LA-140	<	2.6	
16-Sep-19	SURFACE WATER	H-3	<	153.0	

Exposure Pathway - Waterborne
Surface Water
Location: JRR

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
08-Oct-19	SURFACE WATER	MN-54	<	2.8	
08-Oct-19	SURFACE WATER	CO-58	<	1.6	
08-Oct-19	SURFACE WATER	FE-59	<	3.2	
08-Oct-19	SURFACE WATER	CO-60	<	4.1	
08-Oct-19	SURFACE WATER	ZN-65	<	4.3	
08-Oct-19	SURFACE WATER	ZR-NB-95	<	2.9	
08-Oct-19	SURFACE WATER	I-131	<	2.9	
08-Oct-19	SURFACE WATER	CS-134	<	3.3	
08-Oct-19	SURFACE WATER	CS-137	<	2.5	
08-Oct-19	SURFACE WATER	BA-LA-140	<	1.9	
08-Oct-19	SURFACE WATER	H-3	<	151.0	
08-Oct-19	SURFACE WATER	FE-55	<	67.0	
18-Nov-19	SURFACE WATER	MN-54	<	2.8	
18-Nov-19	SURFACE WATER	CO-58	<	2.7	
18-Nov-19	SURFACE WATER	FE-59	<	7.2	
18-Nov-19	SURFACE WATER	CO-60	<	2.9	
18-Nov-19	SURFACE WATER	ZN-65	<	7.6	
18-Nov-19	SURFACE WATER	ZR-NB-95	<	2.6	
18-Nov-19	SURFACE WATER	I-131	<	6.0	
18-Nov-19	SURFACE WATER	CS-134	<	3.9	
18-Nov-19	SURFACE WATER	CS-137	<	3.5	
18-Nov-19	SURFACE WATER	BA-LA-140	<	3.6	
18-Nov-19	SURFACE WATER	H-3	<	156.0	
09-Dec-19	SURFACE WATER	MN-54	<	2.6	
09-Dec-19	SURFACE WATER	CO-58	<	3.9	
09-Dec-19	SURFACE WATER	FE-59	<	5.6	
09-Dec-19	SURFACE WATER	CO-60	<	2.6	
09-Dec-19	SURFACE WATER	ZN-65	<	7.6	
09-Dec-19	SURFACE WATER	ZR-NB-95	<	2.3	
09-Dec-19	SURFACE WATER	I-131	<	3.8	
09-Dec-19	SURFACE WATER	CS-134	<	5.5	
09-Dec-19	SURFACE WATER	CS-137	<	4.2	
09-Dec-19	SURFACE WATER	BA-LA-140	<	4.5	
09-Dec-19	SURFACE WATER	H-3	<	150.0	

Exposure Pathway - Waterborne
Surface Water
Location: SP

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
10-Jan-19	SURFACE WATER	MN-54	<	2.8	
10-Jan-19	SURFACE WATER	CO-58	<	2.8	
10-Jan-19	SURFACE WATER	FE-59	<	4.6	
10-Jan-19	SURFACE WATER	CO-60	<	3.0	
10-Jan-19	SURFACE WATER	ZN-65	<	5.1	
10-Jan-19	SURFACE WATER	ZR-NB-95	<	2.9	
10-Jan-19	SURFACE WATER	I-131	<	8.5	
10-Jan-19	SURFACE WATER	CS-134	<	3.5	
10-Jan-19	SURFACE WATER	CS-137	<	4.5	
10-Jan-19	SURFACE WATER	BA-LA-140	<	1.8	
10-Jan-19	SURFACE WATER	H-3	9,070 +/-	268.0	
26-Feb-19	SURFACE WATER	MN-54	<	2.2	
26-Feb-19	SURFACE WATER	CO-58	<	1.5	
26-Feb-19	SURFACE WATER	FE-59	<	4.8	
26-Feb-19	SURFACE WATER	CO-60	<	1.7	
26-Feb-19	SURFACE WATER	ZN-65	<	3.1	
26-Feb-19	SURFACE WATER	ZR-NB-95	<	3.1	
26-Feb-19	SURFACE WATER	I-131	<	2.9	
26-Feb-19	SURFACE WATER	CS-134	<	3.9	
26-Feb-19	SURFACE WATER	CS-137	<	2.9	
26-Feb-19	SURFACE WATER	BA-LA-140	<	1.6	
26-Feb-19	SURFACE WATER	H-3	9,040 +/-	287.0	
26-Feb-19	SURFACE WATER	FE-55	<	65.0	
11-Mar-19	SURFACE WATER	MN-54	<	3.0	
11-Mar-19	SURFACE WATER	CO-58	<	2.4	
11-Mar-19	SURFACE WATER	FE-59	<	3.7	
11-Mar-19	SURFACE WATER	CO-60	<	2.0	
11-Mar-19	SURFACE WATER	ZN-65	<	3.3	
11-Mar-19	SURFACE WATER	ZR-NB-95	<	2.2	
11-Mar-19	SURFACE WATER	I-131	<	4.1	
11-Mar-19	SURFACE WATER	CS-134	<	2.8	
11-Mar-19	SURFACE WATER	CS-137	<	2.8	
11-Mar-19	SURFACE WATER	BA-LA-140	<	2.0	
11-Mar-19	SURFACE WATER	H-3	9,880 +/-	298.0	
08-Apr-19	SURFACE WATER	MN-54	<	2.2	
08-Apr-19	SURFACE WATER	MN-54	<	2.0	Duplicate
08-Apr-19	SURFACE WATER	CO-58	<	3.0	Duplicate
08-Apr-19	SURFACE WATER	CO-58	<	2.4	

Exposure Pathway - Waterborne
Surface Water
Location: SP

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
08-Apr-19	SURFACE WATER	FE-59	<	4.8	Duplicate
08-Apr-19	SURFACE WATER	FE-59	<	4.5	
08-Apr-19	SURFACE WATER	CO-60	<	1.7	
08-Apr-19	SURFACE WATER	CO-60	<	1.7	Duplicate
08-Apr-19	SURFACE WATER	ZN-65	<	6.5	
08-Apr-19	SURFACE WATER	ZN-65	<	3.6	Duplicate
08-Apr-19	SURFACE WATER	ZR-NB-95	<	2.0	Duplicate
08-Apr-19	SURFACE WATER	ZR-NB-95	<	3.1	
08-Apr-19	SURFACE WATER	I-131	<	3.2	Duplicate
08-Apr-19	SURFACE WATER	I-131	<	5.5	
08-Apr-19	SURFACE WATER	CS-134	<	3.6	Duplicate
08-Apr-19	SURFACE WATER	CS-134	<	4.4	
08-Apr-19	SURFACE WATER	CS-137	<	3.5	
08-Apr-19	SURFACE WATER	CS-137	<	2.4	Duplicate
08-Apr-19	SURFACE WATER	BA-LA-140	<	3.4	
08-Apr-19	SURFACE WATER	BA-LA-140	<	1.6	Duplicate
08-Apr-19	SURFACE WATER	H-3	9,997 +/-	300.0	
08-Apr-19	SURFACE WATER	H-3	10,329 +/-	305.0	Duplicate
13-May-19	SURFACE WATER	MN-54	<	3.7	
13-May-19	SURFACE WATER	CO-58	<	2.7	
13-May-19	SURFACE WATER	FE-59	<	5.1	
13-May-19	SURFACE WATER	CO-60	<	3.2	
13-May-19	SURFACE WATER	ZN-65	<	4.1	
13-May-19	SURFACE WATER	ZR-NB-95	<	3.9	
13-May-19	SURFACE WATER	I-131	<	6.8	
13-May-19	SURFACE WATER	CS-134	<	4.8	
13-May-19	SURFACE WATER	CS-137	<	4.7	
13-May-19	SURFACE WATER	BA-LA-140	<	1.8	
13-May-19	SURFACE WATER	H-3	8,983 +/-	285.0	
13-May-19	SURFACE WATER	FE-55	<	64.0	
10-Jun-19	SURFACE WATER	MN-54	<	1.9	
10-Jun-19	SURFACE WATER	CO-58	<	1.9	
10-Jun-19	SURFACE WATER	FE-59	<	3.2	
10-Jun-19	SURFACE WATER	CO-60	<	2.0	
10-Jun-19	SURFACE WATER	ZN-65	<	2.6	
10-Jun-19	SURFACE WATER	ZR-NB-95	<	3.5	
10-Jun-19	SURFACE WATER	I-131	<	10.7	
10-Jun-19	SURFACE WATER	CS-134	<	2.5	

Exposure Pathway - Waterborne
Surface Water
Location: SP

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
10-Jun-19	SURFACE WATER	CS-137	<	2.7	
10-Jun-19	SURFACE WATER	BA-LA-140	<	4.4	
10-Jun-19	SURFACE WATER	H-3	8,867 +/-	283.0	
10-Jul-19	SURFACE WATER	MN-54	<	4.2	
10-Jul-19	SURFACE WATER	CO-58	<	5.0	
10-Jul-19	SURFACE WATER	FE-59	<	5.5	
10-Jul-19	SURFACE WATER	CO-60	<	4.8	
10-Jul-19	SURFACE WATER	ZN-65	<	9.9	
10-Jul-19	SURFACE WATER	ZR-NB-95	<	3.6	
10-Jul-19	SURFACE WATER	I-131	<	5.4	
10-Jul-19	SURFACE WATER	CS-134	<	5.8	
10-Jul-19	SURFACE WATER	CS-137	<	4.8	
10-Jul-19	SURFACE WATER	BA-LA-140	<	3.1	
10-Jul-19	SURFACE WATER	H-3	12,250 +/-	336.0	
12-Aug-19	SURFACE WATER	MN-54	<	2.1	
12-Aug-19	SURFACE WATER	CO-58	<	2.4	
12-Aug-19	SURFACE WATER	FE-59	<	2.7	
12-Aug-19	SURFACE WATER	CO-60	<	2.6	
12-Aug-19	SURFACE WATER	ZN-65	<	2.8	
12-Aug-19	SURFACE WATER	ZR-NB-95	<	3.0	
12-Aug-19	SURFACE WATER	I-131	<	3.6	
12-Aug-19	SURFACE WATER	CS-134	<	2.5	
12-Aug-19	SURFACE WATER	CS-137	<	2.7	
12-Aug-19	SURFACE WATER	BA-LA-140	<	1.7	
12-Aug-19	SURFACE WATER	H-3	12,331 +/-	340.0	
12-Aug-19	SURFACE WATER	FE-55	<	70.0	
16-Sep-19	SURFACE WATER	MN-54	<	2.7	
16-Sep-19	SURFACE WATER	CO-58	<	2.4	
16-Sep-19	SURFACE WATER	FE-59	<	6.5	
16-Sep-19	SURFACE WATER	CO-60	<	2.1	
16-Sep-19	SURFACE WATER	ZN-65	<	5.0	
16-Sep-19	SURFACE WATER	ZR-NB-95	<	2.9	
16-Sep-19	SURFACE WATER	I-131	<	6.2	
16-Sep-19	SURFACE WATER	CS-134	<	4.8	
16-Sep-19	SURFACE WATER	CS-137	<	3.7	
16-Sep-19	SURFACE WATER	BA-LA-140	<	3.3	
16-Sep-19	SURFACE WATER	H-3	11,304 +/-	326.0	
08-Oct-19	SURFACE WATER	MN-54	<	3.2	

Exposure Pathway - Waterborne
Surface Water
Location: SP

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
08-Oct-19	SURFACE WATER	CO-58	<	2.6	
08-Oct-19	SURFACE WATER	FE-59	<	2.3	
08-Oct-19	SURFACE WATER	CO-60	<	2.7	
08-Oct-19	SURFACE WATER	ZN-65	<	3.0	
08-Oct-19	SURFACE WATER	ZR-NB-95	<	2.7	
08-Oct-19	SURFACE WATER	I-131	<	4.5	
08-Oct-19	SURFACE WATER	CS-134	<	3.0	
08-Oct-19	SURFACE WATER	CS-137	<	2.5	
08-Oct-19	SURFACE WATER	BA-LA-140	<	1.9	
08-Oct-19	SURFACE WATER	H-3	10,886 +/-	317.0	
08-Oct-19	SURFACE WATER	FE-55	<	69.0	
18-Nov-19	SURFACE WATER	MN-54	<	3.3	
18-Nov-19	SURFACE WATER	CO-58	<	2.2	
18-Nov-19	SURFACE WATER	FE-59	<	4.7	
18-Nov-19	SURFACE WATER	CO-60	<	1.2	
18-Nov-19	SURFACE WATER	ZN-65	<	5.5	
18-Nov-19	SURFACE WATER	ZR-NB-95	<	2.9	
18-Nov-19	SURFACE WATER	I-131	<	6.4	
18-Nov-19	SURFACE WATER	CS-134	<	4.8	
18-Nov-19	SURFACE WATER	CS-137	<	2.4	
18-Nov-19	SURFACE WATER	BA-LA-140	<	4.1	
18-Nov-19	SURFACE WATER	H-3	11,306 +/-	325.0	
09-Dec-19	SURFACE WATER	MN-54	<	5.1	
09-Dec-19	SURFACE WATER	CO-58	<	6.4	
09-Dec-19	SURFACE WATER	FE-59	<	12.8	
09-Dec-19	SURFACE WATER	CO-60	<	5.7	
09-Dec-19	SURFACE WATER	ZN-65	<	16.0	
09-Dec-19	SURFACE WATER	ZR-NB-95	<	8.0	
09-Dec-19	SURFACE WATER	I-131	<	7.4	
09-Dec-19	SURFACE WATER	CS-134	<	6.3	
09-Dec-19	SURFACE WATER	CS-137	<	7.0	
09-Dec-19	SURFACE WATER	BA-LA-140	<	6.3	
09-Dec-19	SURFACE WATER	H-3	11,481 +/-	326.0	

Exposure Pathway - Waterborne
Ground Water
Location: B-12

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
11-Mar-19	GROUND WATER	MN-54	<	2.3	
11-Mar-19	GROUND WATER	CO-58	<	1.6	
11-Mar-19	GROUND WATER	FE-59	<	3.4	
11-Mar-19	GROUND WATER	CO-60	<	1.5	
11-Mar-19	GROUND WATER	ZN-65	<	5.0	
11-Mar-19	GROUND WATER	ZR-NB-95	<	3.6	
11-Mar-19	GROUND WATER	I-131	<	0.316	
11-Mar-19	GROUND WATER	CS-134	<	4.2	
11-Mar-19	GROUND WATER	CS-137	<	3.7	
11-Mar-19	GROUND WATER	BA-LA-140	<	3.1	
11-Mar-19	GROUND WATER	H-3	<	154.0	
13-May-19	GROUND WATER	MN-54	<	2.2	
13-May-19	GROUND WATER	CO-58	<	2.2	
13-May-19	GROUND WATER	FE-59	<	5.8	
13-May-19	GROUND WATER	CO-60	<	2.7	
13-May-19	GROUND WATER	ZN-65	<	5.2	
13-May-19	GROUND WATER	ZR-NB-95	<	4.0	
13-May-19	GROUND WATER	I-131	<	0.345	
13-May-19	GROUND WATER	CS-134	<	4.5	
13-May-19	GROUND WATER	CS-137	<	2.1	
13-May-19	GROUND WATER	BA-LA-140	<	3.0	
13-May-19	GROUND WATER	H-3	<	154.0	
14-Aug-19	GROUND WATER	MN-54	<	3.2	
14-Aug-19	GROUND WATER	CO-58	<	1.5	
14-Aug-19	GROUND WATER	FE-59	<	3.1	
14-Aug-19	GROUND WATER	CO-60	<	1.9	
14-Aug-19	GROUND WATER	ZN-65	<	5.4	
14-Aug-19	GROUND WATER	ZR-NB-95	<	1.8	
14-Aug-19	GROUND WATER	I-131	<	0.255	
14-Aug-19	GROUND WATER	CS-134	<	4.5	
14-Aug-19	GROUND WATER	CS-137	<	3.4	
14-Aug-19	GROUND WATER	BA-LA-140	<	4.6	
14-Aug-19	GROUND WATER	H-3	<	152.0	
08-Oct-19	GROUND WATER	MN-54	<	3.1	
08-Oct-19	GROUND WATER	CO-58	<	1.6	
08-Oct-19	GROUND WATER	FE-59	<	5.7	
08-Oct-19	GROUND WATER	CO-60	<	2.5	
08-Oct-19	GROUND WATER	ZN-65	<	7.3	

Exposure Pathway - Waterborne
Ground Water
Location: B-12

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
08-Oct-19	GROUND WATER	ZR-NB-95	<	2.5	
08-Oct-19	GROUND WATER	I-131	<	0.363	
08-Oct-19	GROUND WATER	CS-134	<	3.4	
08-Oct-19	GROUND WATER	CS-137	<	2.4	
08-Oct-19	GROUND WATER	BA-LA-140	<	3.0	
08-Oct-19	GROUND WATER	H-3	<	151.0	

Exposure Pathway - Waterborne
Ground Water
Location: C-10

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
11-Mar-19	GROUND WATER	MN-54	<	2.4	
11-Mar-19	GROUND WATER	CO-58	<	1.8	
11-Mar-19	GROUND WATER	FE-59	<	3.5	
11-Mar-19	GROUND WATER	CO-60	<	2.0	
11-Mar-19	GROUND WATER	ZN-65	<	6.5	
11-Mar-19	GROUND WATER	ZR-NB-95	<	3.1	
11-Mar-19	GROUND WATER	I-131	<	0.31	
11-Mar-19	GROUND WATER	CS-134	<	2.9	
11-Mar-19	GROUND WATER	CS-137	<	3.2	
11-Mar-19	GROUND WATER	BA-LA-140	<	2.8	
11-Mar-19	GROUND WATER	H-3	<	154.0	
13-May-19	GROUND WATER	MN-54	<	3.3	
13-May-19	GROUND WATER	CO-58	<	2.4	
13-May-19	GROUND WATER	FE-59	<	6.5	
13-May-19	GROUND WATER	CO-60	<	4.2	
13-May-19	GROUND WATER	ZN-65	<	4.4	
13-May-19	GROUND WATER	ZR-NB-95	<	2.4	
13-May-19	GROUND WATER	I-131	<	0.365	
13-May-19	GROUND WATER	CS-134	<	4.2	
13-May-19	GROUND WATER	CS-137	<	2.5	
13-May-19	GROUND WATER	BA-LA-140	<	1.8	
13-May-19	GROUND WATER	H-3	<	154.0	
14-Aug-19	GROUND WATER	MN-54	<	2.1	
14-Aug-19	GROUND WATER	CO-58	<	1.8	
14-Aug-19	GROUND WATER	FE-59	<	4.3	
14-Aug-19	GROUND WATER	CO-60	<	2.7	
14-Aug-19	GROUND WATER	ZN-65	<	6.1	
14-Aug-19	GROUND WATER	ZR-NB-95	<	3.2	
14-Aug-19	GROUND WATER	I-131	<	0.401	
14-Aug-19	GROUND WATER	CS-134	<	4.1	
14-Aug-19	GROUND WATER	CS-137	<	3.6	
14-Aug-19	GROUND WATER	BA-LA-140	<	3.4	
14-Aug-19	GROUND WATER	H-3	<	152.0	
08-Oct-19	GROUND WATER	MN-54	<	4.4	
08-Oct-19	GROUND WATER	CO-58	<	2.2	
08-Oct-19	GROUND WATER	FE-59	<	3.8	
08-Oct-19	GROUND WATER	CO-60	<	4.5	
08-Oct-19	GROUND WATER	ZN-65	<	7.0	

Exposure Pathway - Waterborne
Ground Water
Location: C-10

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
08-Oct-19	GROUND WATER	ZR-NB-95	<	4.8	
08-Oct-19	GROUND WATER	I-131	<	0.366	
08-Oct-19	GROUND WATER	CS-134	<	4.9	
08-Oct-19	GROUND WATER	CS-137	<	3.5	
08-Oct-19	GROUND WATER	BA-LA-140	<	5.6	
08-Oct-19	GROUND WATER	H-3	<	151.0	

Exposure Pathway - Waterborne
Ground Water
Location: C-49

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
11-Mar-19	GROUND WATER	MN-54	<	2.7	
11-Mar-19	GROUND WATER	CO-58	<	1.9	
11-Mar-19	GROUND WATER	FE-59	<	3.8	
11-Mar-19	GROUND WATER	CO-60	<	1.8	
11-Mar-19	GROUND WATER	ZN-65	<	6.6	
11-Mar-19	GROUND WATER	ZR-NB-95	<	2.1	
11-Mar-19	GROUND WATER	I-131	<	0.305	
11-Mar-19	GROUND WATER	CS-134	<	2.9	
11-Mar-19	GROUND WATER	CS-137	<	3.2	
11-Mar-19	GROUND WATER	BA-LA-140	<	3.4	
11-Mar-19	GROUND WATER	H-3	<	154.0	
13-May-19	GROUND WATER	MN-54	<	3.4	
13-May-19	GROUND WATER	CO-58	<	1.9	
13-May-19	GROUND WATER	FE-59	<	3.3	
13-May-19	GROUND WATER	CO-60	<	2.1	
13-May-19	GROUND WATER	ZN-65	<	5.3	
13-May-19	GROUND WATER	ZR-NB-95	<	4.6	
13-May-19	GROUND WATER	I-131	<	0.475	
13-May-19	GROUND WATER	CS-134	<	3.5	
13-May-19	GROUND WATER	CS-137	<	2.0	
13-May-19	GROUND WATER	BA-LA-140	<	3.5	
13-May-19	GROUND WATER	H-3	<	154.0	
14-Aug-19	GROUND WATER	MN-54	<	3.4	
14-Aug-19	GROUND WATER	CO-58	<	3.4	
14-Aug-19	GROUND WATER	FE-59	<	9.4	
14-Aug-19	GROUND WATER	CO-60	<	3.7	
14-Aug-19	GROUND WATER	ZN-65	<	11.9	
14-Aug-19	GROUND WATER	ZR-NB-95	<	4.2	
14-Aug-19	GROUND WATER	I-131	<	0.32	
14-Aug-19	GROUND WATER	CS-134	<	5.1	
14-Aug-19	GROUND WATER	CS-137	<	4.4	
14-Aug-19	GROUND WATER	BA-LA-140	<	4.2	
14-Aug-19	GROUND WATER	H-3	<	152.0	
08-Oct-19	GROUND WATER	MN-54	<	2.8	
08-Oct-19	GROUND WATER	CO-58	<	3.0	
08-Oct-19	GROUND WATER	FE-59	<	3.2	
08-Oct-19	GROUND WATER	CO-60	<	1.4	
08-Oct-19	GROUND WATER	ZN-65	<	6.5	

Exposure Pathway - Waterborne
Ground Water
Location: C-49

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
08-Oct-19	GROUND WATER	ZR-NB-95	<	2.1	
08-Oct-19	GROUND WATER	I-131	<	0.436	
08-Oct-19	GROUND WATER	CS-134	<	4.0	
08-Oct-19	GROUND WATER	CS-137	<	4.0	
08-Oct-19	GROUND WATER	BA-LA-140	<	2.7	
08-Oct-19	GROUND WATER	H-3	<	151.0	

Exposure Pathway - Waterborne
Ground Water
Location: F-1

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
11-Mar-19	GROUND WATER	MN-54	<	5.5	
11-Mar-19	GROUND WATER	CO-58	<	2.9	
11-Mar-19	GROUND WATER	FE-59	<	8.2	
11-Mar-19	GROUND WATER	CO-60	<	7.2	
11-Mar-19	GROUND WATER	ZN-65	<	6.0	
11-Mar-19	GROUND WATER	ZR-NB-95	<	5.3	
11-Mar-19	GROUND WATER	I-131	<	0.354	
11-Mar-19	GROUND WATER	CS-134	<	5.5	
11-Mar-19	GROUND WATER	CS-137	<	3.4	
11-Mar-19	GROUND WATER	BA-LA-140	<	4.0	
11-Mar-19	GROUND WATER	H-3	<	154.0	
13-May-19	GROUND WATER	MN-54	<	3.2	
13-May-19	GROUND WATER	CO-58	<	2.5	
13-May-19	GROUND WATER	FE-59	<	2.1	
13-May-19	GROUND WATER	CO-60	<	1.6	
13-May-19	GROUND WATER	ZN-65	<	7.5	
13-May-19	GROUND WATER	ZR-NB-95	<	3.1	
13-May-19	GROUND WATER	I-131	<	0.294	
13-May-19	GROUND WATER	CS-134	<	4.8	
13-May-19	GROUND WATER	CS-137	<	3.7	
13-May-19	GROUND WATER	BA-LA-140	<	2.8	
13-May-19	GROUND WATER	H-3	<	154.0	
14-Aug-19	GROUND WATER	MN-54	<	2.4	
14-Aug-19	GROUND WATER	CO-58	<	1.6	
14-Aug-19	GROUND WATER	FE-59	<	2.9	
14-Aug-19	GROUND WATER	CO-60	<	1.8	
14-Aug-19	GROUND WATER	ZN-65	<	4.2	
14-Aug-19	GROUND WATER	ZR-NB-95	<	3.1	
14-Aug-19	GROUND WATER	I-131	<	0.366	
14-Aug-19	GROUND WATER	CS-134	<	3.2	
14-Aug-19	GROUND WATER	CS-137	<	2.4	
14-Aug-19	GROUND WATER	BA-LA-140	<	3.0	
14-Aug-19	GROUND WATER	H-3	<	152.0	
08-Oct-19	GROUND WATER	MN-54	<	2.7	
08-Oct-19	GROUND WATER	CO-58	<	1.6	
08-Oct-19	GROUND WATER	FE-59	<	5.4	
08-Oct-19	GROUND WATER	CO-60	<	2.3	
08-Oct-19	GROUND WATER	ZN-65	<	4.8	

Exposure Pathway - Waterborne
Ground Water
Location: F-1

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
08-Oct-19	GROUND WATER	ZR-NB-95	<	3.3	
08-Oct-19	GROUND WATER	I-131	<	0.341	
08-Oct-19	GROUND WATER	CS-134	<	3.3	
08-Oct-19	GROUND WATER	CS-137	<	2.0	
08-Oct-19	GROUND WATER	BA-LA-140	<	2.4	
08-Oct-19	GROUND WATER	H-3	<	151.0	

Exposure Pathway - Waterborne
Ground Water
Location: G-2

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
11-Mar-19	GROUND WATER	MN-54	<	3.3	
11-Mar-19	GROUND WATER	CO-58	<	3.4	
11-Mar-19	GROUND WATER	FE-59	<	4.6	
11-Mar-19	GROUND WATER	CO-60	<	3.9	
11-Mar-19	GROUND WATER	ZN-65	<	5.8	
11-Mar-19	GROUND WATER	ZR-NB-95	<	3.1	
11-Mar-19	GROUND WATER	I-131	<	0.317	
11-Mar-19	GROUND WATER	CS-134	<	5.1	
11-Mar-19	GROUND WATER	CS-137	<	4.1	
11-Mar-19	GROUND WATER	BA-LA-140	<	4.2	
11-Mar-19	GROUND WATER	H-3	<	154.0	
13-May-19	GROUND WATER	MN-54	<	2.0	
13-May-19	GROUND WATER	CO-58	<	2.2	
13-May-19	GROUND WATER	FE-59	<	4.9	
13-May-19	GROUND WATER	CO-60	<	1.7	
13-May-19	GROUND WATER	ZN-65	<	3.5	
13-May-19	GROUND WATER	ZR-NB-95	<	2.4	
13-May-19	GROUND WATER	I-131	<	0.302	
13-May-19	GROUND WATER	CS-134	<	3.1	
13-May-19	GROUND WATER	CS-137	<	2.1	
13-May-19	GROUND WATER	BA-LA-140	<	1.6	
13-May-19	GROUND WATER	H-3	<	154.0	
14-Aug-19	GROUND WATER	MN-54	<	3.3	
14-Aug-19	GROUND WATER	CO-58	<	3.3	
14-Aug-19	GROUND WATER	FE-59	<	4.5	
14-Aug-19	GROUND WATER	CO-60	<	3.0	
14-Aug-19	GROUND WATER	ZN-65	<	7.2	
14-Aug-19	GROUND WATER	ZR-NB-95	<	3.8	
14-Aug-19	GROUND WATER	I-131	<	0.414	
14-Aug-19	GROUND WATER	CS-134	<	4.2	
14-Aug-19	GROUND WATER	CS-137	<	3.1	
14-Aug-19	GROUND WATER	BA-LA-140	<	3.8	
14-Aug-19	GROUND WATER	H-3	<	152.0	
08-Oct-19	GROUND WATER	MN-54	<	2.5	
08-Oct-19	GROUND WATER	CO-58	<	2.9	
08-Oct-19	GROUND WATER	FE-59	<	3.0	
08-Oct-19	GROUND WATER	CO-60	<	1.7	
08-Oct-19	GROUND WATER	ZN-65	<	3.2	

Exposure Pathway - Waterborne
Ground Water
Location: G-2

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
08-Oct-19	GROUND WATER	ZR-NB-95	<	1.8	
08-Oct-19	GROUND WATER	I-131	<	0.388	
08-Oct-19	GROUND WATER	CS-134	<	3.1	
08-Oct-19	GROUND WATER	CS-137	<	2.1	
08-Oct-19	GROUND WATER	BA-LA-140	<	2.0	
08-Oct-19	GROUND WATER	H-3	<	151.0	

Exposure Pathway - Waterborne
Ground Water
Location: J-1

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
11-Mar-19	GROUND WATER	MN-54	<	3.3	
11-Mar-19	GROUND WATER	CO-58	<	2.0	
11-Mar-19	GROUND WATER	FE-59	<	4.1	
11-Mar-19	GROUND WATER	CO-60	<	3.0	
11-Mar-19	GROUND WATER	ZN-65	<	4.6	
11-Mar-19	GROUND WATER	ZR-NB-95	<	5.1	
11-Mar-19	GROUND WATER	I-131	<	0.3	
11-Mar-19	GROUND WATER	CS-134	<	3.6	
11-Mar-19	GROUND WATER	CS-137	<	4.1	
11-Mar-19	GROUND WATER	BA-LA-140	<	4.5	
11-Mar-19	GROUND WATER	H-3	<	154.0	
13-May-19	GROUND WATER	MN-54	<	1.7	
13-May-19	GROUND WATER	CO-58	<	2.1	
13-May-19	GROUND WATER	FE-59	<	5.2	
13-May-19	GROUND WATER	CO-60	<	1.8	
13-May-19	GROUND WATER	ZN-65	<	8.1	
13-May-19	GROUND WATER	ZR-NB-95	<	4.9	
13-May-19	GROUND WATER	I-131	<	0.292	
13-May-19	GROUND WATER	CS-134	<	3.6	
13-May-19	GROUND WATER	CS-137	<	3.7	
13-May-19	GROUND WATER	BA-LA-140	<	4.1	
13-May-19	GROUND WATER	H-3	<	154.0	
14-Aug-19	GROUND WATER	MN-54	<	3.3	Duplicate
14-Aug-19	GROUND WATER	MN-54	<	3.3	
14-Aug-19	GROUND WATER	CO-58	<	2.8	
14-Aug-19	GROUND WATER	CO-58	<	1.3	Duplicate
14-Aug-19	GROUND WATER	FE-59	<	4.9	
14-Aug-19	GROUND WATER	FE-59	<	3.9	Duplicate
14-Aug-19	GROUND WATER	CO-60	<	1.8	
14-Aug-19	GROUND WATER	CO-60	<	2.5	Duplicate
14-Aug-19	GROUND WATER	ZN-65	<	7.0	Duplicate
14-Aug-19	GROUND WATER	ZN-65	<	6.7	
14-Aug-19	GROUND WATER	ZR-NB-95	<	3.9	Duplicate
14-Aug-19	GROUND WATER	ZR-NB-95	<	3.8	
14-Aug-19	GROUND WATER	I-131	<	0.472	Duplicate
14-Aug-19	GROUND WATER	I-131	<	0.347	
14-Aug-19	GROUND WATER	CS-134	<	3.0	Duplicate
14-Aug-19	GROUND WATER	CS-134	<	4.1	

Exposure Pathway - Waterborne
Ground Water
Location: J-1

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
14-Aug-19	GROUND WATER	CS-137	<	4.1	
14-Aug-19	GROUND WATER	CS-137	<	2.7	Duplicate
14-Aug-19	GROUND WATER	BA-LA-140	<	3.0	
14-Aug-19	GROUND WATER	BA-LA-140	<	2.0	Duplicate
14-Aug-19	GROUND WATER	H-3	<	152.0	Duplicate
14-Aug-19	GROUND WATER	H-3	<	152.0	
08-Oct-19	GROUND WATER	MN-54	<	2.6	
08-Oct-19	GROUND WATER	CO-58	<	1.6	
08-Oct-19	GROUND WATER	FE-59	<	3.1	
08-Oct-19	GROUND WATER	CO-60	<	1.9	
08-Oct-19	GROUND WATER	ZN-65	<	3.5	
08-Oct-19	GROUND WATER	ZR-NB-95	<	1.9	
08-Oct-19	GROUND WATER	I-131	<	0.418	
08-Oct-19	GROUND WATER	CS-134	<	2.9	
08-Oct-19	GROUND WATER	CS-137	<	2.3	
08-Oct-19	GROUND WATER	BA-LA-140	<	2.3	
08-Oct-19	GROUND WATER	H-3	<	151.0	

Exposure Pathway - Waterborne
Ground Water
Location: J-2

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
11-Mar-19	GROUND WATER	MN-54	<	4.2	
11-Mar-19	GROUND WATER	MN-54	<	3.7	Duplicate
11-Mar-19	GROUND WATER	CO-58	<	2.5	Duplicate
11-Mar-19	GROUND WATER	CO-58	<	1.6	
11-Mar-19	GROUND WATER	FE-59	<	4.1	
11-Mar-19	GROUND WATER	FE-59	<	4.1	Duplicate
11-Mar-19	GROUND WATER	CO-60	<	3.2	
11-Mar-19	GROUND WATER	CO-60	<	2.6	Duplicate
11-Mar-19	GROUND WATER	ZN-65	<	6.2	Duplicate
11-Mar-19	GROUND WATER	ZN-65	<	5.4	
11-Mar-19	GROUND WATER	ZR-NB-95	<	4.9	
11-Mar-19	GROUND WATER	ZR-NB-95	<	3.2	Duplicate
11-Mar-19	GROUND WATER	I-131	<	0.431	
11-Mar-19	GROUND WATER	I-131	<	0.377	Duplicate
11-Mar-19	GROUND WATER	CS-134	<	4.6	
11-Mar-19	GROUND WATER	CS-134	<	4.9	Duplicate
11-Mar-19	GROUND WATER	CS-137	<	4.0	Duplicate
11-Mar-19	GROUND WATER	CS-137	<	3.1	
11-Mar-19	GROUND WATER	BA-LA-140	<	2.9	Duplicate
11-Mar-19	GROUND WATER	BA-LA-140	<	3.2	
11-Mar-19	GROUND WATER	H-3	<	154.0	Duplicate
11-Mar-19	GROUND WATER	H-3	<	154.0	
13-May-19	GROUND WATER	MN-54	<	3.4	
13-May-19	GROUND WATER	CO-58	<	2.9	
13-May-19	GROUND WATER	FE-59	<	6.1	
13-May-19	GROUND WATER	CO-60	<	3.8	
13-May-19	GROUND WATER	ZN-65	<	5.9	
13-May-19	GROUND WATER	ZR-NB-95	<	3.2	
13-May-19	GROUND WATER	I-131	<	0.317	
13-May-19	GROUND WATER	CS-134	<	3.4	
13-May-19	GROUND WATER	CS-137	<	3.8	
13-May-19	GROUND WATER	BA-LA-140	<	4.9	
13-May-19	GROUND WATER	H-3	<	154.0	
14-Aug-19	GROUND WATER	MN-54	<	3.5	
14-Aug-19	GROUND WATER	CO-58	<	2.5	
14-Aug-19	GROUND WATER	FE-59	<	5.8	
14-Aug-19	GROUND WATER	CO-60	<	3.1	
14-Aug-19	GROUND WATER	ZN-65	<	6.3	

Exposure Pathway - Waterborne
Ground Water
Location: J-2

Collection Date	Sample Description	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
14-Aug-19	GROUND WATER	ZR-NB-95	<	3.2	
14-Aug-19	GROUND WATER	I-131	<	0.495	
14-Aug-19	GROUND WATER	CS-134	<	4.4	
14-Aug-19	GROUND WATER	CS-137	<	2.1	
14-Aug-19	GROUND WATER	BA-LA-140	<	3.6	
14-Aug-19	GROUND WATER	H-3	<	152.0	
08-Oct-19	GROUND WATER	MN-54	<	6.0	
08-Oct-19	GROUND WATER	CO-58	<	3.9	
08-Oct-19	GROUND WATER	FE-59	<	8.8	
08-Oct-19	GROUND WATER	CO-60	<	5.2	
08-Oct-19	GROUND WATER	ZN-65	<	8.9	
08-Oct-19	GROUND WATER	ZR-NB-95	<	3.3	
08-Oct-19	GROUND WATER	I-131	<	0.464	
08-Oct-19	GROUND WATER	CS-134	<	5.2	
08-Oct-19	GROUND WATER	CS-137	<	4.1	
08-Oct-19	GROUND WATER	BA-LA-140	<	3.3	
08-Oct-19	GROUND WATER	H-3	<	151.0	

Exposure Pathway - Waterborne
Drinking Water
Location: BW-15

Collection Date	Nuclide	Concentration (pCi/Liter)	Duplicate Analysis
07-Jan-19	MN-54	< 1.7	
07-Jan-19	CO-58	< 1.7	
07-Jan-19	FE-59	< 3.9	
07-Jan-19	CO-60	< 1.9	
07-Jan-19	ZN-65	< 4.3	
07-Jan-19	ZR-NB-95	< 2.8	
07-Jan-19	I-131	< 0.29	
07-Jan-19	CS-134	< 2.9	
07-Jan-19	CS-137	< 2.2	
07-Jan-19	BA-LA-140	< 2.8	
07-Jan-19	GROSS BETA	5.143 +/- 0.824	
07-Jan-19	GROSS BETA	4.145 +/- 0.759	
04-Feb-19	MN-54	< 2.9	
04-Feb-19	CO-58	< 3.2	
04-Feb-19	FE-59	< 6.4	
04-Feb-19	CO-60	< 2.7	
04-Feb-19	ZN-65	< 4.3	
04-Feb-19	ZR-NB-95	< 2.8	
04-Feb-19	I-131	< 0.465	
04-Feb-19	CS-134	< 3.5	
04-Feb-19	CS-137	< 1.9	
04-Feb-19	BA-LA-140	< 3.3	
04-Feb-19	GROSS BETA	2.651 +/- 0.653	
12-Mar-19	MN-54	< 3.1	
12-Mar-19	CO-58	< 2.5	
12-Mar-19	FE-59	< 3.5	
12-Mar-19	CO-60	< 2.6	
12-Mar-19	ZN-65	< 4.1	
12-Mar-19	ZR-NB-95	< 2.4	
12-Mar-19	I-131	< 0.321	
12-Mar-19	CS-134	< 3.4	
12-Mar-19	CS-137	< 3.1	
12-Mar-19	BA-LA-140	< 3.0	
12-Mar-19	GROSS BETA	2.387 +/- 0.66	
01-Apr-19	MN-54	< 3.0	
01-Apr-19	CO-58	< 2.0	
01-Apr-19	FE-59	< 5.2	
01-Apr-19	CO-60	< 2.7	

Exposure Pathway - Waterborne
Drinking Water
Location: BW-15

Collection Date	Nuclide	Concentration (pCi/Liter)	Duplicate Analysis
01-Apr-19	ZN-65	< 5.4	
01-Apr-19	ZR-NB-95	< 1.8	
01-Apr-19	I-131	< 0.302	
01-Apr-19	CS-134	< 3.1	
01-Apr-19	CS-137	< 2.9	
01-Apr-19	BA-LA-140	< 2.4	
01-Apr-19	GROSS BETA	2.467 +/- 0.65	
06-May-19	MN-54	< 3.3	
06-May-19	CO-58	< 2.8	
06-May-19	FE-59	< 2.6	
06-May-19	CO-60	< 2.4	
06-May-19	ZN-65	< 3.8	
06-May-19	ZR-NB-95	< 3.2	
06-May-19	I-131	< 0.287	
06-May-19	CS-134	< 4.1	
06-May-19	CS-137	< 2.4	
06-May-19	BA-LA-140	< 1.8	
06-May-19	GROSS BETA	1.965 +/- 0.611	
03-Jun-19	MN-54	< 2.9	
03-Jun-19	CO-58	< 2.0	
03-Jun-19	FE-59	< 6.1	
03-Jun-19	CO-60	< 1.1	
03-Jun-19	ZN-65	< 5.1	
03-Jun-19	ZR-NB-95	< 2.1	
03-Jun-19	I-131	< 0.382	
03-Jun-19	CS-134	< 4.0	
03-Jun-19	CS-137	< 4.5	
03-Jun-19	BA-LA-140	< 2.3	
03-Jun-19	GROSS BETA	2.497 +/- 0.663	
01-Jul-19	MN-54	< 2.4	
01-Jul-19	CO-58	< 2.0	
01-Jul-19	FE-59	< 3.6	
01-Jul-19	CO-60	< 1.5	
01-Jul-19	ZN-65	< 2.6	
01-Jul-19	ZR-NB-95	< 2.3	
01-Jul-19	I-131	< 0.3	
01-Jul-19	CS-134	< 2.7	
01-Jul-19	CS-137	< 3.1	

Exposure Pathway - Waterborne
Drinking Water
Location: BW-15

Collection Date	Nuclide	Concentration (pCi/Liter)	Duplicate Analysis
01-Jul-19	BA-LA-140	< 2.4	
01-Jul-19	GROSS BETA	2.024 +/- 0.614	
05-Aug-19	MN-54	< 3.5	
05-Aug-19	CO-58	< 2.2	
05-Aug-19	FE-59	< 6.9	
05-Aug-19	CO-60	< 3.2	
05-Aug-19	ZN-65	< 9.2	
05-Aug-19	ZR-NB-95	< 3.1	
05-Aug-19	I-131	< 0.293	
05-Aug-19	CS-134	< 4.1	
05-Aug-19	CS-137	< 3.6	
05-Aug-19	BA-LA-140	< 2.9	
05-Aug-19	GROSS BETA	2.391 +/- 0.615	
03-Sep-19	MN-54	< 4.0	
03-Sep-19	CO-58	< 4.5	
03-Sep-19	FE-59	< 8.4	
03-Sep-19	CO-60	< 3.8	
03-Sep-19	ZN-65	< 6.2	
03-Sep-19	ZR-NB-95	< 4.8	
03-Sep-19	I-131	< 0.333	
03-Sep-19	CS-134	< 4.5	
03-Sep-19	CS-137	< 5.2	
03-Sep-19	BA-LA-140	< 1.9	
03-Sep-19	GROSS BETA	1.948 +/- 0.593	
08-Oct-19	MN-54	< 2.4	
08-Oct-19	CO-58	< 2.5	
08-Oct-19	FE-59	< 3.2	
08-Oct-19	CO-60	< 2.4	
08-Oct-19	ZN-65	< 7.4	
08-Oct-19	ZR-NB-95	< 3.2	
08-Oct-19	I-131	< 0.432	
08-Oct-19	CS-134	< 4.3	
08-Oct-19	CS-137	< 2.8	
08-Oct-19	BA-LA-140	< 3.1	
08-Oct-19	GROSS BETA	3.711 +/- 0.72	
05-Nov-19	MN-54	< 3.2	
05-Nov-19	CO-58	< 3.1	
05-Nov-19	FE-59	< 4.4	

Exposure Pathway - Waterborne
Drinking Water
Location: BW-15

Collection Date	Nuclide	Concentration (pCi/Liter)	Duplicate Analysis
05-Nov-19	CO-60	< 2.3	
05-Nov-19	ZN-65	< 3.5	
05-Nov-19	ZR-NB-95	< 1.9	
05-Nov-19	I-131	< 0.247	
05-Nov-19	CS-134	< 3.2	
05-Nov-19	CS-137	< 2.8	
05-Nov-19	BA-LA-140	< 1.7	
05-Nov-19	GROSS BETA	2.028 +/- 0.631	
05-Dec-19	MN-54	< 5.5	
05-Dec-19	CO-58	< 4.0	
05-Dec-19	FE-59	< 6.6	
05-Dec-19	CO-60	< 3.8	
05-Dec-19	ZN-65	< 10.3	
05-Dec-19	ZR-NB-95	< 4.6	
05-Dec-19	I-131	< 0.457	
05-Dec-19	CS-134	< 4.7	
05-Dec-19	CS-137	< 3.3	
05-Dec-19	BA-LA-140	< 6.4	
05-Dec-19	GROSS BETA	2.318 +/- 0.627	
07-Jan-20	MN-54	< 1.7	
07-Jan-20	CO-58	< 2.7	
07-Jan-20	FE-59	< 5.5	
07-Jan-20	CO-60	< 1.9	
07-Jan-20	ZN-65	< 2.7	
07-Jan-20	ZR-NB-95	< 2.2	
07-Jan-20	I-131	< 0.267	
07-Jan-20	CS-134	< 4.1	
07-Jan-20	CS-137	< 3.7	
07-Jan-20	BA-LA-140	< 3.4	
07-Jan-20	GROSS BETA	1.557 +/- 0.573	

Exposure Pathway - Waterborne
Drinking Water
Location: IO-DW

Collection Date	Nuclide	Concentration (pCi/Liter)	Duplicate Analysis
07-Jan-19	MN-54	< 5.3	
07-Jan-19	CO-58	< 3.2	
07-Jan-19	FE-59	< 7.1	
07-Jan-19	CO-60	< 3.9	
07-Jan-19	ZN-65	< 8.0	
07-Jan-19	ZR-NB-95	< 4.0	
07-Jan-19	I-131	< 0.294	
07-Jan-19	CS-134	< 4.9	
07-Jan-19	CS-137	< 4.3	
07-Jan-19	BA-LA-140	< 2.4	
07-Jan-19	GROSS BETA	4.398 +/- 0.797	
07-Jan-19	GROSS BETA	4.368 +/- 0.785	
04-Feb-19	MN-54	< 2.9	
04-Feb-19	CO-58	< 2.5	
04-Feb-19	FE-59	< 3.4	
04-Feb-19	CO-60	< 2.4	
04-Feb-19	ZN-65	< 4.7	
04-Feb-19	ZR-NB-95	< 4.0	
04-Feb-19	I-131	< 0.484	
04-Feb-19	CS-134	< 3.6	
04-Feb-19	CS-137	< 2.3	
04-Feb-19	BA-LA-140	< 2.6	
04-Feb-19	GROSS BETA	2.735 +/- 0.675	
12-Mar-19	MN-54	< 4.2	
12-Mar-19	CO-58	< 2.4	
12-Mar-19	FE-59	< 8.9	
12-Mar-19	CO-60	< 3.9	
12-Mar-19	ZN-65	< 5.6	
12-Mar-19	ZR-NB-95	< 4.1	
12-Mar-19	I-131	< 0.355	
12-Mar-19	CS-134	< 4.8	
12-Mar-19	CS-137	< 4.6	
12-Mar-19	BA-LA-140	< 1.7	
12-Mar-19	GROSS BETA	1.958 +/- 0.611	
01-Apr-19	MN-54	< 3.0	
01-Apr-19	CO-58	< 1.4	
01-Apr-19	FE-59	< 3.8	
01-Apr-19	CO-60	< 1.2	

Exposure Pathway - Waterborne
Drinking Water
Location: IO-DW

Collection Date	Nuclide	Concentration (pCi/Liter)	Duplicate Analysis
01-Apr-19	ZN-65	< 4.4	
01-Apr-19	ZR-NB-95	< 3.6	
01-Apr-19	I-131	< 0.294	
01-Apr-19	CS-134	< 2.6	
01-Apr-19	CS-137	< 3.0	
01-Apr-19	BA-LA-140	< 2.4	
01-Apr-19	GROSS BETA	1.994 +/- 0.632	
06-May-19	MN-54	< 3.8	
06-May-19	CO-58	< 2.2	
06-May-19	FE-59	< 3.6	
06-May-19	CO-60	< 2.1	
06-May-19	ZN-65	< 3.9	
06-May-19	ZR-NB-95	< 2.6	
06-May-19	I-131	< 0.26	
06-May-19	CS-134	< 4.0	
06-May-19	CS-137	< 3.4	
06-May-19	BA-LA-140	< 2.3	
06-May-19	GROSS BETA	2.543 +/- 0.684	
03-Jun-19	MN-54	< 4.3	
03-Jun-19	CO-58	< 2.9	
03-Jun-19	FE-59	< 5.3	
03-Jun-19	CO-60	< 3.9	
03-Jun-19	ZN-65	< 5.4	
03-Jun-19	ZR-NB-95	< 3.0	
03-Jun-19	I-131	< 0.386	
03-Jun-19	CS-134	< 4.0	
03-Jun-19	CS-137	< 3.8	
03-Jun-19	BA-LA-140	< 4.3	
03-Jun-19	GROSS BETA	1.940 +/- 0.611	
01-Jul-19	MN-54	< 2.3	
01-Jul-19	CO-58	< 3.3	
01-Jul-19	FE-59	< 4.3	
01-Jul-19	CO-60	< 1.6	
01-Jul-19	ZN-65	< 3.4	
01-Jul-19	ZR-NB-95	< 2.0	
01-Jul-19	I-131	< 0.298	
01-Jul-19	CS-134	< 3.2	
01-Jul-19	CS-137	< 2.9	

Exposure Pathway - Waterborne
Drinking Water
Location: IO-DW

Collection Date	Nuclide	Concentration (pCi/Liter)	Duplicate Analysis
01-Jul-19	BA-LA-140	< 3.2	
01-Jul-19	GROSS BETA	< 0.888	
05-Aug-19	MN-54	< 4.1	
05-Aug-19	CO-58	< 4.4	
05-Aug-19	FE-59	< 3.9	
05-Aug-19	CO-60	< 1.8	
05-Aug-19	ZN-65	< 3.6	
05-Aug-19	ZR-NB-95	< 4.6	
05-Aug-19	I-131	< 0.316	
05-Aug-19	CS-134	< 4.3	
05-Aug-19	CS-137	< 3.4	
05-Aug-19	BA-LA-140	< 2.5	
05-Aug-19	GROSS BETA	2.494 +/- 0.667	
03-Sep-19	MN-54	< 2.1	
03-Sep-19	CO-58	< 2.3	
03-Sep-19	FE-59	< 4.3	
03-Sep-19	CO-60	< 2.4	
03-Sep-19	ZN-65	< 4.6	
03-Sep-19	ZR-NB-95	< 3.1	
03-Sep-19	I-131	< 0.482	
03-Sep-19	CS-134	< 3.0	
03-Sep-19	CS-137	< 1.7	
03-Sep-19	BA-LA-140	< 2.1	
03-Sep-19	GROSS BETA	2.413 +/- 0.654	
08-Oct-19	MN-54	< 2.0	
08-Oct-19	CO-58	< 2.4	
08-Oct-19	FE-59	< 3.9	
08-Oct-19	CO-60	< 2.0	
08-Oct-19	ZN-65	< 4.5	
08-Oct-19	ZR-NB-95	< 3.4	
08-Oct-19	I-131	< 0.379	
08-Oct-19	CS-134	< 3.5	
08-Oct-19	CS-137	< 2.3	
08-Oct-19	BA-LA-140	< 3.0	
08-Oct-19	GROSS BETA	2.917 +/- 0.679	
05-Nov-19	MN-54	< 3.0	
05-Nov-19	CO-58	< 2.2	
05-Nov-19	FE-59	< 3.8	

Exposure Pathway - Waterborne
Drinking Water
Location: IO-DW

Collection Date	Nuclide	Concentration (pCi/Liter)	Duplicate Analysis
05-Nov-19	CO-60	< 2.3	
05-Nov-19	ZN-65	< 3.6	
05-Nov-19	ZR-NB-95	< 2.6	
05-Nov-19	I-131	< 0.285	
05-Nov-19	CS-134	< 3.2	
05-Nov-19	CS-137	< 2.2	
05-Nov-19	BA-LA-140	< 3.1	
05-Nov-19	GROSS BETA	2.290 +/- 0.659	
05-Dec-19	MN-54	< 3.2	
05-Dec-19	CO-58	< 2.1	
05-Dec-19	FE-59	< 3.6	
05-Dec-19	CO-60	< 2.5	
05-Dec-19	ZN-65	< 2.4	
05-Dec-19	ZR-NB-95	< 3.7	
05-Dec-19	I-131	< 0.462	
05-Dec-19	CS-134	< 3.2	
05-Dec-19	CS-137	< 2.3	
05-Dec-19	BA-LA-140	< 3.7	
05-Dec-19	GROSS BETA	2.771 +/- 0.7	
07-Jan-20	MN-54	< 2.9	
07-Jan-20	CO-58	< 3.0	
07-Jan-20	FE-59	< 3.2	
07-Jan-20	CO-60	< 2.1	
07-Jan-20	ZN-65	< 5.3	
07-Jan-20	ZR-NB-95	< 3.2	
07-Jan-20	I-131	< 0.259	
07-Jan-20	CS-134	< 3.3	
07-Jan-20	CS-137	< 2.6	
07-Jan-20	BA-LA-140	< 1.8	
07-Jan-20	GROSS BETA	1.898 +/- 0.632	

Exposure Pathway - Waterborne
Drinking Water
Quarterly Tritium Analysis
Location: BW-15

Collection Date	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
07-Jan-19	H-3	<	147	
01-Apr-19	H-3	<	155	
01-Jul-19	H-3	<	149	
01-Jul-19	H-3	<	149	Duplicate
08-Oct-19	H-3	<	151	
07-Jan-20	H-3	<	157	

Exposure Pathway - Waterborne
Drinking Water
Quarterly Tritium Analysis
Location: IO-DW

Collection Date	Nuclide	Concentration (pCi/Liter)		Duplicate Analysis
07-Jan-19	H-3	<	147	
01-Apr-19	H-3	<	155	
01-Jul-19	H-3	<	149	
08-Oct-19	H-3	<	151	
07-Jan-20	H-3	<	157	

Exposure Pathway - Waterborne
Shoreline Sediment
Location: DC

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Dry)		Duplicate Analysis
23-May-19	SHORELINE SEDIMENTS	K-40	8,940.9 +/-	698.2	
23-May-19	SHORELINE SEDIMENTS	MN-54	<	25.9	
23-May-19	SHORELINE SEDIMENTS	CO-58	<	33.2	
23-May-19	SHORELINE SEDIMENTS	FE-59	<	53.6	
23-May-19	SHORELINE SEDIMENTS	CO-60	<	17.6	
23-May-19	SHORELINE SEDIMENTS	ZN-65	<	53.0	
23-May-19	SHORELINE SEDIMENTS	CS-134	<	23.0	
23-May-19	SHORELINE SEDIMENTS	CS-137	196.8 +/-	31.8	
22-Oct-19	SHORELINE SEDIMENTS	K-40	5,671.7 +/-	458.3	
22-Oct-19	SHORELINE SEDIMENTS	MN-54	<	18.7	
22-Oct-19	SHORELINE SEDIMENTS	CO-58	<	21.7	
22-Oct-19	SHORELINE SEDIMENTS	FE-59	<	46.0	
22-Oct-19	SHORELINE SEDIMENTS	CO-60	<	15.1	
22-Oct-19	SHORELINE SEDIMENTS	ZN-65	<	29.8	
22-Oct-19	SHORELINE SEDIMENTS	CS-134	<	11.5	
22-Oct-19	SHORELINE SEDIMENTS	CS-137	<	16.7	

Exposure Pathway - Waterborne
Shoreline Sediment
Location: JRR

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Dry)		Duplicate Analysis
27-Jun-19	SHORELINE SEDIMENTS	K-40	10,012.0 +/-	538.7	
27-Jun-19	SHORELINE SEDIMENTS	MN-54	<	25.6	
27-Jun-19	SHORELINE SEDIMENTS	CO-58	<	23.0	
27-Jun-19	SHORELINE SEDIMENTS	FE-59	<	45.1	
27-Jun-19	SHORELINE SEDIMENTS	CO-60	<	16.7	
27-Jun-19	SHORELINE SEDIMENTS	ZN-65	<	44.6	
27-Jun-19	SHORELINE SEDIMENTS	CS-134	<	17.1	
27-Jun-19	SHORELINE SEDIMENTS	CS-137	147.7 +/-	27.1	
16-Oct-19	SHORELINE SEDIMENTS	K-40	11,270.0 +/-	707.4	
16-Oct-19	SHORELINE SEDIMENTS	MN-54	<	30.0	
16-Oct-19	SHORELINE SEDIMENTS	CO-58	<	32.8	
16-Oct-19	SHORELINE SEDIMENTS	FE-59	<	86.4	
16-Oct-19	SHORELINE SEDIMENTS	CO-60	<	21.5	
16-Oct-19	SHORELINE SEDIMENTS	ZN-65	<	56.3	
16-Oct-19	SHORELINE SEDIMENTS	CS-134	<	22.9	
16-Oct-19	SHORELINE SEDIMENTS	CS-137	<	22.3	

Exposure Pathway - Waterborne
Shoreline Sediment
Location: SC

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Dry)		Duplicate Analysis
01-May-19	SHORELINE SEDIMENTS	K-40	9,844.2 +/-	531.2	
01-May-19	SHORELINE SEDIMENTS	MN-54	<	28.4	
01-May-19	SHORELINE SEDIMENTS	CO-58	<	21.4	
01-May-19	SHORELINE SEDIMENTS	FE-59	<	41.8	
01-May-19	SHORELINE SEDIMENTS	CO-60	<	15.6	
01-May-19	SHORELINE SEDIMENTS	ZN-65	<	39.2	
01-May-19	SHORELINE SEDIMENTS	CS-134	<	17.2	
01-May-19	SHORELINE SEDIMENTS	CS-137	<	15.8	

Exposure Pathway - Ingestion
Fish
Location: CCL

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
20-Mar-19	CHANNEL CATFISH	K-40	3,529.9 +/-	469.6	
20-Mar-19	CHANNEL CATFISH	MN-54	<	15.5	
20-Mar-19	CHANNEL CATFISH	CO-58	<	13.6	
20-Mar-19	CHANNEL CATFISH	FE-59	<	27.5	
20-Mar-19	CHANNEL CATFISH	CO-60	<	18.0	
20-Mar-19	CHANNEL CATFISH	ZN-65	<	54.9	
20-Mar-19	CHANNEL CATFISH	I-131	<	24.3	
20-Mar-19	CHANNEL CATFISH	CS-134	<	18.6	
20-Mar-19	CHANNEL CATFISH	CS-137	<	22.5	
20-Mar-19	CHANNEL CATFISH	H-3	6,209.0 +/-	210.0	
20-Mar-19	FRESHWATER DRUM	K-40	3,213.0 +/-	450.9	
20-Mar-19	FRESHWATER DRUM	MN-54	<	12.3	
20-Mar-19	FRESHWATER DRUM	CO-58	<	17.0	
20-Mar-19	FRESHWATER DRUM	FE-59	<	21.1	
20-Mar-19	FRESHWATER DRUM	CO-60	<	16.0	
20-Mar-19	FRESHWATER DRUM	ZN-65	<	17.9	
20-Mar-19	FRESHWATER DRUM	I-131	<	35.3	
20-Mar-19	FRESHWATER DRUM	CS-134	<	20.0	
20-Mar-19	FRESHWATER DRUM	CS-137	<	12.8	
20-Mar-19	FRESHWATER DRUM	H-3	5,106.0 +/-	170.0	
20-Mar-19	LARGEMOUTH BASS	K-40	3,909.7 +/-	481.1	
20-Mar-19	LARGEMOUTH BASS	MN-54	<	18.8	
20-Mar-19	LARGEMOUTH BASS	CO-58	<	14.1	
20-Mar-19	LARGEMOUTH BASS	FE-59	<	31.7	
20-Mar-19	LARGEMOUTH BASS	CO-60	<	12.7	
20-Mar-19	LARGEMOUTH BASS	ZN-65	<	20.1	
20-Mar-19	LARGEMOUTH BASS	I-131	<	35.5	
20-Mar-19	LARGEMOUTH BASS	CS-134	<	16.9	
20-Mar-19	LARGEMOUTH BASS	CS-137	<	19.2	
20-Mar-19	LARGEMOUTH BASS	H-3	5,984.0 +/-	201.0	
20-Mar-19	SMALLMOUTH BUFFALO	K-40	3,570.0 +/-	424.0	
20-Mar-19	SMALLMOUTH BUFFALO	MN-54	<	16.6	
20-Mar-19	SMALLMOUTH BUFFALO	CO-58	<	14.5	
20-Mar-19	SMALLMOUTH BUFFALO	FE-59	<	22.5	
20-Mar-19	SMALLMOUTH BUFFALO	CO-60	<	10.1	
20-Mar-19	SMALLMOUTH BUFFALO	ZN-65	<	16.0	
20-Mar-19	SMALLMOUTH BUFFALO	I-131	<	25.9	
20-Mar-19	SMALLMOUTH BUFFALO	CS-134	<	14.3	

Exposure Pathway - Ingestion
Fish
Location: CCL

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
20-Mar-19	SMALLMOUTH BUFFALO	CS-137	<	11.2	
20-Mar-19	SMALLMOUTH BUFFALO	H-3	6,489.0 +/-	214.0	
20-Mar-19	WHITE BASS	K-40	3,656.7 +/-	476.9	
20-Mar-19	WHITE BASS	MN-54	<	27.3	
20-Mar-19	WHITE BASS	CO-58	<	23.2	
20-Mar-19	WHITE BASS	FE-59	<	35.6	
20-Mar-19	WHITE BASS	CO-60	<	15.7	
20-Mar-19	WHITE BASS	ZN-65	<	42.9	
20-Mar-19	WHITE BASS	I-131	<	44.1	
20-Mar-19	WHITE BASS	CS-134	<	23.6	
20-Mar-19	WHITE BASS	CS-137	<	22.8	
20-Mar-19	WHITE BASS	H-3	6,128.0 +/-	208.0	
24-Oct-19	BLUE CATFISH	K-40	3,868.5 +/-	663.8	
24-Oct-19	BLUE CATFISH	MN-54	<	29.2	
24-Oct-19	BLUE CATFISH	CO-58	<	31.4	
24-Oct-19	BLUE CATFISH	FE-59	<	55.9	
24-Oct-19	BLUE CATFISH	CO-60	<	28.0	
24-Oct-19	BLUE CATFISH	ZN-65	<	119.6	
24-Oct-19	BLUE CATFISH	I-131	<	74.0	
24-Oct-19	BLUE CATFISH	CS-134	<	40.0	
24-Oct-19	BLUE CATFISH	CS-137	<	36.7	
24-Oct-19	BLUE CATFISH	H-3	8,353.0 +/-	247.0	
24-Oct-19	CHANNEL CATFISH	K-40	3,804.1 +/-	512.2	
24-Oct-19	CHANNEL CATFISH	MN-54	<	15.3	
24-Oct-19	CHANNEL CATFISH	CO-58	<	17.4	
24-Oct-19	CHANNEL CATFISH	FE-59	<	26.4	
24-Oct-19	CHANNEL CATFISH	CO-60	<	12.6	
24-Oct-19	CHANNEL CATFISH	ZN-65	<	38.6	
24-Oct-19	CHANNEL CATFISH	I-131	<	20.6	
24-Oct-19	CHANNEL CATFISH	CS-134	<	18.3	
24-Oct-19	CHANNEL CATFISH	CS-137	<	22.0	
24-Oct-19	CHANNEL CATFISH	H-3	8,384.0 +/-	254.0	
24-Oct-19	COMMON CARP	K-40	4,200.0 +/-	506.1	
24-Oct-19	COMMON CARP	MN-54	<	17.7	
24-Oct-19	COMMON CARP	CO-58	<	18.0	
24-Oct-19	COMMON CARP	FE-59	<	22.1	
24-Oct-19	COMMON CARP	CO-60	<	21.2	
24-Oct-19	COMMON CARP	ZN-65	<	38.9	

Exposure Pathway - Ingestion
Fish
Location: CCL

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
24-Oct-19	COMMON CARP	I-131	<	25.3	
24-Oct-19	COMMON CARP	CS-134	<	24.3	
24-Oct-19	COMMON CARP	CS-137	<	15.8	
24-Oct-19	COMMON CARP	H-3	8,079.0 +/-	247.0	
24-Oct-19	DRUM	K-40	3,867.7 +/-	614.6	
24-Oct-19	DRUM	MN-54	<	18.2	
24-Oct-19	DRUM	CO-58	<	16.2	
24-Oct-19	DRUM	FE-59	<	27.3	
24-Oct-19	DRUM	CO-60	<	21.2	
24-Oct-19	DRUM	ZN-65	<	30.0	
24-Oct-19	DRUM	I-131	<	34.3	
24-Oct-19	DRUM	CS-134	<	24.0	
24-Oct-19	DRUM	CS-137	<	25.2	
24-Oct-19	DRUM	H-3	8,260.0 +/-	250.0	
24-Oct-19	WALLEYE	K-40	4,478.3 +/-	508.8	
24-Oct-19	WALLEYE	MN-54	<	18.3	
24-Oct-19	WALLEYE	CO-58	<	9.8	
24-Oct-19	WALLEYE	FE-59	<	38.8	
24-Oct-19	WALLEYE	CO-60	<	9.3	
24-Oct-19	WALLEYE	ZN-65	<	34.0	
24-Oct-19	WALLEYE	I-131	<	25.1	
24-Oct-19	WALLEYE	CS-134	<	18.2	
24-Oct-19	WALLEYE	CS-137	<	17.2	
24-Oct-19	WALLEYE	H-3	9,861.0 +/-	269.0	
24-Oct-19	WHITE BASS	K-40	3,609.3 +/-	486.6	
24-Oct-19	WHITE BASS	MN-54	<	16.2	
24-Oct-19	WHITE BASS	CO-58	<	11.8	
24-Oct-19	WHITE BASS	FE-59	<	28.0	
24-Oct-19	WHITE BASS	CO-60	<	15.2	
24-Oct-19	WHITE BASS	ZN-65	<	44.0	
24-Oct-19	WHITE BASS	I-131	<	33.4	
24-Oct-19	WHITE BASS	CS-134	<	19.1	
24-Oct-19	WHITE BASS	CS-137	<	17.4	
24-Oct-19	WHITE BASS	H-3	9,263.0 +/-	267.0	

Exposure Pathway - Ingestion
Fish
Location: JRR

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
05-Jun-19	BIGMOUTH BUFFALO	K-40	4,224.9 +/-	462.0	
05-Jun-19	BIGMOUTH BUFFALO	MN-54	<	12.8	
05-Jun-19	BIGMOUTH BUFFALO	CO-58	<	10.0	
05-Jun-19	BIGMOUTH BUFFALO	FE-59	<	21.8	
05-Jun-19	BIGMOUTH BUFFALO	CO-60	<	10.1	
05-Jun-19	BIGMOUTH BUFFALO	ZN-65	<	13.9	
05-Jun-19	BIGMOUTH BUFFALO	I-131	<	23.6	
05-Jun-19	BIGMOUTH BUFFALO	CS-134	<	15.7	
05-Jun-19	BIGMOUTH BUFFALO	CS-137	<	18.1	
05-Jun-19	BIGMOUTH BUFFALO	H-3	<	124.0	
05-Jun-19	CHANNEL CATFISH	K-40	4,283.4 +/-	484.4	
05-Jun-19	CHANNEL CATFISH	MN-54	<	14.3	
05-Jun-19	CHANNEL CATFISH	CO-58	<	13.7	
05-Jun-19	CHANNEL CATFISH	FE-59	<	26.6	
05-Jun-19	CHANNEL CATFISH	CO-60	<	9.4	
05-Jun-19	CHANNEL CATFISH	ZN-65	<	28.5	
05-Jun-19	CHANNEL CATFISH	I-131	<	16.9	
05-Jun-19	CHANNEL CATFISH	CS-134	<	15.8	
05-Jun-19	CHANNEL CATFISH	CS-137	<	15.7	
05-Jun-19	CHANNEL CATFISH	H-3	<	121.0	
05-Jun-19	COMMON CARP	K-40	4,048.2 +/-	465.3	
05-Jun-19	COMMON CARP	MN-54	<	14.8	
05-Jun-19	COMMON CARP	CO-58	<	13.1	
05-Jun-19	COMMON CARP	FE-59	<	20.8	
05-Jun-19	COMMON CARP	CO-60	<	11.7	
05-Jun-19	COMMON CARP	ZN-65	<	41.5	
05-Jun-19	COMMON CARP	I-131	<	28.9	
05-Jun-19	COMMON CARP	CS-134	<	19.5	
05-Jun-19	COMMON CARP	CS-137	<	21.6	
05-Jun-19	COMMON CARP	H-3	<	121.0	
05-Jun-19	SMALLMOUTH BUFFALO	K-40	4,539.9 +/-	456.1	
05-Jun-19	SMALLMOUTH BUFFALO	MN-54	<	16.6	
05-Jun-19	SMALLMOUTH BUFFALO	CO-58	<	20.9	
05-Jun-19	SMALLMOUTH BUFFALO	FE-59	<	33.1	
05-Jun-19	SMALLMOUTH BUFFALO	CO-60	<	12.0	
05-Jun-19	SMALLMOUTH BUFFALO	ZN-65	<	25.2	
05-Jun-19	SMALLMOUTH BUFFALO	I-131	<	24.4	
05-Jun-19	SMALLMOUTH BUFFALO	CS-134	<	14.3	

Exposure Pathway - Ingestion
Fish
Location: JRR

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
05-Jun-19	SMALLMOUTH BUFFALO	CS-137	<	16.4	
05-Jun-19	SMALLMOUTH BUFFALO	H-3	<	124.0	
16-Oct-19	CATFISH	K-40	3,729.4 +/-	486.5	
16-Oct-19	CATFISH	MN-54	<	14.0	
16-Oct-19	CATFISH	CO-58	<	19.6	
16-Oct-19	CATFISH	FE-59	<	30.5	
16-Oct-19	CATFISH	CO-60	<	13.5	
16-Oct-19	CATFISH	ZN-65	<	22.3	
16-Oct-19	CATFISH	I-131	<	28.3	
16-Oct-19	CATFISH	CS-134	<	18.1	
16-Oct-19	CATFISH	CS-137	<	10.9	
16-Oct-19	CATFISH	H-3	<	123.0	
16-Oct-19	COMMON CARP	K-40	3,803.4 +/-	489.6	
16-Oct-19	COMMON CARP	MN-54	<	21.9	
16-Oct-19	COMMON CARP	CO-58	<	17.1	
16-Oct-19	COMMON CARP	FE-59	<	30.5	
16-Oct-19	COMMON CARP	CO-60	<	20.0	
16-Oct-19	COMMON CARP	ZN-65	<	19.5	
16-Oct-19	COMMON CARP	I-131	<	34.2	
16-Oct-19	COMMON CARP	CS-134	<	19.8	
16-Oct-19	COMMON CARP	CS-137	<	17.3	
16-Oct-19	COMMON CARP	H-3	<	120.0	
16-Oct-19	CRAPPIE	K-40	4,504.2 +/-	516.7	
16-Oct-19	CRAPPIE	MN-54	<	23.2	
16-Oct-19	CRAPPIE	CO-58	<	15.5	
16-Oct-19	CRAPPIE	FE-59	<	28.2	
16-Oct-19	CRAPPIE	CO-60	<	17.4	
16-Oct-19	CRAPPIE	ZN-65	<	19.2	
16-Oct-19	CRAPPIE	I-131	<	46.3	
16-Oct-19	CRAPPIE	CS-134	<	22.3	
16-Oct-19	CRAPPIE	CS-137	<	11.3	
16-Oct-19	CRAPPIE	H-3	<	121.0	
16-Oct-19	DRUM	K-40	3,410.2 +/-	481.1	
16-Oct-19	DRUM	MN-54	<	19.7	
16-Oct-19	DRUM	CO-58	<	14.9	
16-Oct-19	DRUM	FE-59	<	31.3	
16-Oct-19	DRUM	CO-60	<	17.8	
16-Oct-19	DRUM	ZN-65	<	16.0	

Exposure Pathway - Ingestion
Fish
Location: JRR

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
16-Oct-19	DRUM	I-131	<	31.8	
16-Oct-19	DRUM	CS-134	<	17.9	
16-Oct-19	DRUM	CS-137	<	14.4	
16-Oct-19	DRUM	H-3	<	125.0	
16-Oct-19	RIVER CARP SUCKER	K-40	3,852.2 +/-	481.8	
16-Oct-19	RIVER CARP SUCKER	MN-54	<	16.2	
16-Oct-19	RIVER CARP SUCKER	CO-58	<	18.0	
16-Oct-19	RIVER CARP SUCKER	FE-59	<	47.0	
16-Oct-19	RIVER CARP SUCKER	CO-60	<	10.4	
16-Oct-19	RIVER CARP SUCKER	ZN-65	<	20.3	
16-Oct-19	RIVER CARP SUCKER	I-131	<	26.8	
16-Oct-19	RIVER CARP SUCKER	CS-134	<	15.0	
16-Oct-19	RIVER CARP SUCKER	CS-137	<	20.8	
16-Oct-19	RIVER CARP SUCKER	H-3	<	123.0	
16-Oct-19	SMALLMOUTH BUFFALO	K-40	3,911.5 +/-	475.4	Duplicate
16-Oct-19	SMALLMOUTH BUFFALO	K-40	2,584.5 +/-	419.2	
16-Oct-19	SMALLMOUTH BUFFALO	MN-54	<	16.6	
16-Oct-19	SMALLMOUTH BUFFALO	MN-54	<	14.2	Duplicate
16-Oct-19	SMALLMOUTH BUFFALO	CO-58	<	14.0	Duplicate
16-Oct-19	SMALLMOUTH BUFFALO	CO-58	<	14.2	
16-Oct-19	SMALLMOUTH BUFFALO	FE-59	<	27.1	Duplicate
16-Oct-19	SMALLMOUTH BUFFALO	FE-59	<	24.7	
16-Oct-19	SMALLMOUTH BUFFALO	CO-60	<	10.4	Duplicate
16-Oct-19	SMALLMOUTH BUFFALO	CO-60	<	11.5	
16-Oct-19	SMALLMOUTH BUFFALO	ZN-65	<	26.9	
16-Oct-19	SMALLMOUTH BUFFALO	ZN-65	<	37.8	Duplicate
16-Oct-19	SMALLMOUTH BUFFALO	I-131	<	31.7	Duplicate
16-Oct-19	SMALLMOUTH BUFFALO	I-131	<	32.2	
16-Oct-19	SMALLMOUTH BUFFALO	CS-134	<	18.7	
16-Oct-19	SMALLMOUTH BUFFALO	CS-134	<	22.1	Duplicate
16-Oct-19	SMALLMOUTH BUFFALO	CS-137	<	16.7	Duplicate
16-Oct-19	SMALLMOUTH BUFFALO	CS-137	<	19.5	
16-Oct-19	SMALLMOUTH BUFFALO	H-3	<	111.0	Duplicate
16-Oct-19	SMALLMOUTH BUFFALO	H-3	<	111.0	

Exposure Pathway - Ingestion
Food/Garden
Location: A-3

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
12-Jun-19	HORSERADISH LEAVES	BE-7	1,406.7 +/-	300.8	
12-Jun-19	HORSERADISH LEAVES	K-40	5,359.3 +/-	654.9	
12-Jun-19	HORSERADISH LEAVES	MN-54	<	14.2	
12-Jun-19	HORSERADISH LEAVES	CO-58	<	18.5	
12-Jun-19	HORSERADISH LEAVES	FE-59	<	38.7	
12-Jun-19	HORSERADISH LEAVES	CO-60	<	20.8	
12-Jun-19	HORSERADISH LEAVES	ZN-65	<	48.2	
12-Jun-19	HORSERADISH LEAVES	ZR-NB-95	<	22.2	
12-Jun-19	HORSERADISH LEAVES	I-131	<	35.4	
12-Jun-19	HORSERADISH LEAVES	CS-134	<	28.6	
12-Jun-19	HORSERADISH LEAVES	CS-137	<	24.6	
15-Jul-19	HORSERADISH LEAVES	BE-7	2,098.2 +/-	455.9	
15-Jul-19	HORSERADISH LEAVES	K-40	8,745.7 +/-	869.6	
15-Jul-19	HORSERADISH LEAVES	MN-54	<	36.3	
15-Jul-19	HORSERADISH LEAVES	CO-58	<	35.4	
15-Jul-19	HORSERADISH LEAVES	FE-59	<	89.5	
15-Jul-19	HORSERADISH LEAVES	CO-60	<	14.2	
15-Jul-19	HORSERADISH LEAVES	ZN-65	<	72.3	
15-Jul-19	HORSERADISH LEAVES	ZR-NB-95	<	33.2	
15-Jul-19	HORSERADISH LEAVES	I-131	<	58.9	
15-Jul-19	HORSERADISH LEAVES	CS-134	<	29.9	
15-Jul-19	HORSERADISH LEAVES	CS-137	<	29.7	
28-Oct-19	HORSERADISH LEAVES	BE-7	1,293.3 +/-	373.0	
28-Oct-19	HORSERADISH LEAVES	K-40	5,430.7 +/-	715.7	
28-Oct-19	HORSERADISH LEAVES	MN-54	<	26.9	
28-Oct-19	HORSERADISH LEAVES	CO-58	<	14.4	
28-Oct-19	HORSERADISH LEAVES	FE-59	<	55.3	
28-Oct-19	HORSERADISH LEAVES	CO-60	<	21.3	
28-Oct-19	HORSERADISH LEAVES	ZN-65	<	32.2	
28-Oct-19	HORSERADISH LEAVES	ZR-NB-95	<	28.6	
28-Oct-19	HORSERADISH LEAVES	I-131	<	29.1	
28-Oct-19	HORSERADISH LEAVES	CS-134	<	29.1	
28-Oct-19	HORSERADISH LEAVES	CS-137	<	25.3	

Exposure Pathway - Ingestion
Food/Garden
Location: B-1

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
28-May-19	HORSERADISH LEAVES	BE-7	2,618.9 +/-	256.6	
28-May-19	HORSERADISH LEAVES	K-40	4,720.3 +/-	404.3	
28-May-19	HORSERADISH LEAVES	MN-54	<	19.7	
28-May-19	HORSERADISH LEAVES	CO-58	<	17.1	
28-May-19	HORSERADISH LEAVES	FE-59	<	46.0	
28-May-19	HORSERADISH LEAVES	CO-60	<	11.9	
28-May-19	HORSERADISH LEAVES	ZN-65	<	44.2	
28-May-19	HORSERADISH LEAVES	ZR-NB-95	<	11.1	
28-May-19	HORSERADISH LEAVES	I-131	<	33.2	
28-May-19	HORSERADISH LEAVES	CS-134	<	16.5	
28-May-19	HORSERADISH LEAVES	CS-137	<	19.5	
12-Jun-19	HORSERADISH LEAVES	BE-7	2,091.0 +/-	409.2	
12-Jun-19	HORSERADISH LEAVES	K-40	6,703.7 +/-	663.8	
12-Jun-19	HORSERADISH LEAVES	MN-54	<	33.6	
12-Jun-19	HORSERADISH LEAVES	CO-58	<	15.6	
12-Jun-19	HORSERADISH LEAVES	FE-59	<	49.1	
12-Jun-19	HORSERADISH LEAVES	CO-60	<	30.0	
12-Jun-19	HORSERADISH LEAVES	ZN-65	<	26.4	
12-Jun-19	HORSERADISH LEAVES	ZR-NB-95	<	21.3	
12-Jun-19	HORSERADISH LEAVES	I-131	<	51.8	
12-Jun-19	HORSERADISH LEAVES	CS-134	<	28.6	
12-Jun-19	HORSERADISH LEAVES	CS-137	<	21.1	
15-Jul-19	HORSERADISH LEAVES	BE-7	1,452.1 +/-	318.1	
15-Jul-19	HORSERADISH LEAVES	K-40	6,908.7 +/-	681.1	
15-Jul-19	HORSERADISH LEAVES	MN-54	<	21.9	
15-Jul-19	HORSERADISH LEAVES	CO-58	<	23.0	
15-Jul-19	HORSERADISH LEAVES	FE-59	<	56.8	
15-Jul-19	HORSERADISH LEAVES	CO-60	<	19.0	
15-Jul-19	HORSERADISH LEAVES	ZN-65	<	30.8	
15-Jul-19	HORSERADISH LEAVES	ZR-NB-95	<	17.4	
15-Jul-19	HORSERADISH LEAVES	I-131	<	52.6	
15-Jul-19	HORSERADISH LEAVES	CS-134	<	23.7	
15-Jul-19	HORSERADISH LEAVES	CS-137	<	20.2	
23-Sep-19	HORSERADISH LEAVES	BE-7	1,053.8 +/-	353.4	
23-Sep-19	HORSERADISH LEAVES	K-40	6,378.1 +/-	788.7	
23-Sep-19	HORSERADISH LEAVES	MN-54	<	32.5	
23-Sep-19	HORSERADISH LEAVES	CO-58	<	28.5	
23-Sep-19	HORSERADISH LEAVES	FE-59	<	56.0	

Exposure Pathway - Ingestion
Food/Garden
Location: B-1

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
23-Sep-19	HORSERADISH LEAVES	CO-60	<	21.8	
23-Sep-19	HORSERADISH LEAVES	ZN-65	<	67.9	
23-Sep-19	HORSERADISH LEAVES	ZR-NB-95	<	19.7	
23-Sep-19	HORSERADISH LEAVES	I-131	<	45.1	
23-Sep-19	HORSERADISH LEAVES	CS-134	<	33.0	
23-Sep-19	HORSERADISH LEAVES	CS-137	<	29.7	
28-Oct-19	HORSERADISH LEAVES	BE-7	1,283.4 +/-	402.2	
28-Oct-19	HORSERADISH LEAVES	K-40	5,017.9 +/-	609.1	
28-Oct-19	HORSERADISH LEAVES	MN-54	<	19.4	
28-Oct-19	HORSERADISH LEAVES	CO-58	<	23.1	
28-Oct-19	HORSERADISH LEAVES	FE-59	<	31.5	
28-Oct-19	HORSERADISH LEAVES	CO-60	<	18.2	
28-Oct-19	HORSERADISH LEAVES	ZN-65	<	38.7	
28-Oct-19	HORSERADISH LEAVES	ZR-NB-95	<	13.2	
28-Oct-19	HORSERADISH LEAVES	I-131	<	39.8	
28-Oct-19	HORSERADISH LEAVES	CS-134	<	24.8	
28-Oct-19	HORSERADISH LEAVES	CS-137	<	26.5	

Exposure Pathway - Ingestion
Food/Garden
Location: D-2

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
28-May-19	HORSERADISH LEAVES	BE-7	1,734.9 +/-	311.7	
28-May-19	HORSERADISH LEAVES	K-40	3,981.2 +/-	548.4	
28-May-19	HORSERADISH LEAVES	MN-54	<	17.6	
28-May-19	HORSERADISH LEAVES	CO-58	<	20.0	
28-May-19	HORSERADISH LEAVES	FE-59	<	31.3	
28-May-19	HORSERADISH LEAVES	CO-60	<	11.7	
28-May-19	HORSERADISH LEAVES	ZN-65	<	32.4	
28-May-19	HORSERADISH LEAVES	ZR-NB-95	<	13.6	
28-May-19	HORSERADISH LEAVES	I-131	<	42.6	
28-May-19	HORSERADISH LEAVES	CS-134	<	22.1	
28-May-19	HORSERADISH LEAVES	CS-137	<	24.6	
12-Jun-19	HORSERADISH LEAVES	BE-7	2,407.3 +/-	428.5	
12-Jun-19	HORSERADISH LEAVES	K-40	7,183.6 +/-	773.5	
12-Jun-19	HORSERADISH LEAVES	MN-54	<	24.8	
12-Jun-19	HORSERADISH LEAVES	CO-58	<	24.7	
12-Jun-19	HORSERADISH LEAVES	FE-59	<	72.0	
12-Jun-19	HORSERADISH LEAVES	CO-60	<	16.7	
12-Jun-19	HORSERADISH LEAVES	ZN-65	<	47.1	
12-Jun-19	HORSERADISH LEAVES	ZR-NB-95	<	24.5	
12-Jun-19	HORSERADISH LEAVES	I-131	<	41.7	
12-Jun-19	HORSERADISH LEAVES	CS-134	<	30.5	
12-Jun-19	HORSERADISH LEAVES	CS-137	<	26.6	
15-Jul-19	HORSERADISH LEAVES	BE-7	2,299.4 +/-	307.8	
15-Jul-19	HORSERADISH LEAVES	K-40	8,365.4 +/-	620.4	
15-Jul-19	HORSERADISH LEAVES	MN-54	<	21.4	
15-Jul-19	HORSERADISH LEAVES	CO-58	<	24.8	
15-Jul-19	HORSERADISH LEAVES	FE-59	<	55.4	
15-Jul-19	HORSERADISH LEAVES	CO-60	<	22.1	
15-Jul-19	HORSERADISH LEAVES	ZN-65	<	40.4	
15-Jul-19	HORSERADISH LEAVES	ZR-NB-95	<	13.3	
15-Jul-19	HORSERADISH LEAVES	I-131	<	44.8	
15-Jul-19	HORSERADISH LEAVES	CS-134	<	23.9	
15-Jul-19	HORSERADISH LEAVES	CS-137	<	26.2	
19-Aug-19	HORSERADISH LEAVES	BE-7	3,356.5 +/-	488.7	
19-Aug-19	HORSERADISH LEAVES	K-40	9,245.6 +/-	1,020.0	
19-Aug-19	HORSERADISH LEAVES	MN-54	<	38.0	
19-Aug-19	HORSERADISH LEAVES	CO-58	<	18.6	
19-Aug-19	HORSERADISH LEAVES	FE-59	<	50.7	

Exposure Pathway - Ingestion
Food/Garden
Location: D-2

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
19-Aug-19	HORSERADISH LEAVES	CO-60	<	21.6	
19-Aug-19	HORSERADISH LEAVES	ZN-65	<	40.2	
19-Aug-19	HORSERADISH LEAVES	ZR-NB-95	<	30.8	
19-Aug-19	HORSERADISH LEAVES	I-131	<	32.1	
19-Aug-19	HORSERADISH LEAVES	CS-134	<	34.2	
19-Aug-19	HORSERADISH LEAVES	CS-137	<	33.9	
23-Sep-19	HORSERADISH LEAVES	BE-7	963.4 +/-	311.9	
23-Sep-19	HORSERADISH LEAVES	K-40	8,289.3 +/-	679.8	
23-Sep-19	HORSERADISH LEAVES	MN-54	<	25.8	
23-Sep-19	HORSERADISH LEAVES	CO-58	<	22.2	
23-Sep-19	HORSERADISH LEAVES	FE-59	<	39.7	
23-Sep-19	HORSERADISH LEAVES	CO-60	<	27.0	
23-Sep-19	HORSERADISH LEAVES	ZN-65	<	56.3	
23-Sep-19	HORSERADISH LEAVES	ZR-NB-95	<	23.6	
23-Sep-19	HORSERADISH LEAVES	I-131	<	44.1	
23-Sep-19	HORSERADISH LEAVES	CS-134	<	29.6	
23-Sep-19	HORSERADISH LEAVES	CS-137	<	27.3	
28-Oct-19	HORSERADISH LEAVES	BE-7	1,321.7 +/-	201.0	
28-Oct-19	HORSERADISH LEAVES	K-40	5,697.6 +/-	537.5	
28-Oct-19	HORSERADISH LEAVES	MN-54	<	17.2	
28-Oct-19	HORSERADISH LEAVES	CO-58	<	10.6	
28-Oct-19	HORSERADISH LEAVES	FE-59	<	31.3	
28-Oct-19	HORSERADISH LEAVES	CO-60	<	13.7	
28-Oct-19	HORSERADISH LEAVES	ZN-65	<	38.1	
28-Oct-19	HORSERADISH LEAVES	ZR-NB-95	<	17.8	
28-Oct-19	HORSERADISH LEAVES	I-131	<	19.7	
28-Oct-19	HORSERADISH LEAVES	CS-134	<	16.1	
28-Oct-19	HORSERADISH LEAVES	CS-137	<	20.2	

Exposure Pathway - Ingestion
Food/Garden
Location: H-2

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
28-May-19	HORSERADISH LEAVES	BE-7	1,851.6 +/-	176.7	
28-May-19	HORSERADISH LEAVES	K-40	4,419.6 +/-	296.6	
28-May-19	HORSERADISH LEAVES	MN-54	<	11.3	
28-May-19	HORSERADISH LEAVES	CO-58	<	11.8	
28-May-19	HORSERADISH LEAVES	FE-59	<	13.8	
28-May-19	HORSERADISH LEAVES	CO-60	<	7.3	
28-May-19	HORSERADISH LEAVES	ZN-65	<	20.5	
28-May-19	HORSERADISH LEAVES	ZR-NB-95	<	11.3	
28-May-19	HORSERADISH LEAVES	I-131	<	25.2	
28-May-19	HORSERADISH LEAVES	CS-134	<	11.6	
28-May-19	HORSERADISH LEAVES	CS-137	<	11.0	
12-Jun-19	HORSERADISH LEAVES	BE-7	1,601.6 +/-	363.7	
12-Jun-19	HORSERADISH LEAVES	K-40	6,717.5 +/-	666.0	
12-Jun-19	HORSERADISH LEAVES	MN-54	<	17.3	
12-Jun-19	HORSERADISH LEAVES	CO-58	<	27.8	
12-Jun-19	HORSERADISH LEAVES	FE-59	<	42.3	
12-Jun-19	HORSERADISH LEAVES	CO-60	<	17.2	
12-Jun-19	HORSERADISH LEAVES	ZN-65	<	57.0	
12-Jun-19	HORSERADISH LEAVES	ZR-NB-95	<	34.6	
12-Jun-19	HORSERADISH LEAVES	I-131	<	57.4	
12-Jun-19	HORSERADISH LEAVES	CS-134	<	26.8	
12-Jun-19	HORSERADISH LEAVES	CS-137	<	20.5	
15-Jul-19	HORSERADISH LEAVES	BE-7	1,668.9 +/-	405.0	
15-Jul-19	HORSERADISH LEAVES	BE-7	1,239.5 +/-	332.3	Duplicate
15-Jul-19	HORSERADISH LEAVES	K-40	6,914.6 +/-	699.3	Duplicate
15-Jul-19	HORSERADISH LEAVES	K-40	6,742.3 +/-	695.4	
15-Jul-19	HORSERADISH LEAVES	MN-54	<	27.1	Duplicate
15-Jul-19	HORSERADISH LEAVES	MN-54	<	18.5	
15-Jul-19	HORSERADISH LEAVES	CO-58	<	17.2	
15-Jul-19	HORSERADISH LEAVES	CO-58	<	26.3	Duplicate
15-Jul-19	HORSERADISH LEAVES	FE-59	<	42.9	Duplicate
15-Jul-19	HORSERADISH LEAVES	FE-59	<	51.3	
15-Jul-19	HORSERADISH LEAVES	CO-60	<	15.4	Duplicate
15-Jul-19	HORSERADISH LEAVES	CO-60	<	17.7	
15-Jul-19	HORSERADISH LEAVES	ZN-65	<	43.7	Duplicate
15-Jul-19	HORSERADISH LEAVES	ZN-65	<	33.1	
15-Jul-19	HORSERADISH LEAVES	ZR-NB-95	<	20.7	
15-Jul-19	HORSERADISH LEAVES	ZR-NB-95	<	32.5	Duplicate

Exposure Pathway - Ingestion
Food/Garden
Location: H-2

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
15-Jul-19	HORSERADISH LEAVES	I-131	<	50.9	Duplicate
15-Jul-19	HORSERADISH LEAVES	I-131	<	46.2	
15-Jul-19	HORSERADISH LEAVES	CS-134	<	25.7	Duplicate
15-Jul-19	HORSERADISH LEAVES	CS-134	<	24.4	
15-Jul-19	HORSERADISH LEAVES	CS-137	<	20.1	Duplicate
15-Jul-19	HORSERADISH LEAVES	CS-137	<	28.1	
19-Aug-19	HORSERADISH LEAVES	BE-7	2,903.4 +/-	339.4	
19-Aug-19	HORSERADISH LEAVES	K-40	6,274.7 +/-	661.9	
19-Aug-19	HORSERADISH LEAVES	MN-54	<	14.2	
19-Aug-19	HORSERADISH LEAVES	CO-58	<	14.4	
19-Aug-19	HORSERADISH LEAVES	FE-59	<	40.4	
19-Aug-19	HORSERADISH LEAVES	CO-60	<	15.4	
19-Aug-19	HORSERADISH LEAVES	ZN-65	<	32.7	
19-Aug-19	HORSERADISH LEAVES	ZR-NB-95	<	12.4	
19-Aug-19	HORSERADISH LEAVES	I-131	<	20.7	
19-Aug-19	HORSERADISH LEAVES	CS-134	<	22.4	
19-Aug-19	HORSERADISH LEAVES	CS-137	<	16.1	
23-Sep-19	HORSERADISH LEAVES	BE-7	1,499.4 +/-	406.4	
23-Sep-19	HORSERADISH LEAVES	K-40	7,211.2 +/-	864.7	
23-Sep-19	HORSERADISH LEAVES	MN-54	<	33.7	
23-Sep-19	HORSERADISH LEAVES	CO-58	<	37.9	
23-Sep-19	HORSERADISH LEAVES	FE-59	<	63.1	
23-Sep-19	HORSERADISH LEAVES	CO-60	<	20.1	
23-Sep-19	HORSERADISH LEAVES	ZN-65	<	45.9	
23-Sep-19	HORSERADISH LEAVES	ZR-NB-95	<	25.7	
23-Sep-19	HORSERADISH LEAVES	I-131	<	36.8	
23-Sep-19	HORSERADISH LEAVES	CS-134	<	29.5	
23-Sep-19	HORSERADISH LEAVES	CS-137	<	30.1	
28-Oct-19	HORSERADISH LEAVES	BE-7	1,834.0 +/-	345.8	
28-Oct-19	HORSERADISH LEAVES	K-40	7,466.8 +/-	798.1	
28-Oct-19	HORSERADISH LEAVES	MN-54	<	22.1	
28-Oct-19	HORSERADISH LEAVES	CO-58	<	29.7	
28-Oct-19	HORSERADISH LEAVES	FE-59	<	57.7	
28-Oct-19	HORSERADISH LEAVES	CO-60	<	21.3	
28-Oct-19	HORSERADISH LEAVES	ZN-65	<	39.7	
28-Oct-19	HORSERADISH LEAVES	ZR-NB-95	<	24.8	
28-Oct-19	HORSERADISH LEAVES	I-131	<	30.0	
28-Oct-19	HORSERADISH LEAVES	CS-134	<	29.6	

Exposure Pathway - Ingestion
Food/Garden
Location: H-2

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
28-Oct-19	HORSERADISH LEAVES	CS-137	<	22.9	

Exposure Pathway - Ingestion
Food/Garden
Location: Q-6

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
28-May-19	HORSERADISH LEAVES	BE-7	1,939.3 +/-	263.8	
28-May-19	HORSERADISH LEAVES	K-40	4,731.8 +/-	412.0	
28-May-19	HORSERADISH LEAVES	MN-54	<	18.8	
28-May-19	HORSERADISH LEAVES	CO-58	<	14.5	
28-May-19	HORSERADISH LEAVES	FE-59	<	22.3	
28-May-19	HORSERADISH LEAVES	CO-60	<	15.1	
28-May-19	HORSERADISH LEAVES	ZN-65	<	35.2	
28-May-19	HORSERADISH LEAVES	ZR-NB-95	<	16.9	
28-May-19	HORSERADISH LEAVES	I-131	<	41.7	
28-May-19	HORSERADISH LEAVES	CS-134	<	18.6	
28-May-19	HORSERADISH LEAVES	CS-137	<	18.6	
12-Jun-19	HORSERADISH LEAVES	BE-7	1,523.8 +/-	335.4	
12-Jun-19	HORSERADISH LEAVES	K-40	6,451.0 +/-	656.7	
12-Jun-19	HORSERADISH LEAVES	MN-54	<	28.1	
12-Jun-19	HORSERADISH LEAVES	CO-58	<	28.6	
12-Jun-19	HORSERADISH LEAVES	FE-59	<	54.9	
12-Jun-19	HORSERADISH LEAVES	CO-60	<	19.8	
12-Jun-19	HORSERADISH LEAVES	ZN-65	<	60.1	
12-Jun-19	HORSERADISH LEAVES	ZR-NB-95	<	25.6	
12-Jun-19	HORSERADISH LEAVES	I-131	<	48.7	
12-Jun-19	HORSERADISH LEAVES	CS-134	<	26.4	
12-Jun-19	HORSERADISH LEAVES	CS-137	<	29.3	
15-Jul-19	HORSERADISH LEAVES	BE-7	984.3 +/-	296.5	
15-Jul-19	HORSERADISH LEAVES	K-40	6,975.9 +/-	670.1	
15-Jul-19	HORSERADISH LEAVES	MN-54	<	26.2	
15-Jul-19	HORSERADISH LEAVES	CO-58	<	21.6	
15-Jul-19	HORSERADISH LEAVES	FE-59	<	45.7	
15-Jul-19	HORSERADISH LEAVES	CO-60	<	18.9	
15-Jul-19	HORSERADISH LEAVES	ZN-65	<	37.8	
15-Jul-19	HORSERADISH LEAVES	ZR-NB-95	<	15.0	
15-Jul-19	HORSERADISH LEAVES	I-131	<	43.4	
15-Jul-19	HORSERADISH LEAVES	CS-134	<	22.9	
15-Jul-19	HORSERADISH LEAVES	CS-137	<	26.5	
19-Aug-19	HORSERADISH LEAVES	BE-7	2,805.0 +/-	390.8	
19-Aug-19	HORSERADISH LEAVES	K-40	6,490.3 +/-	797.5	
19-Aug-19	HORSERADISH LEAVES	MN-54	<	25.8	
19-Aug-19	HORSERADISH LEAVES	CO-58	<	26.5	
19-Aug-19	HORSERADISH LEAVES	FE-59	<	45.8	

Exposure Pathway - Ingestion
Food/Garden
Location: Q-6

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
19-Aug-19	HORSERADISH LEAVES	CO-60	<	9.6	
19-Aug-19	HORSERADISH LEAVES	ZN-65	<	61.5	
19-Aug-19	HORSERADISH LEAVES	ZR-NB-95	<	27.1	
19-Aug-19	HORSERADISH LEAVES	I-131	<	35.8	
19-Aug-19	HORSERADISH LEAVES	CS-134	<	26.4	
19-Aug-19	HORSERADISH LEAVES	CS-137	<	30.3	
23-Sep-19	HORSERADISH LEAVES	BE-7	722.3 +/-	209.9	
23-Sep-19	HORSERADISH LEAVES	K-40	5,411.3 +/-	491.7	
23-Sep-19	HORSERADISH LEAVES	MN-54	<	14.0	
23-Sep-19	HORSERADISH LEAVES	CO-58	<	12.2	
23-Sep-19	HORSERADISH LEAVES	FE-59	<	39.7	
23-Sep-19	HORSERADISH LEAVES	CO-60	<	19.5	
23-Sep-19	HORSERADISH LEAVES	ZN-65	<	35.1	
23-Sep-19	HORSERADISH LEAVES	ZR-NB-95	<	23.1	
23-Sep-19	HORSERADISH LEAVES	I-131	<	33.5	
23-Sep-19	HORSERADISH LEAVES	CS-134	<	19.3	
23-Sep-19	HORSERADISH LEAVES	CS-137	<	20.3	
28-Oct-19	HORSERADISH LEAVES	BE-7	1,799.3 +/-	393.9	
28-Oct-19	HORSERADISH LEAVES	K-40	6,267.1 +/-	870.5	
28-Oct-19	HORSERADISH LEAVES	MN-54	<	36.5	
28-Oct-19	HORSERADISH LEAVES	CO-58	<	19.0	
28-Oct-19	HORSERADISH LEAVES	FE-59	<	42.5	
28-Oct-19	HORSERADISH LEAVES	CO-60	<	19.3	
28-Oct-19	HORSERADISH LEAVES	ZN-65	<	60.9	
28-Oct-19	HORSERADISH LEAVES	ZR-NB-95	<	25.3	
28-Oct-19	HORSERADISH LEAVES	I-131	<	38.6	
28-Oct-19	HORSERADISH LEAVES	CS-134	<	33.7	
28-Oct-19	HORSERADISH LEAVES	CS-137	<	44.3	

Exposure Pathway - Ingestion
Food/Crops
Location: NR-D1

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
28-Oct-19	NON-IRRIGATED SOYBEANS	BE-7	<	99.4	
28-Oct-19	NON-IRRIGATED SOYBEANS	K-40	13,801.0 +/-	579.4	
28-Oct-19	NON-IRRIGATED SOYBEANS	MN-54	<	14.5	
28-Oct-19	NON-IRRIGATED SOYBEANS	CO-58	<	12.9	
28-Oct-19	NON-IRRIGATED SOYBEANS	FE-59	<	37.1	
28-Oct-19	NON-IRRIGATED SOYBEANS	CO-60	<	11.8	
28-Oct-19	NON-IRRIGATED SOYBEANS	ZN-65	<	28.1	
28-Oct-19	NON-IRRIGATED SOYBEANS	ZR-NB-95	<	13.9	
28-Oct-19	NON-IRRIGATED SOYBEANS	I-131	<	28.5	
28-Oct-19	NON-IRRIGATED SOYBEANS	CS-134	<	11.9	
28-Oct-19	NON-IRRIGATED SOYBEANS	CS-137	<	8.1	

Exposure Pathway - Ingestion
Food/Crops
Location: NR-D2

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
06-Nov-19	IRRIGATED SOYBEANS	BE-7	<	97.1	
06-Nov-19	IRRIGATED SOYBEANS	K-40	16,586.0 +/-	689.4	
06-Nov-19	IRRIGATED SOYBEANS	MN-54	<	13.1	
06-Nov-19	IRRIGATED SOYBEANS	CO-58	<	16.7	
06-Nov-19	IRRIGATED SOYBEANS	FE-59	<	44.9	
06-Nov-19	IRRIGATED SOYBEANS	CO-60	<	13.5	
06-Nov-19	IRRIGATED SOYBEANS	ZN-65	<	53.6	
06-Nov-19	IRRIGATED SOYBEANS	ZR-NB-95	<	13.7	
06-Nov-19	IRRIGATED SOYBEANS	I-131	<	18.5	
06-Nov-19	IRRIGATED SOYBEANS	CS-134	<	14.1	
06-Nov-19	IRRIGATED SOYBEANS	CS-137	<	14.3	

Exposure Pathway - Ingestion
Food/Crops
Location: NR-U1

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
18-Nov-19	IRRIGATED SOYBEANS	BE-7	<	114.9	
18-Nov-19	IRRIGATED SOYBEANS	K-40	14,592.0 +/-	599.5	
18-Nov-19	IRRIGATED SOYBEANS	MN-54	<	13.1	
18-Nov-19	IRRIGATED SOYBEANS	CO-58	<	11.9	
18-Nov-19	IRRIGATED SOYBEANS	FE-59	<	23.8	
18-Nov-19	IRRIGATED SOYBEANS	CO-60	<	13.8	
18-Nov-19	IRRIGATED SOYBEANS	ZN-65	<	25.6	
18-Nov-19	IRRIGATED SOYBEANS	ZR-NB-95	<	12.8	
18-Nov-19	IRRIGATED SOYBEANS	I-131	<	14.7	
18-Nov-19	IRRIGATED SOYBEANS	CS-134	<	10.3	
18-Nov-19	IRRIGATED SOYBEANS	CS-137	<	11.7	

Exposure Pathway - Aquatic
Bottom Sediment
Location: DC

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Dry)		Duplicate Analysis
23-May-19	BOTTOM SEDIMENT	K-40	10,612.0 +/-	609.4	
23-May-19	BOTTOM SEDIMENT	MN-54	<	20.0	
23-May-19	BOTTOM SEDIMENT	CO-58	<	21.6	
23-May-19	BOTTOM SEDIMENT	FE-59	<	40.0	
23-May-19	BOTTOM SEDIMENT	CO-60	<	14.9	
23-May-19	BOTTOM SEDIMENT	ZN-65	<	35.8	
23-May-19	BOTTOM SEDIMENT	CS-134	<	20.6	
23-May-19	BOTTOM SEDIMENT	CS-137	38.9 +/-	21.3	
23-May-19	BOTTOM SEDIMENT	FE-55	<	26,036.0	
22-Oct-19	BOTTOM SEDIMENT	K-40	9,276.9 +/-	580.4	
22-Oct-19	BOTTOM SEDIMENT	MN-54	<	26.4	
22-Oct-19	BOTTOM SEDIMENT	CO-58	<	30.0	
22-Oct-19	BOTTOM SEDIMENT	FE-59	<	88.6	
22-Oct-19	BOTTOM SEDIMENT	CO-60	<	12.4	
22-Oct-19	BOTTOM SEDIMENT	ZN-65	<	45.1	
22-Oct-19	BOTTOM SEDIMENT	CS-134	<	17.4	
22-Oct-19	BOTTOM SEDIMENT	CS-137	<	25.0	
22-Oct-19	BOTTOM SEDIMENT	FE-55	<	2,785.0	

Exposure Pathway - Aquatic
Bottom Sediment
Location: JRR

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Dry)		Duplicate Analysis
27-Jun-19	BOTTOM SEDIMENT	K-40	11,146.0 +/-	545.4	
27-Jun-19	BOTTOM SEDIMENT	MN-54	<	18.3	
27-Jun-19	BOTTOM SEDIMENT	CO-58	<	25.1	
27-Jun-19	BOTTOM SEDIMENT	FE-59	<	42.0	
27-Jun-19	BOTTOM SEDIMENT	CO-60	<	14.7	
27-Jun-19	BOTTOM SEDIMENT	ZN-65	<	51.4	
27-Jun-19	BOTTOM SEDIMENT	CS-134	<	13.4	
27-Jun-19	BOTTOM SEDIMENT	CS-137	<	22.8	
16-Oct-19	BOTTOM SEDIMENT	K-40	12,836.0 +/-	1,033.0	
16-Oct-19	BOTTOM SEDIMENT	MN-54	<	46.4	
16-Oct-19	BOTTOM SEDIMENT	CO-58	<	40.2	
16-Oct-19	BOTTOM SEDIMENT	FE-59	<	140.5	
16-Oct-19	BOTTOM SEDIMENT	CO-60	<	23.6	
16-Oct-19	BOTTOM SEDIMENT	ZN-65	<	99.8	
16-Oct-19	BOTTOM SEDIMENT	CS-134	<	42.7	
16-Oct-19	BOTTOM SEDIMENT	CS-137	<	40.9	

Exposure Pathway - Aquatic Vegetation
Location: EEA

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
26-Jul-19	PRIMROSE	BE-7	303.5 +/-	109.7	
26-Jul-19	PRIMROSE	K-40	1,853.8 +/-	230.5	
26-Jul-19	PRIMROSE	MN-54	<	10.4	
26-Jul-19	PRIMROSE	CO-58	<	9.0	
26-Jul-19	PRIMROSE	FE-59	<	16.9	
26-Jul-19	PRIMROSE	CO-60	<	7.6	
26-Jul-19	PRIMROSE	ZN-65	<	14.2	
26-Jul-19	PRIMROSE	ZR-NB-95	<	9.4	
26-Jul-19	PRIMROSE	I-131	<	14.4	
26-Jul-19	PRIMROSE	CS-134	<	8.2	
26-Jul-19	PRIMROSE	CS-137	<	10.6	

Exposure Pathway - Aquatic Vegetation
Location: MUDS

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
26-Jul-19	AMERICAN PONDWEED	BE-7	196.2 +/-	69.0	
26-Jul-19	AMERICAN PONDWEED	K-40	2,110.8 +/-	185.4	
26-Jul-19	AMERICAN PONDWEED	MN-54	<	8.0	
26-Jul-19	AMERICAN PONDWEED	CO-58	<	6.7	
26-Jul-19	AMERICAN PONDWEED	FE-59	<	13.9	
26-Jul-19	AMERICAN PONDWEED	CO-60	<	4.9	
26-Jul-19	AMERICAN PONDWEED	ZN-65	<	16.4	
26-Jul-19	AMERICAN PONDWEED	ZR-NB-95	<	12.7	
26-Jul-19	AMERICAN PONDWEED	I-131	<	15.6	
26-Jul-19	AMERICAN PONDWEED	CS-134	<	6.6	
26-Jul-19	AMERICAN PONDWEED	CS-137	<	7.6	

Exposure Pathway - Aquatic Vegetation
Location: SC

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
09-Aug-19	CATTAILS	BE-7	1,279.5 +/-	206.4	Duplicate
09-Aug-19	CATTAILS	BE-7	1,221.5 +/-	192.9	
09-Aug-19	CATTAILS	K-40	3,124.8 +/-	357.2	
09-Aug-19	CATTAILS	K-40	3,139.8 +/-	354.6	Duplicate
09-Aug-19	CATTAILS	MN-54	<	10.3	Duplicate
09-Aug-19	CATTAILS	MN-54	<	14.0	
09-Aug-19	CATTAILS	CO-58	<	5.2	
09-Aug-19	CATTAILS	CO-58	<	6.5	Duplicate
09-Aug-19	CATTAILS	FE-59	<	15.6	Duplicate
09-Aug-19	CATTAILS	FE-59	<	19.6	
09-Aug-19	CATTAILS	CO-60	<	13.6	
09-Aug-19	CATTAILS	CO-60	<	13.9	Duplicate
09-Aug-19	CATTAILS	ZN-65	<	25.0	
09-Aug-19	CATTAILS	ZN-65	<	29.0	Duplicate
09-Aug-19	CATTAILS	ZR-NB-95	<	14.3	
09-Aug-19	CATTAILS	ZR-NB-95	<	10.5	Duplicate
09-Aug-19	CATTAILS	I-131	<	14.9	
09-Aug-19	CATTAILS	I-131	<	24.5	Duplicate
09-Aug-19	CATTAILS	CS-134	<	13.1	Duplicate
09-Aug-19	CATTAILS	CS-134	<	15.7	
09-Aug-19	CATTAILS	CS-137	<	10.9	Duplicate
09-Aug-19	CATTAILS	CS-137	<	16.4	

Exposure Pathway - Terrestrial
Soil
Location: EEA

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Dry)		Duplicate Analysis
25-Jun-19	SOIL	K-40	10,567.0 +/-	530.5	
25-Jun-19	SOIL	MN-54	<	23.0	
25-Jun-19	SOIL	CO-58	<	19.3	
25-Jun-19	SOIL	FE-59	<	69.8	
25-Jun-19	SOIL	CO-60	<	13.0	
25-Jun-19	SOIL	ZN-65	<	35.8	
25-Jun-19	SOIL	CS-134	<	16.5	
25-Jun-19	SOIL	CS-137	138.2 +/-	28.5	

Exposure Pathway - Terrestrial
Soil
Location: MUDS

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Dry)		Duplicate Analysis
23-May-19	SOIL	K-40	11,791.0 +/-	592.9	
23-May-19	SOIL	MN-54	<	28.4	
23-May-19	SOIL	CO-58	<	33.8	
23-May-19	SOIL	FE-59	<	89.4	
23-May-19	SOIL	CO-60	<	25.1	
23-May-19	SOIL	ZN-65	<	59.9	
23-May-19	SOIL	CS-134	<	16.9	
23-May-19	SOIL	CS-137	94.5 +/-	26.7	

Exposure Pathway - Ingestion
Meat
Location: J3.5

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
04-Jan-19	DEER	K-40	2,771.2 +/-	436.8	
04-Jan-19	DEER	MN-54	<	20.9	
04-Jan-19	DEER	CO-58	<	14.6	
04-Jan-19	DEER	FE-59	<	29.3	
04-Jan-19	DEER	CO-60	<	10.5	
04-Jan-19	DEER	ZN-65	<	22.7	
04-Jan-19	DEER	CS-134	<	15.3	
04-Jan-19	DEER	CS-137	<	19.4	
04-Jan-19	DEER	H-3	786.0 +/-	106.0	

Exposure Pathway - Ingestion
Meat
Location: J4.0

Collection Date	Sample Description	Nuclide	Concentration (pCi/Kg Wet)		Duplicate Analysis
20-Apr-19	WILD TURKEY	K-40	2,860.9 +/-	442.7	
20-Apr-19	WILD TURKEY	MN-54	<	12.4	
20-Apr-19	WILD TURKEY	CO-58	<	12.9	
20-Apr-19	WILD TURKEY	FE-59	<	21.9	
20-Apr-19	WILD TURKEY	CO-60	<	18.0	
20-Apr-19	WILD TURKEY	ZN-65	<	43.5	
20-Apr-19	WILD TURKEY	CS-134	<	16.7	
20-Apr-19	WILD TURKEY	CS-137	<	14.1	
20-Apr-19	WILD TURKEY	H-3	<	94.0	

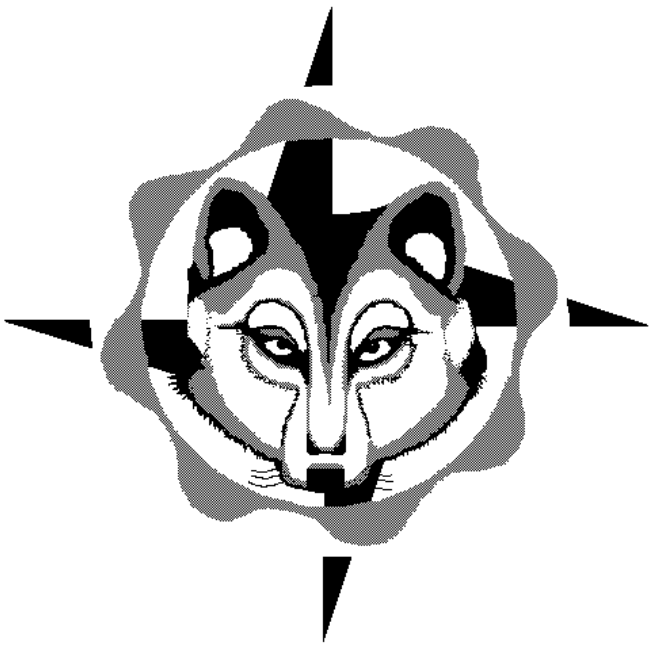
APPENDIX D

LAND USE CENSUS REPORT

WOLF CREEK GENERATING STATION

2019 LAND USE CENSUS REPORT

REVISION 1



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EXECUTIVE SUMMARY

The annual Land Use Census of rural residents within five miles of the Wolf Creek Generating Station (WCGS) has been completed in 2019 in accordance with AP 07B-004, [Offsite Dose Calculation Manual (Radiological Environmental Monitoring Program)].

No program changes are necessary regarding milk locations. Again, no milk sampling locations were identified.

The two broadleaf vegetation locations with the highest calculated annual average D/Q rankings are A2.60-17TE1527 and Q2.35-MILA1619. Since these gardens are currently listed as sample locations for the Radiological Environmental Monitoring Program in procedure AP 07B-004 (locations A-3 and Q-6), no program changes are necessary regarding broadleaf vegetation locations.

BACKGROUND

Section 5.2, Attachment A, of procedure AP 07B-004, directs that "a Land Use Census shall be conducted annually during the growing season to identify the nearest (1) milk animal, (2) residence, and (3) garden of greater than 500 square feet producing broadleaf vegetation in each of the 16 meteorological sections within five miles of the WCGS site."

Table 5-1, Attachment A, of procedure AP 07B-004, requires that broadleaf vegetation samples be collected from “two indicator locations (using the criteria from the “Land Use Census” section) with highest calculated annual average D/Q.”

Table 5-1, Attachment A, of procedure AP 07B-004, also requires that milk samples be collected from “three indicator locations within 5 miles of the site having the highest dose potential.”

METHODOLOGY

Over two hundred surveys were mailed to the rural residents living within five miles of WCGS. The survey excluded the residents of New Strawn and Burlington. These locations were excluded due to the large number of households and the low likelihood that information gained from these residences would affect the locations chosen for REMP sampling. Drive-by information was collected for the nearest residences in each sector that did not return surveys.

The information collected was compiled and the results are identified in Tables 1-3. Calculations were performed so that garden locations could be ranked by their respective D/Q. These results are contained in Table 4.

RESULTS

No changes were identified for the nearest occupied residence in each sector. Seven changes were noted for the nearest garden producing broadleaf vegetation. These changes are identified as an underlined entry in the Tables. There were no changes regarding milk sample locations. Again, no locations were identified that milked animals for human consumption.

TABLE 1

2019 LAND USE CENSUS DATA

LOCATION OF NEAREST:

SECTOR	RESIDENCE	MILKING ANIMALS	BROADLEAF GARDEN
A	A2.60-17TE1527	None	A2.60-17TE1527
B	B3.53-QURD1755	None	None
C	C1.92-16RD1655	None	C3.16-QURD1712
D	D2.33-RERD1520	None	D2.33-RERD1520
E	E1.78-QULA1451	None	E4.92-15RD2065
F	F1.76-14RD1730	None	F2.44-RERD1391
G	G3.03-13RD1820	None	None
H	H3.09-12RD1711	None	H3.80-11RD1674
J	J3.70-11RD1540	None	J3.70-11RD1540
K	K2.70-12LA1437	None	None
L	L2.10-NARD1339	None	L2.39-NARD1309
M	M2.34-14RD1346	None	M3.87-13RD1227
N	N2.08-15RD1350	None	N2.08-15RD1350
P	P2.76-HW751534	None	P3.52-16RD1196
Q	Q2.35-MILA1619	None	Q2.35-MILA1619
R	R2.08-NALN1650	None	None

NOTE: Entries underlined indicate changes from the 2018 Land Use Census.

EXAMPLE: A2.60-17TE1527
"A" = Sector A
"2.60" = 2.60 miles from the reactor
"17TE1527" = address

TABLE 2

SECTOR	2018 NEAREST RESIDENCE	2019 NEAREST RESIDENCE
A	A2.60-17TE1527	A2.60-17TE1527
B	B3.53-QURD1755	B3.53-QURD1755
C	C1.92-16RD1655	C1.92-16RD1655
D	D2.33-RERD1520	D2.33-RERD1520
E	E1.78-QULA1451	E1.78-QULA1451
F	F1.76-14RD1730	F1.76-14RD1730
G	G3.03-13RD1820	G3.03-13RD1820
H	H3.09-12RD1711	H3.09-12RD1711
J	J3.70-11RD1540	J3.70-11RD1540
K	K2.70-12LA1437	K2.70-12LA1437
L	L2.10-NARD1339	L2.10-NARD1339
M	M2.34-14RD1346	M2.34-14RD1346
N	N2.08-15RD1350	N2.08-15RD1350
P	P2.76-HW751534	P2.76-HW751534
Q	Q2.35-MILA1619	Q2.35-MILA1619
R	R2.08-NALN1650	R2.08-NALN1650

NOTE: Entries underlined indicate changes from the 2018 Land Use Census.

TABLE 3

2019 LAND USE CENSUS MILK AND GARDEN DATA

SECTOR	2018 MILKING ANIMALS	2019 MILKING ANIMALS	2018 NEAREST BROADLEAF GARDEN	2019 NEAREST BROADLEAF GARDEN
A	None	None	A2.60-17TE1527	A2.60-17TE1527
B	None	None	None	None
C	None	None	C3.58-RERD1675	C3.16-QURD1712
D	None	None	D3.00-16RD1829	D2.33-RERD1520
E	None	None	None	E4.92-15RD2065
F	None	None	F3.37-14RD1904	F2.44-RERD1391
G	None	None	None	None
H	None	None	None	H3.80-11RD1674
J	None	None	J3.70-11RD1540	J3.70-11RD1540
K	None	None	K4.10-NARD1120	None
L	None	None	L2.39-NARD1309	L2.39-NARD1309
M	None	None	M3.78-LYRD1390	M3.87-13RD1227
N	None	None	N2.08-15RD1350	N2.08-15RD1350
P	None	None	P2.94-16RD1309	P3.52-16RD1196
Q	None	None	Q2.35-MILA1619	Q2.35-MILA1619
R	None	None	None	None

NOTE: Underlined entries indicate changes from the 2018 Land Use Census.

TABLE 4

INFORMATION USED FOR D/Q CALCULATIONS ON GARDENS PRODUCING BROADLEAF VEGETATION

FROM LAND USE			FROM SA-19-002					
	DIST	CALC	NEAR	NEAR	FAR	FAR		SECTOR
SECTOR	(MI)	(METERS)	DIST	D / Q	DIST	D / Q	CALC	RANKING
A	2.60	4184	4000	1.94E-09	5000	1.32E-09	1.83E-09	1
B								
C	3.16	5086	5000	2.51E-10	6000	1.85E-10	2.45E-10	11
D	2.33	3750	3000	4.88E-10	4000	2.93E-10	3.42E-10	8
E	4.92	7918	7000	1.28E-10	8000	1.03E-10	1.05E-10	12
F	2.44	3927	3000	6.58E-10	4000	3.95E-10	4.14E-10	7
G								
H	3.80	6116	6000	4.71E-10	7000	3.50E-10	4.57E-10	5
J	3.70	5955	5000	4.59E-10	6000	3.37E-10	3.42E-10	8
K								
L	2.39	3846	3000	1.02E-09	4000	6.11E-10	6.74E-10	4
M	3.87	6228	6000	2.99E-10	7000	2.22E-10	2.81E-10	10
N	2.08	3347	3000	1.10E-09	4000	6.62E-10	9.48E-10	3
P	3.52	5665	5000	5.11E-10	6000	3.76E-10	4.21E-10	6
Q	2.35	3782	3000	1.53E-09	4000	9.17E-10	1.05E-09	2
R								

Originated by: Matt Vopat Date: 01/15/20

Verified by: Craig T. Atkinson Date: 01/16/20