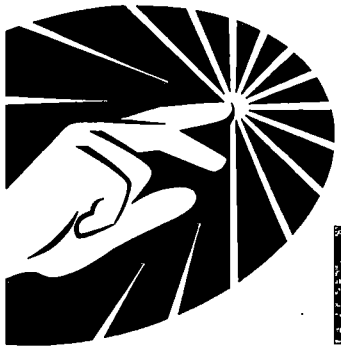

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2015 Annual Radiological Environmental Operating Report

Kewaunee Power Station

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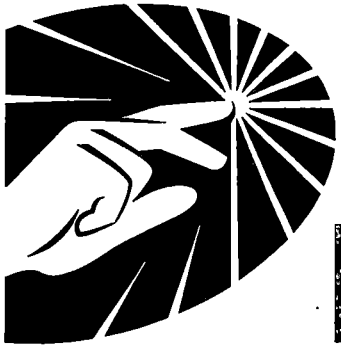

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2015 Annual Radiological Environmental Operating Report

Kewaunee Power Station

Part I

Summary and Interpretation

Dominion Energy Kewaunee, Inc.

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ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

TO

DOMINION NUCLEAR

RADIOLOGICAL MONITORING PROGRAM FOR
THE KEWAUNEE POWER STATION
KEWAUNEE, WISCONSIN

PART I - SUMMARY AND INTERPRETATION

January 1 to December 31, 2015

Prepared and submitted by:

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PREFACE

The staff of ATI Environmental, Inc., Midwest Laboratory were responsible for the acquisition of data presented in this report. Assistance in sample collection was provided by Kewaunee Power Station personnel. The report was prepared by staff members of ATI Environmental, Inc., Midwest Laboratory.

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Appendix A

1.0 INTRODUCTION

The Kewaunee Power Station is a 598 megawatt pressurized water reactor located on the Wisconsin shore of Lake Michigan in Kewaunee County. The Plant became critical on March 7, 1974. Initial power generation was achieved on April 8, 1974, and the Plant was declared commercial on June 16, 1974.

On February 25, 2013, Dominion Energy Kewaunee submitted a certification of intent to cease power operations to the Nuclear Regulatory Committee. Power Operation of the Kewaunee Power Station ceased on May 7, 2013. The fuel was permanently removed from the reactor and placed in the spent fuel pool for storage on May 14, 2013.

This report summarizes the environmental operation data collected during the period January - December 2015.

Dominion Energy Kewaunee, operator and owner of the Kewaunee Power Station, assumes responsibility for the environmental program at the Plant. Any questions should be directed to Mr. J. Michael Hale, Radiation Protection / Chemistry Manager, at (920) 388-8103.

2.0 SUMMARY

Results of sample analyses during the period January - December 2015 are summarized in Table 4.5. Radionuclide concentrations measured at indicator locations are compared with levels measured at control locations and in preoperational studies. In no instance were REMP threshold reporting levels exceeded.

3.0 RADIOLOGICAL SURVEILLANCE PROGRAM

Following is a description of the Radiological Surveillance Program and its execution.

3.1 METHODOLOGY

The sampling locations are shown in Figure 4-1. Table 4.1 describes the locations, lists for each direction and distance from the reactor, and defines which are indicators and control locations.

The sampling program monitors the air, terrestrial, and aquatic environments. The types of samples collected at each location and the frequency of collections are presented in Table 4.2, using sample codes defined in Table 4.3. The collections and analyses that comprise the program are described below. Finally, the execution of the program in the current reporting year is discussed.

3.1.1 The Air Program

Ambient Gamma Radiation – TLDs

Ambient gamma radiation is monitored at the six air sampling locations (K-1f, K-2, K-8, K-31, K-41 and K-43), at three milk sampling locations (K-3, K-5, and K-39), and from five additional sites (K-15, located 9.25 miles northwest of the plant; K-17, located 4.0 miles west of the plant; K-25, located 1.9 miles southwest of the plant; K-27, located 1.53 miles northwest of the plant and K-30, located 0.8 miles north of the plant) by thermoluminescent dosimetry (TLD). Two TLD cards, each having four main readout areas containing $CaSO_4$:Dy phosphor, are placed at each location (eight TLDs at each location). One card is exchanged quarterly, the other card is exchanged annually and read only on an emergency basis.

Dosimeters have also been placed at eight additional locations (K-1L through K-1S), to monitor an Independent Spent Fuel Storage Installation (ISFSI). They are replaced and measured quarterly.

Airborne Particulates

Airborne particulates are collected on 47 mm diameter, 1μm porosity glass fiber filters, at a volumetric rate of approx. one cubic foot per minute. The filters are collected weekly from six locations (K-1f, K-2, K-8, K-31, K-41 and K-43), and dispatched by mail to ATI Environmental, Inc. for radiometric analysis. The particulate filters are counted for gross beta activity, a minimum of three days after the date of collection, to allow for the decay of naturally-occurring short-lived radionuclides.

Quarterly composites from each sampling location are analyzed for gamma-emitting isotopes on a high-purity germanium (HPGe) detector.

Airborne Iodine

Charcoal traps are located at locations K-1f, K-2, K-8, K-31, K-41 and K-43. The traps are changed weekly and analyzed for iodine-131 immediately after arrival at the laboratory.

Precipitation

Monthly composites of precipitation samples are collected at K-11 and analyzed for tritium.

3.1.2 The Terrestrial Program

Milk

Milk samples are collected from two herds grazing within three miles of the reactor site (K-34 and K-38); from four herds that graze between 3-7 miles of the reactor site (K-3, K-5, K-35, and K-39); and one from a dairy in Green Bay (K-42), 28.1 miles from the reactor site.

The samples are collected twice per month during the grazing period (May through October) and monthly for the rest of the year. The samples are analyzed for iodine-131, strontium-89 and strontium-90, calcium, stable potassium and gamma-emitting isotopes.

Well Water

Groundwater is collected quarterly from the four off-site well locations K-10, K-11, K-13 and K-38 and from two on-site wells located at K-1g and K-1h.

Gamma spectroscopic analysis, tritium and gross beta on the total residue are performed for each water sample. The concentration of potassium-40 is calculated from total potassium. Samples of water from the two on-site wells (K-1g and K-1h) are analyzed for gross alpha. Water samples from K-1g are also tested for strontium-89 and strontium-90.

Domestic Meat

Domestic meat is collected annually (if available) during the third quarter, from three locations in the vicinity of the plant (K-24, K-29, and K-32). The flesh is separated from the bone and analyzed for gross alpha, gross beta and gamma emitting isotopes.

Eggs

Eggs are collected quarterly from locations K-24 and K-32. Samples are analyzed for gross beta, strontium-89, strontium-90 and gamma-emitting isotopes.

Vegetables and Grain

Annually, during the third quarter, five varieties of vegetables and samples of grain are collected from location K-26. Samples may also be obtained from other local sources to supplement the program (eg., K-3, and K-24). In addition, two varieties of grain or leafy vegetables are collected annually from farmland owned by Dominion Energy Kewaunee (K-23a and K-23b) and rented to a private individual for growing crops. The samples are analyzed for gross beta, strontium-89, strontium-90 and gamma emitting isotopes.

Cattle Feed

Cattle feed (e.g., hay and silage) is collected during the first quarter from dairy farm locations (K-3, K-5, K-34, K-35, K-38 and K-39). The samples are analyzed for gross beta, strontium-89, strontium-90 and gamma emitting isotopes.

Grass

Grass is collected during the second, third and fourth quarters from two on-site locations (K-1b and K-1f) and from the dairy farm locations (K-3, K-5, K-34, K-35, K-38 and K-39). The samples are analyzed for gross beta, strontium-89, strontium-90 and gamma emitting isotopes.

Soil

Soil samples are collected twice a year on-site at K-1f and from the dairy farm locations (K-3, K-5, K-34, K-35, K-38 and K-39). The samples are analyzed for gross alpha, gross beta, strontium-89, strontium-90 and gamma emitting isotopes.

3.1.3 The Aquatic Program

Surface Water

Surface water samples are taken monthly from three locations on Lake Michigan: 1) at the point where the service water is discharged into Lake Michigan (K-1d); 2) Two Creeks Park (K-14) located 2.6 miles south of the reactor site; and 3) at the main pumping station located approximately equidistant from Kewaunee and Green Bay, which pumps water from the Rostok water intake (K-9) located 11.5 miles NNE of the reactor site. Both raw and tap water are collected at K-9. One-gallon water samples are taken monthly from three creeks that pass through the site (K-1a, K-1b, and K-1e). Samples from North and Middle Creeks (K-1a, K-1b) are collected near the mouth of each creek. Samples from the South Creek (K-1e) are collected about ten feet downstream from the point where the outflow from the two drain pipes meets. Additionally, the drainage pond (K-1k), located approximately 0.6 miles southwest of the plant, is included in the sampling program. Water samples at K-14 are collected and analyzed in duplicate.

The water is analyzed for gamma emitting isotopes, gross beta activity in total residue, dissolved and suspended solids, and potassium-40. The concentration of potassium-40 is calculated from the total potassium concentration. In addition, quarterly composites of monthly grab samples are analyzed for tritium, strontium-89 and strontium-90.

Fish

Fish samples are collected during the second, third and fourth quarters near location K-1d. The flesh is separated from the bones, gamma scanned and analyzed for gross beta activity. Bone samples are analyzed for gross beta, strontium-89 and strontium-90. Fiala's Fish Market (K-36) may be used for backup fish samples, if needed.

Aquatic Slime

Periphyton algae (slime) or aquatic vegetation is collected during the second and third quarters from three Lake Michigan locations (K-1d, K-9 and K-14), from three creek locations (K-1a, K-1b and K-1e) and from the drainage pond (K-1k), if available. The samples are analyzed for gross beta activity. If the quantity is sufficient, analyses for gamma-emitting isotopes and strontium-89 and strontium-90 activities are performed.

Bottom Sediment

Bottom sediments are collected in May and November from five locations (K-1c, K-1d, K-1j, K-9 and K-14). The samples are analyzed for gross beta, strontium-89, strontium-90 and gamma emitting isotopes.

3.1.4 Program Execution

Program execution is summarized in Table 4.4. The program was executed for the year 2015 as described in the preceding sections, with the following exceptions:

Air Particulates / Air Iodine

A partial air particulate / air iodine sample (303 m^3) was collected at location K-2, for the sample period ending 7/28/15. A mechanical failure with the sample pump resulted in a reduced runtime of 127 hours. (CR 88).

Surface Water

Surface water location K-1a could not be sampled for the February and March 2015 collection. The creek was frozen. (CR 580855)

Surface water location K-1b could not be sampled for the March 2015 collection. The creek was frozen. (CR 580855).

Surface water location K-1e could not be sampled for the February 2015 collection. The creek was frozen. (CR 580855).

Surface water from location K-1k could not be sampled from January through March 2015. The pond was frozen or inaccessible for collection. (CR 580855).

Surface water from locations K-14a and K-14b could not be sampled for the February 2015 collection due to large shoreline ice formations making the sampling sites inaccessible. (CR 580855).

Milk

Milk location K-38 was sampled off schedule. The milk sample collected 05/19/15 leaked and was lost in shipment. A replacement milk sample from location K-38 was collected on 5/21/15. (CR 580839).

Domestic Meat

Samples collected at two locations for 2015, K-24 and K-32. No sample available at K-29.

3.1.5 Program Modifications

None.

3.2 RESULTS AND DISCUSSION

Results for the reporting period January to December, 2015 are presented in summary form in Table 4.5. For each type of analysis, of each sampled medium, the table shows the annual mean and range for all indicator and control locations. The location with the highest annual mean and the results for this location are also given.

The discussion of the results has been divided into three broad categories: the air, terrestrial, and aquatic environments. Within each category, samples will be discussed in the order listed in Table 4.4. Any discussion of previous environmental data for the Kewaunee Power Station refers to data collected by Environmental Inc., Midwest Laboratory.

Results of all measurements made in 2015 are not included in this section, although references to these results will be made in the discussion. A complete tabulation of results is provided in Part II of the 2015 annual report on the Radiological Monitoring Program for the Kewaunee Power Station.

3.2.1 Atmospheric Nuclear Detonations and Nuclear Accidents

There were no atmospheric nuclear tests or accidents reported in 2015. The Chernobyl and Fukushima Daiichi nuclear accidents occurred on April 26, 1986 and March 11, 2011, respectively. The last reported atmospheric nuclear test was conducted by the People's Republic of China on October 16, 1980. Contributions from these events have resulted in the presence of long-lived radioisotopes of cesium and strontium still detectable in the environment.

3.2.2 The Air Environment

Ambient Gamma Radiation – TLDs

Ambient gamma radiation was monitored by TLDs at fourteen locations, eight indicators and six controls. TLDs at the indicator locations measured a mean dose equivalent of 16.2 mR/91 days, in close agreement with the control locations 16.1 mR/91 days. The readings are similar to the averages obtained from 2002 (and prior to) through 2014.

For eight TLDs monitoring the Independent Spent Fuel Storage Installation (Protected Area), (K-1L through K-1S), measurements averaged 14.4 mR/91 days.

No plant effect on ambient gamma radiation was indicated. These values are lower than the United States average value of 19.5 mR/91 days due to natural background radiation (National Council on Radiation Protection and Measurements, 1975). The highest annual mean was 19.4 mR/91 days, measured at indicator location K-27.

Year	Average (Indicators)	Average (Controls)
	Dose rate (mR/91 days)	
2002	16.1	15.1
2003	14.1	13.7
2004	14.8	14.0
2005	15.7	14.3
2006	16.4	15.0
2007	16.2	15.2
2008	15.6	14.2
2009	15.2	13.9

2010	15.2	14.3
2011	15.0	14.5
2012	16.1	15.3
2013	16.2	15.5
2014	15.0	14.8
2015	16.2	16.1

Ambient gamma radiation as measured by thermoluminescent dosimetry.
Average quarterly dose rates.

Using ANSI/HPS N13.37-2014 as guidance, a determination of facility related dose was performed using quarterly TLD data from control and indicator locations from 2005 through 2014. A baseline background dose (B_Q) was computed for each TLD location. Then a Quarterly Minimum Differential Dose (MDD_Q) was calculated as 3 times the 90th percentile of the standard deviations of the historical quarterly results. The result of this calculation was 6.4 mrem. Transit and storage doses weren't considered since the TLD's currently are, and have historically been, collected in the field and delivered to the laboratory for immediate processing.

2015 results at all locations both indicator and control were lower than the sum of the Baseline Background Dose(B_Q) and the Quarterly Minimum Differential Dose(MDD_Q), which according to ANSI/HPS-N13.37-2014 indicates no detection(ND) which supports the conclusion that there is no plant effect.

Monitoring Location	Quarterly Baseline B_Q(mrem)	Normalized Quarterly Monitoring Data M_Q (mrem per standard quarter)				Quarterly Facility Dose $F_Q = M_Q - B_Q$(mrem)			
		1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
K-1f	12.6	14.0	16.1	14.3	17.4	ND	ND	ND	ND
K-5	17.5	16.8	14.4	16.6	15.1	ND	ND	ND	ND
K-17	14.9	13.7	17.3	13.8	18.6	ND	ND	ND	ND
K-25	17.1	13.9	16.4	15.0	17.8	ND	ND	ND	ND
K-27	16.0	20.1	17.9	20.1	19.3	ND	ND	ND	ND
K-30	15.1	14.5	16.9	14.0	18.7	ND	ND	ND	ND
K-39	15.6	13.6	18.2	13.0	20.6	ND	ND	ND	ND
K-43	16.6	14.3	16.6	14.9	15.5	ND	ND	ND	ND
K-2	15.5	17.1	16.2	17.6	17.9	ND	ND	ND	ND
K-3	17.0	17.4	17.0	17.3	18.5	ND	ND	ND	ND
K-8	14.9	14.7	13.3	16.5	14.5	ND	ND	ND	ND
K-15	14.0	14.6	15.6	14.4	17.3	ND	ND	ND	ND
K-31	12.4	15.1	11.6	14.2	12.7	ND	ND	ND	ND
K-41	14.2	19.0	17.1	19.4	18.1	ND	ND	ND	ND

Table assumes 1 roentgen = 1 rem (per NRC -Health Physics Positions Based on 10 CFR Part 20, October 2015)

Airborne Particulates

The annual gross beta concentration in air particulates averaged 0.022 pCi/m^3 at both indicator and control locations, similar to the means observed from 2002 (and prior to) through 2014. There is no indication of a plant effect, the average readings were evenly distributed between indicator and control locations. New sampler pumps were installed in the third quarter of 2010. The slight increases in beta activity may be due to a change in the calculated volume. Results are tabulated below.

Year	Average (Indicators)	Average (Controls)
	Concentration (pCi/m^3)	
2002	0.023	0.023
2003	0.022	0.022
2004	0.019	0.020
2005	0.023	0.023
2006	0.021	0.021
2007	0.022	0.021
2008	0.022	0.022
2009	0.023	0.023
2010	0.023	0.022
2011	0.029	0.029
2012	0.029	0.030
2013	0.024	0.025
2014	0.019	0.019
2015	0.022	0.022

Average annual gross beta concentrations in airborne particulates.

Variation in the gross beta activity throughout the year is not unusual. Typically, higher beta averages occur during the months of January and December, and the first and fourth quarters, as noted in data from 2002 through 2015.

Gamma spectroscopic analysis of quarterly composites of air particulate filters yielded similar results for indicator and control locations. Beryllium-7, produced continuously in the upper atmosphere by cosmic radiation, was detected in all samples, with an average activity of 0.060 pCi/m^3 at the indicator locations and an average of 0.065 pCi/m^3 at the control locations. All other gamma-emitting isotopes were below their respective LLD limits.

Airborne Iodine

Levels of airborne iodine-131 were below the lower limit of detection (LLD) of 0.030 pCi/m^3 at all locations. There was no indication of a plant effect on the local air environment.

Precipitation

Precipitation was monitored for tritium at indicator location, K-11. The concentration was below the LLD level of 194 pCi/L in all samples.

3.2.3 The Terrestrial Environment

Milk

126 milk samples were tested for the presence of iodine-131, all measured below an LLD level of 0.5 pCi/L.

Strontium-89 concentrations measured below an LLD level of 1.6 pCi/L in all samples. Measurable levels of strontium-90 above an LLD level of 0.8 pCi/L were detected in nineteen of eighty-four samples tested. Mean values were 0.8 pCi/L for indicator locations and 1.0 pCi/L for control locations and are similar to averages seen from 1990 through 2014.

For gamma emitting isotopes, concentrations measured below the required limits of 15 pCi/L for

barium-lanthanum-140 and 10 pCi/L for cesium-134 and cesium-137. Potassium-40 results were comparable at the indicator and control locations (1352 and 1389 pCi/L, respectively), and are consistent with levels observed from 1990 through 2014.

Detection of strontium, iodine and potassium activity is consistent with findings of the National Center for Radiological Health (1968). Most radiocontaminants in cattlefeed do not find their way into milk, exceptions are radioisotopes of potassium, cesium, strontium, barium, and iodine. Due to chemical similarities between strontium and calcium, and cesium and potassium, organisms tend to deposit strontium-89 and strontium-90 in bone and cesium-137 in the soft tissue and muscle Consequently, ratios of strontium-90 activity to the weight of calcium in milk and cesium-137 activity to the weight of potassium in milk were monitored in order to detect potential environmental accumulation of these radionuclides. Measured concentrations of calcium are in agreement with previously determined values and averaged 0.96 g/L at both the indicator and control locations. Measured concentrations of stable Potassium were averaged 1.65 g/L at the indicator locations and 1.68 g/L at the control locations.

There was no indication of any effect due to the operation of the Kewaunee Power Station.

Well Water

All eight samples for gross alpha analysis, from on-site well K-1h, were below an LLD of 3.0 pCi/L. Gross beta activity above a detection limit of 3.3 pCi/L, was measured in two of the twenty-four indicator samples tested. Concentrations of 5.3 and 5.6 pCi/L, were measured. The gross alpha and beta activities, when detected in the ground water, are most likely contributions from potassium-40 and naturally-occurring daughters of radium and thorium.

Levels of strontium-89 and strontium-90 were measured for the on-site well (K-1g). The concentrations measured below LLD values of 1.0 and 0.6 pCi/L, respectively.

Samples were tested for tritium and gamma emitting isotopes. All tritium concentrations measured below a detection level of 198 pCi/L. Gamma-emitting isotopes measured below respective LLDs.

Potassium-40 averages were generally in proportion to gross beta measurements and in agreement with previously measured values. No plant effect was indicated.

Domestic Meat

In domestic meat samples, gross alpha measured below the LLD of 0.03 pCi/g wet for both indicator and control locations, respectively, while the gross beta concentrations measured 2.05 pCi/g wet and 1.87 pCi/g wet. Gamma-spectroscopic analyses showed that most beta activity was due to naturally occurring potassium-40 (2.68 pCi/g wet and 1.94 pCi/g wet respectively). All other gamma-emitting isotopes measured below detection limits.

Eggs

In samples of eggs tested, the gross beta concentrations averaged 1.53 pCi/g wet at the indicator location and 1.43 pCi/g wet for the control location, similar to observed concentrations of naturally-occurring potassium-40 (1.32 and 1.31 pCi/g wet respectively). Other gamma-emitting isotopes were below their respective LLDs.

Levels of strontium-89 measured less than 0.007 pCi/g wet in all samples. Strontium-90 was measured at 0.004 pCi/g wet in the January sample from the indicator location. All other samples tested were below the LLD of 0.003 pCi/g wet.

Vegetables and Grain

In vegetables a gross beta concentration of 4.57 pCi/g wet was measured at the single indicator (K-24) sample and an average of 3.43 pCi/g wet was measured for the control locations K-3 and K-26, due primarily to potassium-40 and beryllium-7 activity. All other gamma emitting isotopes measured below detection levels. No strontium-89 was detected above an LLD of 0.012 pCi/g wet. Strontium-90 was found in one indicator sample at a concentration of 0.008 pCi /g wet. Trace radiostrontium in the environment can still be attributed to nuclear testing from previous decades.

In four samples of grain consisting of wheat and clover collected from indicator locations K-23 and K-1a, the gross beta concentrations averaged 3.95 pCi/g wet, due primarily to activity from potassium-40 and beryllium-7. Strontium-89 measured below the LLD of 0.028 pCi/g wet. Strontium-90 was measured at two of the four grain samples from indicator locations with an average of 0.014 pCi/g wet. All other samples measured below the LLD of 0.003 pCi/g wet.

Cattle Feed

For cattlefeed, gross beta concentrations were 16.43 and 15.03 pCi/g wet at the indicator and control locations respectively, and reflected potassium-40 levels observed of 11.29 and 10.88 pCi/g wet, respectively. No strontium-89 activity was detected. Strontium-90 was found in five of the eight indicator samples tested and averaged 0.022 pCi/g wet. Strontium-90 was also found in three of the control locations and averaged 0.017 pCi/g wet.

Grass

In grass, mean gross beta measured 8.29 and 7.64 pCi/g wet at indicator and control locations, respectively, In all cases the activity was predominantly due to naturally occurring potassium-40 and beryllium-7. Other gamma-emitting isotopes were below respective LLDs. Strontium-89 tested below detection limits of 0.035 pCi/g wet. Strontium-90 measured above the detection limit of 0.018 pCi/g wet at three indicator locations for an average of 0.051 pCi/g wet.

With the exception of the naturally-occurring beryllium and potassium, gamma-emitting isotopes were below detection levels.

Soil

Gross alpha concentrations in soil averaged 7.03 pCi/g dry in all ten indicator location samples and 6.88 pCi/g dry at the two control locations. Mean gross beta levels measured at indicator and control locations averaged 24.65 and 23.66 pCi/g dry, respectively, primarily due to potassium-40 activity. Strontium-89 was below an LLD level of 0.13 pCi/g dry in all samples. Strontium-90 was below an LLD of 0.047 pCi/g for all fourteen samples analyzed.

Cesium-137 was detected in all fourteen soil samples at an average of 0.11 pCi/g dry at both the indicator and control locations. Trace levels of Cs-137 in the environment can be attributed to nuclear testing and accidents. Potassium-40 was detected in all samples and averaged 18.73 and 17.14 pCi/g dry for indicator and control locations, respectively. All other gamma-emitting isotopes were below respective LLD's. The levels of detected activities are similar to those observed from 1990 through 2014. The data suggests no evidence of a plant effect.

3.2.4 The Aquatic Environment

Surface Water

Gross beta activity in surface water measured higher at the indicator locations (4.2 pCi/L) than at the control locations (1.4 pCi/L). A similar pattern of activity has been observed since 1978. In 2015, the highest activities measured were sampled from the K-1k drainage pond. The average activity was 8.4 pCi/L, with a range of 1.6 to 24.9 pCi/L, due primarily to potassium-40 activity. The potassium-40 concentrations averaged 7.1 pCi/L and ranged from 3.7 to 13.3 pCi/L.

Year	Average (Indicators)	Average (Controls)
	Gross Beta (pCi/L)	
2002	5.7	2.2
2003	7.3	2.4
2004	6.2	2.3
2005	5.2	1.7
2006	5.5	1.8
2007	5.7	1.8
2008	4.7	1.5
2009	4.7	1.5
2010	4.7	1.4
2011	5.0	1.5
2012	6.1	1.4
2013	5.7	1.5
2014	4.4	1.9
2015	4.2	1.4

Average annual gross beta concentrations in surface water.

These differences in activity are due in part to the indicator location (K-1k), a pond formed by drainage of surrounding fields to the southwest. The control sample is Lake Michigan water, which varies very little in gross beta concentration during the year, while indicator samples include the two creek locations (K-1a and K-1e) which are much higher in gross beta concentration and exhibit large month-to-month variations. The K-1a creek draws its water from the surrounding fields which are heavily fertilized; and the K-1e creek draws its water mainly from the Sewage Treatment Plant. In general, gross beta concentrations were high when potassium-40 levels were high and low when potassium-40 levels were low, indicating that fluctuations in beta concentration were due to variations in potassium-40 concentrations and were not due to plant operations. The fact that similar fluctuations at these locations were observed in pre-operational studies conducted prior to 1974 supports this assessment.

No tritium was detected above an LLD of 153 pCi/L in the thirty-five samples tested, (quarterly composites of monthly samples).

All analyses for strontium-89 measured below an LLD of 1.5 pCi/L. All analyses for Strontium-90 measured below an LLD of 0.8 pCi/L.

With the exception of naturally occurring potassium-40, gamma-emitting isotopes measured below their respective LLDs in all samples.

Fish

In fish, gross beta concentrations averaged 3.63 pCi/g wet in flesh and 3.54 pCi/g wet in bone fractions. In flesh, the gross beta concentration was primarily due to potassium-40 activity.

Excluding potassium-40, gamma-emitting isotopes measured below their respective LLDs in all samples except for Cs-137 that was measured at 0.036 pCi/g wet in flesh at one location(k-1d).

Strontium-89 concentrations in the bone were below an LLD of 0.54 pCi/g wet. Strontium-90 was detected in all three samples at an average of 0.17 pCi/g wet.

Aquatic Slime

In periphyton algae(slime) and aquatic vegetation samples, mean gross beta concentrations for indicator and control locations measured 4.78 and 4.24 pCi/g wet, respectively, due primarily to combined potassium-40 and beryllium-7 activity of 4.17 and 3.83 pCi/g wet, respectively.

Trace cobalt-60 activity was detected in one of twelve indicator samples at 0.010 pCi/g wet compared to a detection level of 0.007 pCi/g wet. Cesium-137 was measured in six of twelve indicator samples, at a level of 0.014 pCi/g wet. Other gamma-emitting isotopes, with the exception of naturally-occurring beryllium-7 and potassium-40, were below their respective LLDs.

No strontium-89 was measured above the detection level of 0.161 pCi/g wet. Strontium-90 activity was measured above detection level of 0.035 pCi/g wet, in one sample from indicator location K-14 with an activity of 0.074 pCi/g wet

Bottom Sediments

In bottom sediment samples, the mean gross beta concentrations measured an average 8.68 pCi/g dry at the indicator locations versus an average of 18.28 pCi/g dry at the control location.

Cesium-134 measured below the LLD level of 0.019 pCi/g dry for all samples tested. A low level of cesium-137 was observed at one of the indicator samples at an activity of 0.019 pCi/g dry and at an activity of 0.052 pCi/g dry at the control location. On average cesium-137 measurements are lower than or similar to levels observed from 1979 through 2014. Other gamma-emitting isotopes, with the exception of naturally-occurring potassium-40, were below their respective LLDs.

Strontium-89 was measured below an LLD of 0.076 pCi/g dry for all samples. Strontium-90 was measured below LLD values for all of the indicator locations, but was detected in one of the control samples at a concentration of 0.054 pCi/g dry.

3.3 LAND USE CENSUS

The Land Use Census satisfies the requirements of the KPS Radiological Environmental Monitoring Manual. Section 2.2.2 states:

"A land use census shall be conducted and shall identify within a distance of 8 km (5 mi.) the location, in each of the 10 meteorological sectors, of the nearest milk animal, the nearest residence and the nearest garden of greater than $50m^2$ ($500 ft^2$) producing broad leaf vegetation." (Figure 4-1)

The 2015 Land Use Census was completed to identify the presence of the nearest milk animals, gardens and farm crops surrounding the Kewaunee Power Station. The Land Use Census was completed on September 1, 2015. The census is conducted annually during the growing season per Health Physics Procedure RP-KW-001-014.

In summary, the highest D/Q locations for nearest garden, nearest residence and nearest milk animal did not change from the 2014 census.

3.4 LABORATORY PROCEDURES

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

Environmental, Inc., Midwest Laboratory has a comprehensive quality control/quality assurance program designed to assure the reliability of data obtained. Details of the QA Program are presented elsewhere (Environmental, Inc., Midwest Laboratory, 2012). The QA Program includes participation in Interlaboratory Comparison (crosscheck) Programs. Results obtained are presented in Appendix A.

4.0 FIGURES AND TABLES

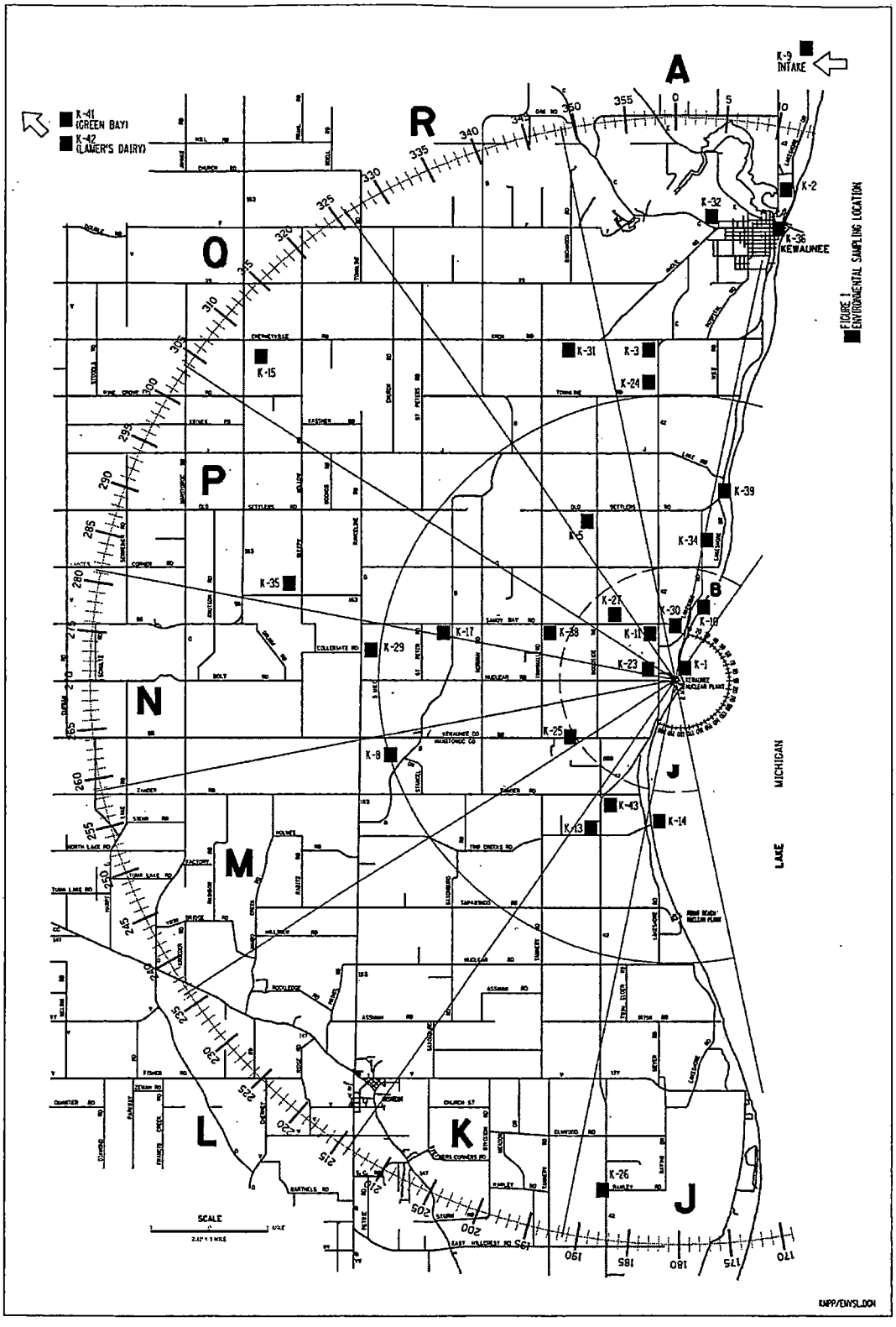

Figure 4-1. Sampling locations, Kewaunee Power Station.

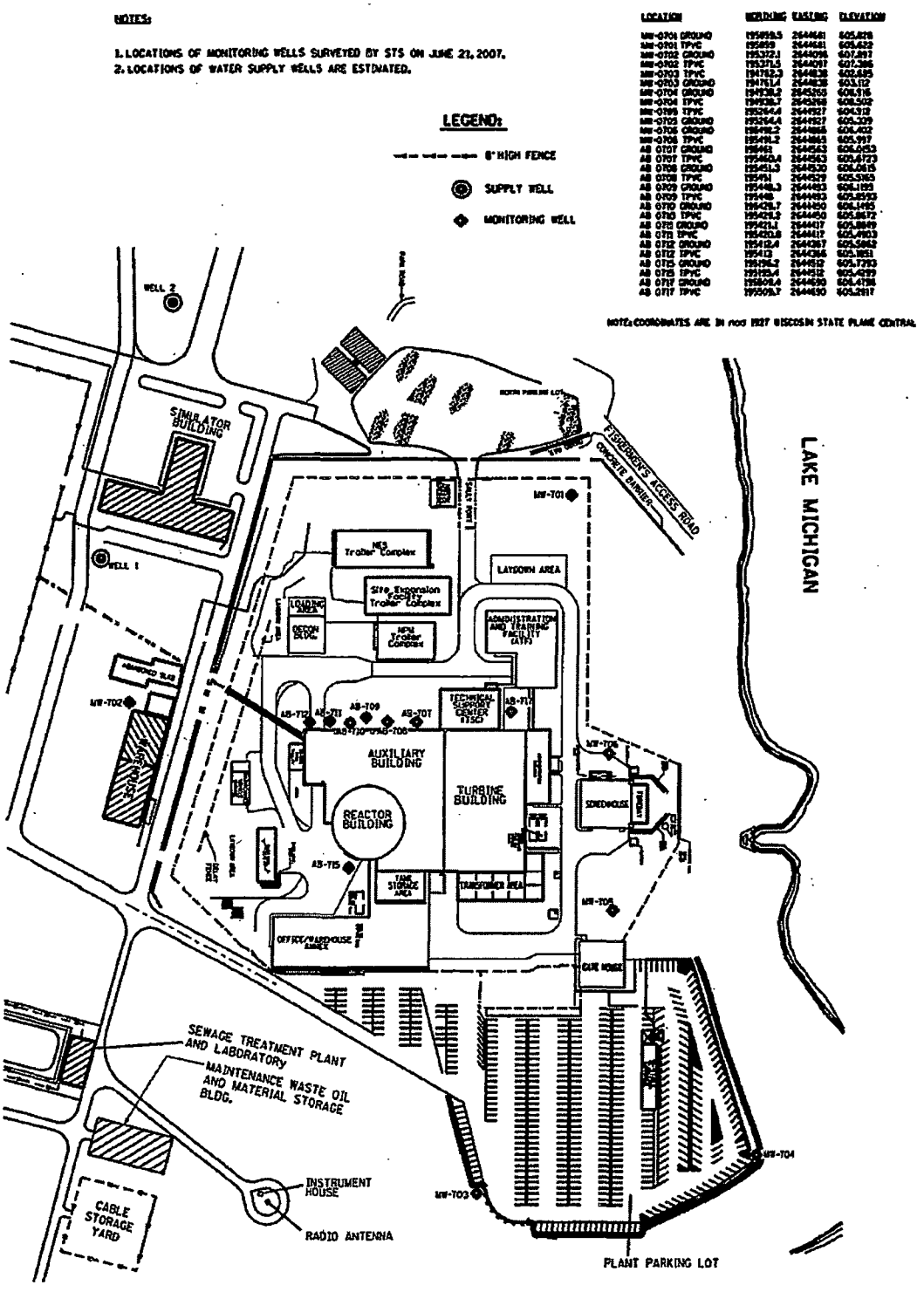

Figure 4-2. Ground Monitoring Wells, Kewaunee Power Station.

Table 4.1. Sampling locations, Kewaunee Power Station.

Code	Type [a]	Distance (miles)[b] and Sector	Location
K-1	I		Onsite
K-1a	I	0.62 N	North Creek
K-1b	I	0.12 N	Middle Creek
K-1c	I	0.10 N	500' north of condenser discharge
K-1d	I	0.10 E	Condenser discharge
K-1e	I	0.12 S	South Creek
K-1f	I	0.12 S	Meteorological Tower
K-1g	I	0.06 W	South Well
K-1h	I	0.12 NW	North Well
K-1j	I	0.10 S	500' south of condenser discharge
K-1k	I	0.60 SW	Drainage Pond, south of plant
K-1l	I	0.13 N	ISFSI Southeast
K-1m	I	0.15 N	ISFSI East
K-1n	I	0.16 N	ISFSI Northwest
K-1o	I	0.16 N	ISFSI North
K-1p	I	0.17 N	ISFSI Northwest
K-1q	I	0.16 N	ISFSI West
K-1r	I	0.13 N	ISFSI West
K-1s	I	0.12 N	ISFSI Southwest
K-2	C	8.91 NNE	WPS Operations Building in Kewaunee
K-3	C	5.9 N	Lyle and John Siegmund Farm, N2815 Hy 42, Kewaunee
K-5	I	3.2 NNW	Ben Paplham Farm, E4160 Old Settlers Rd, Kewaunee
K-8	C	4.85 WSW	St. Isadore the Farmer Church, 18424 Tisch Mills Rd, Tisch Mills
K-9	C	11.5 NNE	Green Bay Municipal Pumping Station, six miles east of Green Bay (sample source is Lake Michigan from Rostok Intake two miles north of Kewaunee.
K-10	I	1.35 NNE	Turner Farm, Kewaunee site
K-11	I	0.96 NW	Louise Ihlenfeldt Farm, N879 Hy 42, Kewaunee
K-13	C	3.0 SSW	Rand's General Store, Two Creeks
K-14	I	2.6 S	Two Creeks Park, 2.6 miles south of site
K-15	C	9.25 NW	Gas Substation, 1.5 miles north of Stangelville
K-17	I	4.0 W	Klimesh's' Farm, N885 Tk B, Kewaunee
K-23a	I	0.5 W	0.5 miles west of plant, Kewaunee site
K-23b	I	0.6 N	0.6 miles north of plant, Kewaunee site
K-24	I	5.4 N	Fictum Farm, N2653 Hy 42, Kewaunee
K-25	I	1.9 SW	Wotachek Farm, 3968 E. Cty Tk BB, Two Rivers
K-26	C	9.1 SSW	Sandy's Vegetable Stand (8.0 miles south of "BB")
K-27	I	1.53 NW	Schleis Farm, E4298 Sandy Bay Rd, Kewaunee
K-29	I	5.34 W	Kunesh Farm, E3873 Cty Tk G, Kewaunee
K-30	I	0.8 N	End of site boundary
K-31	C	6.35 NNW	E. Krok Substation, Krok Road
K-32	C	7.8 N	Piggly Wiggly, 931 Marquette Dr., Kewaunee
K-34	I	2.7 N	Leon and Vicki Struck, N1549 Lakeshore Dr., Kewaunee
K-35	C	6.71 mi. WNW	Duane Ducat, N1215 Sleepy Hollow Rd., Kewaunee
K-36	I	8.0 mi NNE	Fiala's Fish market, 216 Milwaukee, Kewaunee
K-38	I	2.45 mi. WNW	Dave Sinkula Farm, N890 Town Hall Road, Kewaunee
K-39	I	3.46 mi. N	Francis Wojta, N1859 Lakeshore Dr., Kewaunee
K-41	C	22 NW	Point Beach-EOF, 3060 Voyager Dr. , Green Bay
K-42	C	28.1 NW	Lamers Dairy Products obtained from Green Bay Markets
K-43	I	2.71 SSW	Gary Maigatter Property, 17333 Hwy 42, Two Rivers
K-44	I	2.63 SW	Gerald Schleis Property, 4728 Schleis Rd., Two Rivers

[a] I = indicator; C = control
[b] Distances are measured from reactor stack.

Table 4.2. Type and frequency of collection.

Location	Weekly	Monthly	Quarterly	Semiannually	Annually
K-1a		SW		SL [f]	
K-1b		SW	GR [a]	SL [f]	
K-1c				BS [b]	
K-1d		SW	FI [a]	SL [f] BS [b]	
K-1e		SW		SL [f]	
K-1f	AP [g], AI		GR [a] TLD	SO	
K-1g, K-1h			WW		
K-1j				BS [b]	
K-1k		SW		SL [f]	
K-1l through K-1s			TLD		
K-2	AP [g], AI		TLD		
K-3, K-5		MI [c]	GR [a] TLD	SO	CF [d]
K-8	AP [g], AI		TLD		
K-9		SW [i]		SL [f] BS [b]	
K-10, K-13			WW		
K-11		PR	WW		
K-14		SW [h]		SL [f] BS [b]	
K-15, K-17			TLD		
K-23a, b					GRN / GLV [e]
K-24			EG		DM
K-25			TLD		
K-26					VE / GLV [e]
K-27			TLD		
K-29					DM
K-30			TLD		
K-31	AP [g], AI		TLD		
K-32			EG		DM
K-34, K-35		MI [c]	GR [a]	SO	CF [d]
K-36			FI [a,j]		
K-38		MI [c]	GR [a] WW	SO	CF [d]
K-39		MI [c]	GR [a] TLD	SO	CF [d]
K-41	AP [g], AI		TLD		
K-42		MI [c]			
K-43	AP [g], AI		TLD		
K-44		MI			

[a] Three times a year, second, third and fourth quarters.
[b] Collected in May and November.
[c] Monthly from November through April; semimonthly May through October.
[d] First quarter (January, February or March) only.
[e] Alternate, if milk is not available.
[f] Second and third quarters.
[g] The frequency may be increased dependent on the dust loading.
[h] Two samples are collected, North (K-14a) and South (K-14b) of Two Creeks Road.
[i] Two samples, raw and tap water.
[j] Location dropped, dairy herd was sold in February, 2013.

Table 4.3. Sample Codes:

Code	Description	Code	Description
AI	Airborne Iodine	GR	Grass
AP	Airborne particulates	MI	Milk
BS	Bottom sediments	PR	Precipitation
CF	Cattlefeed	SL	Slime
DM	Domestic Meat	SO	Soil
EG	Eggs	SW	Surface water
FI	Fish	TLD	Thermoluminescent Dosimeter
GLV	Green Leafy Vegetables	VE	Vegetables
GRN	Grain	WW	Well water

Table 4.4. Sampling Summary, January – December, 2015.

Sample Type	Collection Type and Frequency [a]	Number of Locations	Number of Samples Collected	Number of Samples Missed
Air Environment				
TLD's	C/Q	22	88	0
Airborne particulates	C/W	6	312	0
Airborne Iodine	C/W	6	312	0
Precipitation	C/M	1	12	0
Terrestrial Environment				
Milk (May-Oct)	G/SM	7	84	0
(Nov-Apr)	G/M	7	42	0
Well water	G/Q	6	24	0
Domestic meat	G/A	2	2	0
Eggs	G/Q	2	8	0
Vegetables - 5 varieties	G/A	3	8	0
Grain - clover	G/A	3	5	0
Cattle feed	G/A	6	12	0
Grass	G/TA	8	24	0
Soil	G/SA	7	14	0
Aquatic Environment				
Surface water	G/M	7	99	9
Fish	G/TA	1	3	0
Slime	G/SA	7	14	0
Bottom sediments	G/SA	5	10	0

[a] Type of collection is coded as follows: C = continuous; G = grab.
Frequency is coded as follows: W = weekly; BW = bi-weekly; SM = semimonthly; M = monthly; Q = quarterly; SA = semiannually; TA = three times per year; A = annually.

Table 4.5 Environmental Radiation Monitoring Program Summary.

Name of Facility: Kewaunee Power Station
Location of Facility: Kewaunee County, Wisconsin (County, State)
Docket No.: 50-305
Reporting Period: January-December, 2015

Sample Type (Units)	Type and Number of Analyses[a]	LLD[b]	Indicator Locations Mean (F)[c] Range[c]	Location with Highest Annual Mean Location[d]	Mean (F)[c] Range[c]	Control Locations Mean (F)[c] Range[c]	Number Non-Routine Results[e]
TLDs (mR/91days)	Gamma 56	3.0	16.2 (32/32) (13.0-20.6)	K-27, Schlies Farm 1.53 NW	19.4 (4/4) (17.9-20.1)	16.1 (24/24) (11.6-19.4)	0
TLDs (ISFSI) (mR/91days)	Gamma 32	3.0	14.5 (32/32) (10.1-19.4)	K-1-M, ISFSI E 0.15 N	17.7 (4/4) (14.5-19.1)	none	0
Airborne Particulates (pCi/m^3)	GB 312	0.005	0.022 (104/104) (0.006-0.052)	K-1f, Met. Tower 0.12 S	0.022 (52/52) (0.007-0.052)	0.022 (208/208) (0.006-0.053)	0
	GS 24						
	Be-7	0.020	0.060 (8/8) (0.057-0.086)	K-41,Point Beach-EOF 22 NW	0.071 (4/4) (0.059-0.084)	0.065 (16/16) (0.051-0.089)	0
	Nb-95	0.0022	< LLD	-	-	< LLD	0
	Zr-Nb-95	0.0026	< LLD	-	-	< LLD	0
	Ru-103	0.0017	< LLD	-	-	< LLD	0
	Ru-106	0.0083	< LLD	-	-	< LLD	0
	Cs-134	0.0011	< LLD	-	-	< LLD	0
	Cs-137	0.0011	< LLD	-	-	< LLD	0
	Ce-141	0.0025	< LLD	-	-	< LLD	0
	Ce-144	0.0067	< LLD	-	-	< LLD	0
Airborne Iodine (pCi/m^3)	I-131 312	0.03	< LLD	-	-	< LLD	0
Precipitation (pCi/L)	H-3 12	194	< LLD	-	-	none	0
Milk (pCi/L)	I-131 126	0.5	< LLD	-	-	< LLD	0
	Sr-89 84	1.6	< LLD	-	-	< LLD	0
	Sr-90 84	0.8	0.8 (12/48) (0.6-1.3)	K-38, Sinkula Farm 2.45 mi. WNW	1 (7/12) (0.8-1.3)	1.0 (7/36) (0.8-1.0)	0
	GS 126						
	K-40	50	1352 (72/72) (1191-1482)	K-35, Ducat 6.71 mi. WNW	1438 (18/18) (1279-1529)	1389 (54/54) (1189-1529)	0
	Cs-134	6.9	< LLD	-	-	< LLD	0
	Cs-137	5.9	< LLD	-	-	< LLD	0
	Ba-La-140	11.9	< LLD	-	-	< LLD	0
(g/L)	K-stable 84	1.00	1.65 (48/48) (1.55-1.80)	K-35, Ducat 6.71 mi. WNW	1.74 (12/12) (1.56-1.86)	1.68 (36/36) (1.45-1.86)	0
(g/L)	Ca 84	0.40	0.96 (48/48) (0.82-1.14)	K-34, Struck Farm 2.7 N	0.99 (12/12) (0.90-1.14)	0.96 (36/36) (0.81-1.14)	0

Table 4.5 Environmental Radiation Monitoring Program Summary.

Name of Facility: Kewaunee Power Station — Docket No. 50-305
Location of Facility: Kewaunee County, Wisconsin (County, State) — Reporting Period January-December, 2015

Sample Type (Units)	Type and Number of Analyses[a]	LLD[b]	Indicator Locations Mean (F)[c] Range[c]	Location with Highest Annual Mean: Location[d]	Location with Highest Annual Mean: Mean (F)[c] Range[c]	Control Locations Mean (F)[c] Range[c]	Number Non-Routine Results[e]
Well Water (pCi/L)	GA 8	3.0	< LLD	-	-	None	0
	GB 24	3.3	5.5 (2/20) (5.3-5.6)	K-10, Turner Farm 1.35 NNE	5.6 (1/4)	< LLD	0
	H-3 24	198	< LLD	-	-	< LLD	0
	K-40 24	0.30	1.93 (20/20) (0.40-7.15)	K-10, Turner Farm 1.35 NNE	2.77 (4/4) (0.40-7.15)	0.99 (4/4) (0.95-1.06)	0
	Sr-89 4	1.0	< LLD	-	-	None	0
	Sr-90 4	0.6	< LLD	-	-	None	0
	GS 24						
	Mn-54	4.6	< LLD	-	-	< LLD	0
	Fe-59	12.2	< LLD	-	-	< LLD	0
	Co-58	5.1	< LLD	-	-	< LLD	0
	Co-60	3.7	< LLD	-	-	< LLD	0
	Zn-65	8.7	< LLD	-	-	< LLD	0
	Zr-Nb-95	5.4	< LLD	-	-	< LLD	0
	Cs-134	5.7	< LLD	-	-	< LLD	0
	Cs-137	4.9	< LLD	-	-	< LLD	0
	Ba-La-140	9.3	< LLD	-	-	< LLD	0
Domestic Meat	GA 2	0.03	< LLD	-	-	< LLD	0
(pCi/gwet)	GB 2	0.10	2.05 (1/1)	K-24, Fictum Farm 5.4 mi. N	2.05 (1/1) -	1.87 (1/1) -	0
	GS 2						
	Be-7	0.22	< LLD	-	-	< LLD	0
	K-40	0.50	2.68 (1/1)	K-24, Fictum Farm 5.45 mi. N	2.68 (1/1)	1.94 (1/1) -	0
	Nb-95	0.034	< LLD	-	-	< LLD	0
	Zr-95	0.040	< LLD	-	-	< LLD	0
	Ru-103	0.024	< LLD	-	-	< LLD	0
	Ru-106	0.15	< LLD	-	-	< LLD	0
	Cs-134	0.018	< LLD	-	-	< LLD	0
	Cs-137	0.019	< LLD	-	-	< LLD	0
	Ce-141	0.066	< LLD	-	-	< LLD	0
	Ce-144	0.15	< LLD	-	-	< LLD	0
Eggs (pCi/gwet)	GB 8	0.007	1.53 (4/4) (1.41-1.60)	K-24, Fictum Farm 5.45 mi. N	1.53 (4/4) (1.41-1.60)	1.43 (4/4) (1.32-1.49)	0
	Sr-89 8	0.007	< LLD	-	-	< LLD	0
	Sr-90 8	0.003	0.003 (1/4)	K-32, Piggly Wiggly 7.8 mi. N	0.004 (1/4)	0.004 (1/4)	0
	GS 8						
	Be-7	0.084	< LLD	-	-	< LLD	0
	K-40	0.50	1.31 (4/4) (1.20-1.48)	K-32, Piggly Wiggly 7.8 mi. N	1.32 (4/4) (1.20-1.45)	1.32 (4/4) (1.20-1.45)	0
	Nb-95	0.011	< LLD	-	-	< LLD	0
	Zr-95	0.014	< LLD	-	-	< LLD	0
	Ru-103	0.010	< LLD	-	-	< LLD	0
	Ru-106	0.052	< LLD	-	-	< LLD	0
	Cs-134	0.005	< LLD	-	-	< LLD	0
	Cs-137	0.006	< LLD	-	-	< LLD	0
	Ce-141	0.028	< LLD	-	-	< LLD	0
	Ce-144	0.043	< LLD	-	-	< LLD	0

Table 4.5 Environmental Radiation Monitoring Program Summary.

Name of Facility: Kewaunee Power Station — Docket No. 50-305
Location of Facility: Kewaunee County, Wisconsin (County, State) — Reporting Period January-December, 2015

Sample Type (Units)	Type and Number of Analyses [a]	LLD [b]	Indicator Locations Mean (F)[c] Range[c]	Location with Highest Annual Mean: Location [d]	Location with Highest Annual Mean: Mean (F)[c] Range[c]	Control Locations Mean (F)[c] Range[c]	Number Non-Routine Results[e]
Vegetables (pCi/gwet)	GB 8	0.010	4.57(1/1)	K-3, Siegmund Farm 5.9 mi N	4.75 (2/2) (4.64-4.85)	3.43 (7/7) (1.72-4.85)	0
	Sr-89 8	0.012	< LLD	-	-	< LLD	0
	Sr-90 8	0.004	0.008 (1/1)	K-24, Fictum Farm 5.45 mi. N	0.008 (1/1)	< LLD	0
	GS 8						0
	Be-7	0.06	0.29 (1/1)	K-23, Kewaunee Site, 0.5 mi. W	0.88 (2/2) (0.61-1.15)	0.32 (2/7)	0
	K-40	0.50	4.44 (1/1)	K-24, Fictum Farm 5.45 mi. N	4.44 (1/1)	3.04 (7/7) (1.47-4.75)	0
	Nb-95	0.009	< LLD	-	-	< LLD	0
	Zr-95	0.015	< LLD	-	-	< LLD	0
	Ru-103	0.011	< LLD	-	-	< LLD	0
	Ru-106	0.07	< LLD	-	-	< LLD	0
	Cs-134	0.006	< LLD	-	-	< LLD	0
	Cs-137	0.009	< LLD	-	-	< LLD	0
	Ce-141	0.030	< LLD	-	-	< LLD	0
	Ce-144	0.053	< LLD	-	-	< LLD	0
Grain - (Wheat, Clover)	GB 5	0.010	3.95 (4/4) (2.36-6.58)	K-23, Kewaunee Site, 0.5 mi. W	4.45 (3/3) (2.36-6.58)	2.07 (1/1)	0
(pCi/gwet)	Sr-89 5	0.028	< LLD	-	-	< LLD	0
	Sr-90 5	0.003	0.014 (2/4) (0.006-0.021)	K-23, Kewaunee Site, 0.5 mi. W	0.014 (2/2) (0.006-0.021)	< LLD	0
	GS 5						
	Be-7	0.059	0.88 (2/2) (0.61-1.15)	K-23, Kewaunee Site, 0.5 mi. W	0.88 (2/2) (0.61-1.15)	< LLD	0
	K-40	0.50	3.31 (4/4) (1.76-5.04)	K-23, Kewaunee Site, 0.5 mi. W	3.79 (3/3) (1.76-5.04)	1.89 (1/1)	0
	Nb-95	0.024	< LLD	-	-	< LLD	0
	Zr-95	0.028	< LLD	-	-	< LLD	0
	Ru-103	0.014	< LLD	-	-	< LLD	0
	Ru-106	0.13	< LLD	-	-	< LLD	0
	Cs-134	0.021	< LLD	-	-	< LLD	0
	Cs-137	0.023	< LLD	-	-	< LLD	0
	Ce-141	0.035	< LLD	-	-	< LLD	0
	Ce-144	0.15	< LLD	-	-	< LLD	0
Cattlefeed (pCi/gwet)	GB 12	0.10	16.43 (8/8) (4.04-38.34)	K-5, Paplham Farm 3.2 NNW	24.66 (2/2) (10.98-38.34)	15.03 (4/4) (5.78-25.46)	0
	Sr-89 12	0.058	< LLD	-	< LLD	< LLD	0
	Sr-90 12	0.012	0.022 (5/8) (0.015-0.027)	K-39, Wojta Farm 3.46 mi. N	0.021 (2/2) (0.015-0.027)	0.017 (3/4) (0.011-0.024)	0
	GS 12						
	Be-7	0.15	0.68 (4/8) (0.40-0.79)	K-34, Struck Farm 2.7 N	0.58 (2/2) (0.24-0.92)	0.58 (2/4) (0.24-0.92)	0
	K-40	0.10	11.29 (8/8) (3.39-29.64)	K-5, Paplham Farm 3.2 NNW	18.98 (2/2) (8.32-29.64)	10.88 (4/4) (3.97-17.32)	0

Table 4.5 Environmental Radiation Monitoring Program Summary.

Name of Facility: Kewaunee Power Station — Docket No. 50-305
Location of Facility: Kewaunee County, Wisconsin (County, State) — Reporting Period: January-December, 2015

Sample Type (Units)	Type and Number of Analyses[a]	LLD[b]	Indicator Locations Mean (F)[c] Range[c]	Location with Highest Annual Mean: Location[c]	Location with Highest Annual Mean: Mean (F)[c] Range[c]	Control Locations Mean (F)[c] Range[c]	Number Non-Routine Results[a]
Cattlefeed (continued)	Nb-95	0.016	< LLD	-	-	< LLD	0
	Zr-95	0.029	< LLD	-	-	< LLD	0
	Ru-103	0.014	< LLD	-	-	< LLD	0
	Ru-106	0.11	< LLD	-	-	< LLD	0
	Cs-134	0.014	< LLD	-	-	< LLD	0
	Cs-137	0.015	< LLD	-	-	< LLD	0
	Ce-141	0.021	< LLD	-	-	< LLD	0
	Ce-144	0.07	< LLD	-	-	< LLD	0
Grass (pCi/gwet)	GB 24	0.10	8.29 (18/18) (5.41-12.61)	K-5, Paplham Farm 3.2 NNW	8.59 (3/3) (5.59-10.60)	7.64 (6/6) (4.94-10.60)	0
	Sr-89 24	0.035	< LLD	-	-	< LLD	0
	Sr-90 24	0.018	0.051 (3/18) (0.03-0.07)	K-1f, Met Tower 0.12 S	-	< LLD	0
	GS 24						
	Be-7		1.90 (18/18) (0.39-4.07)	K-39, Wojta Farm 3.46 mi. N	2.15 (3/3) (0.42-5.30)	1.52 (6/6) (0.42-5.3)	0
	K-40	0.50	6.99 (18/18) (5.61-9.81)	K-5, Paplham Farm 3.2 NNW	6.41 (3/3) (4.81-7.88)	5.87 (6/6) (5.32-7.88)	0
	Nb-95	0.012	< LLD	-	-	< LLD	0
	Zr-95	0.020	< LLD	-	-	< LLD	0
	Ru-103	0.009	< LLD		-	< LLD	0
	Ru-106	0.10	< LLD	-	-	< LLD	0
	Cs-134	0.012	< LLD	-	-	< LLD	0
	Cs-137	0.014	< LLD	-	-	< LLD	0
	Ce-141	0.024	< LLD	-	-	< LLD	0
	Ce-144	0.084	< LLD	-	-	< LLD	0
Soil (pCi/gdry)	GA 14	4.6	7.03 (10/10) (5.53-8.90)	K-34, Struck Farm 2.7 N	8.06 (2/2) (7.26-8.86)	6.88 (3/4) (5.88-8.72)	0
	GB 14	2.0	24.65 (10/10) (18.43-30.64)	K-39, Wojta Farm 3.46 mi. N	28.66 (2/2) (26.68-30.64)	23.66 (4/4) (18.62-29.12)	0
	Sr-89 14	0.13	< LLD	-	-	< LLD	0
	Sr-90 14	0.047	< LLD	-	-	< LLD	0
	GS 14			-			
	Be-7	0.33	< LLD	-	-	< LLD	0
	K-40	1.4	18.73 (10/10) (17.03-20.98)	K-39, Wojta Farm 3.46 mi. N	19.80 (2/2) (19.03-20.57)	17.14 (4/4) (14.54-19.87)	0
	Nb-95	0.083	< LLD	-	-	< LLD	0
	Zr-95	0.074	< LLD	-	-	< LLD	0
	Ru-103	0.062	< LLD		-	< LLD	0
	Ru-106	0.19	< LLD	-	-	< LLD	0
	Cs-134	0.023	< LLD	-	-	< LLD	0
	Cs-137	0.023	0.11 (10/10) (0.06-0.16)	K-5, Paplham Farm 3.2 NNW	0.13 (2/2) (0.10-0.16)	0.11 (4/4) (0.08-0.13)	0
	Ce-141	0.12	< LLD	-	-	< LLD	0
	Ce-144	0.17	< LLD	-	-	< LLD	0

Table 4.5 Environmental Radiation Monitoring Program Summary.

Name of Facility: Kewaunee Power Station — Docket No. 50-305
Location of Facility: Kewaunee County, Wisconsin (County, State) — Reporting Period: January-December, 2015

Sample Type (Units)	Type and Number of Analyses[a]	LLD[b]	Indicator Locations Mean (F)[c] Range[c]	Location with Highest Annual Mean: Location[d]	Location with Highest Annual Mean: Mean (F)[c] Range[c]	Control Locations Mean (F)[c] Range[c]	Number Non-Routine Results[e]
Surface Water	GB (TR) 99	1.3	4.2 (75/75) (0.7-24.9)	K-1k, Drainage Pond 0.60 SW	8.4 (9/9) (1.6-24.9)	1.4 (24/24) (0.6-2.7)	0
(pCi/L)	GS 99						
	Mn-54	15	< LLD	-	-	< LLD	0
	Fe-59	30	< LLD	-	-	< LLD	0
	Co-58	15	< LLD	-	-	< LLD	0
	Co-60	15	< LLD	-	-	< LLD	0
	Zn-65	30	< LLD	-	-	< LLD	0
	Zr-Nb-95	15	< LLD	-	-	< LLD	0
	Cs-134	10	< LLD	-	-	< LLD	0
	Cs-137	10	< LLD	-	-	< LLD	0
	Ba-La-140	15	< LLD	-	-	< LLD	0
	H-3 35	153	< LLD	-	-	< LLD	0
	Sr-89 35	1.5	< LLD	-	-	< LLD	0
	Sr-90 35	0.8	< LLD	-	-	< LLD	0
	K-40 99	0.87	3.4 (75/75) (1.1-13.3)	K-1k, Drainage Pond 0.60 SW	7.1 (9/9) (3.7-13.3)	1.2 (24/24) (1.1-1.3)	0
Fish (Flesh) (pCi/gwet)	GB 3	0.5	3.63 (3/3) (3.00-4.32)	K-1d, Cond. Discharge 0.10 mi. E	3.63 (3/3) (3.00-4.32)	None	0
	GS 3						
	K-40	0.65	3.28 (2/3) (3.21-3.35)	K-1d, Cond. Discharge 0.10 mi. E	3.28 (2/3) (3.21-3.35)	None	0
	Mn-54	0.015	< LLD	-	-	None	0
	Fe-59	0.070	< LLD	-	-	None	0
	Co-58	0.028	< LLD	-	-	None	0
	Co-60	0.017	< LLD	-	-	None	0
	Cs-134	0.018	< LLD	-	-	None	0
	Cs-137	0.016	0.036 (1/3)	K-1d, Cond. Discharge 0.10 mi. E	0.036 (1/3)	None	0
Fish (Bones) (pCi/gwet)	GB 3	0.5	3.54 (3/3) (2.75-4.91)	K-1d, Cond. Discharge 0.10 mi. E	3.54 (3/3) (2.75-4.91)	None	0
	Sr-89 3	0.54	< LLD	-	-	None	0
	Sr-90 3	0.07	0.17 (3/3) (0.15-0.18)	K-1d, Cond. Discharge 0.10 mi. E	0.17 (3/3) (0.15-0.18)	None	0 0

Table 4.5 Environmental Radiation Monitoring Program Summary.

Name of Facility Kewaunee Power Station
Location of Facility Kewaunee County, Wisconsin (County, State)
Docket No. 50-305
Reporting Period January-December, 2015

Sample Type (Units)	Type and Number of Analyses[a]	LLD[b]	Indicator Locations Mean (F)[c] Range[c]	Location with Highest Annual Mean		Control Locations Mean (F)[c] Range[c]	Number Non-Routine Results[e]
				Location[d]	Mean (F)[c] Range[c]		
Aquatic Slime (pCi/gwet)	GB 14	0.10	4.78 (12/12) (1.43-7.65)	K-14, Two Creeks Park 2.6 S	6.42 (2/2) (6.14-6.70)	4.24 (2/2) (2.59-5.89)	0
	Sr-89 14	0.161	< LLD	-	-	< LLD	0
	Sr-90 14	0.035	0.074 (1/12)	K-14, Two Creeks Park 2.6 mi S	0.074 (1/2)	< LLD	0
	GS 14						
	Be-7	0.08	0.60 (10/12) (0.21-2.15)	K-14, Two Creeks Park 2.6 S	1.39 (2/2) (0.63-2.15)	0.59 (2/2) (0.44-0.73)	0
	K-40	0.5	3.57 (12/12) (1.12-6.22)	K-1a, North Creek 0.62 N	4.92 (2/2) (3.62-6.22)	3.24 (2/2) (1.49-4.98)	0
	Mn-54	0.008	< LLD	-	-	< LLD	0
	Co-58	0.007	< LLD	-	-	< LLD	0
	Co-60	0.007	0.010 (1/12)	K-1d, Cond. Discharge 0.10 E	0.010 (1/2)	< LLD	0
	Nb-95	0.009	< LLD	-	-	< LLD	0
	Zr-95	0.013	< LLD	-	-	< LLD	0
	Ru-103	0.009	< LLD	-	-	< LLD	0
	Ru-106	0.06	< LLD	-	-	< LLD	0
	Cs-134	0.007	< LLD	-	-	< LLD	0
	Cs-137	0.008	0.014 (6/12) (0.009-0.031)	K-14, Two Creeks Park 2.6 mi S	0.022 (1/2) (0.012-0.031)	< LLD	0
	Ce-141	0.020	< LLD	-	-	< LLD	0
	Ce-144	0.04	< LLD	-	-	< LLD	0
Bottom Sediments (pCi/gdry)	GB 10	1.0	8.68 (8/8) (5.65-11.69)	K-9, Rostok Intake 11.5 NNE	18.28 (2/2) (16.09-20.46)	18.28 (2/2) (16.09-20.46)	0
	Sr-89 10	0.076	< LLD	-	-	< LLD	0
	Sr-90 10	0.028	< LLD	-	-	0.054 (1/2)	0
	GS 10						
	K-40	0.5	6.20 (8/8) (4.71-7.87)	K-9, Rostok Intake 11.5 NNE	10.70 (2/2) (9.32-12.08)	10.70 (2/2) (9.32-12.08)	0
	Co-58	0.031	< LLD	-	-	< LLD	0
	Co-60	0.017	< LLD	-	-	< LLD	0
					-	< LLD	0
	Cs-134	0.017	< LLD	-	-	< LLD	0
	Cs-137	0.016	0.019 (1/12)	K-9, Rostok Intake 11.5 NNE	0.052 (2/2) (0.050-0.054)	0.052 (2/2) (0.050-0.054)	0

[a] GA = gross alpha, GB = gross beta, GS = gamma spectroscopy, TR = total residue.
[b] LLD = nominal lower limit of detection based on a 4.66 sigma counting error for background sample.
[c] Mean and range are based on detectable measurements only (i.e., >LLD) Fraction of detectable measurements at specified locations is indicated in parentheses (F).
[d] Locations are specified by station code (Table 4.1) and distance (miles) and direction relative to reactor site.
[e] Non-routine results are those which exceed ten times the control station value. If no control station value is available, the result is considered non-routine if it exceeds ten times the preoperational value for the location.

Table 4.6 Land Use Census

The following table lists an inventory of residence, gardens ≥ 500 ft^2 and milk animals found nearest to the plant in each of the 10 meteorological sectors within a five mile radius of the Kewaunee Power Station. (Figure 4-1)

Sector	Township No.	Residence	Garden	Milk Animals	Distance From Plant (miles)	Location ID
A	1			X	4.62	
A	12		X		3.71	
A	24	X			1.12	
B	18			X	2.70	K-34
B	24	X			1.01	K-10
B	18		X		2.12	
R	23		X	X	2.16	
R	26	X			0.96	K-11
Q	23	X			1.27	
Q	23		X	X	1.53	K-27
P	27		X	X	2.45	K-38
P	26	X			1.35	
N	26		X		1.03	
N	28			X	2.37	
N	35	X			0.94	
M	3		X		2.47	
M	35	X			1.38	
M	4			X	2.89	
L	35	X	X		1.00	
L	4			X	3.26	
K	15			X	3.40	
K	36	X	X		0.91	
J	11	X	X	(Note 2)	2.72	

Note 1. Bold Type denotes change from previous census.
Note 2. There were no milk animals located in Sector J within five miles of the Kewaunee Power Station.

No changes to the nearest residence, nearest garden or nearest milk animal locations were identified.

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APPENDIX A

INTERLABORATORY COMPARISON PROGRAM RESULTS

NOTE: Environmental Inc., Midwest Laboratory participates in intercomparison studies administered by Environmental Resources Associates, and serves as a replacement for studies conducted previously by the U.S. EPA Environmental Monitoring Systems Laboratory, Las Vegas, Nevada. Results are reported in Appendix A. TLD Intercomparison results, in-house spikes, blanks, duplicates and mixed analyte performance evaluation program results are also reported. Appendix A is updated four times a year; the complete Appendix is included in March, June, September and December monthly progress reports only.

January, 2015 through December, 2015

Appendix A

Interlaboratory 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 environmental sample crosscheck program administered by Environmental Resources Associates, serving as a replacement for studies conducted previously by the U.S. EPA Environmental Monitoring Systems Laboratory, Las Vegas, Nevada.

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

Table A-3 lists results of the analyses on 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-4 lists results of the analyses on in-house "blank" samples for the past twelve months. Data for previous years available upon request.

Table A-5 lists REMP specific analytical results from the in-house "duplicate" program for the past twelve months. Acceptance is based on the difference of the results being less than the sum of the errors. Complete analytical data for duplicate analyses is available upon request.

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

Results in Table A-7 were obtained through participation in the environmental sample crosscheck program administered by Environmental Resources Associates, serving as a replacement for studies conducted previously by the Environmental Measurement Laboratory Quality Assessment Program (EML).

Attachment A lists the laboratory precision at the 1 sigma level for various analyses. The acceptance criteria in Table A-3 is set at ± 2 sigma.

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

Attachment A

ACCEPTANCE CRITERIA FOR "SPIKED" SAMPLES

LABORATORY PRECISION: ONE STANDARD DEVIATION VALUES FOR VARIOUS ANALYSES[a]

Analysis	Level	One standard deviation for single determination
Gamma Emitters	5 to 100 pCi/liter or kg	5.0 pCi/liter
	> 100 pCi/liter or kg	5% of known value
Strontium-89[b]	5 to 50 pCi/liter or kg	5.0 pCi/liter
	> 50 pCi/liter or kg	10% of known value
Strontium-90[b]	2 to 30 pCi/liter or kg	5.0 pCi/liter
	> 30 pCi/liter or kg	10% of known value
Potassium-40	≥ 0.1 g/liter or kg	5% of known value
Gross alpha	≤ 20 pCi/liter	5.0 pCi/liter
	> 20 pCi/liter	25% of known value
Gross beta	≤ 100 pCi/liter	5.0 pCi/liter
	> 100 pCi/liter	5% of known value
Tritium	≤ 4,000 pCi/liter	$\pm 1\sigma = 169.85 \times (\text{known})^{0.0933}$
	> 4,000 pCi/liter	10% of known value
Radium-226,-228	≥ 0.1 pCi/liter	15% of known value
Plutonium	≥ 0.1 pCi/liter, gram, or sample	10% of known value
Iodine-131, Iodine-129[b]	≤ 55 pCi/liter	6 pCi/liter
	> 55 pCi/liter	10% of known value
Uranium-238, Nickel-63[b] Technetium-99[b]	≤ 35 pCi/liter	6 pCi/liter
	> 35 pCi/liter	15% of known value
Iron-55[b]	50 to 100 pCi/liter	10 pCi/liter
	> 100 pCi/liter	10% of known value
Other Analyses [b]	---	20% of known value

[a] From EPA publication, "Environmental Radioactivity Laboratory Intercomparison Studies Program, Fiscal Year, 1981-1982, EPA-600/4-81-004.

[b] Laboratory limit.

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

Lab Code	Date	Analysis	Concentration (pCi/L) Laboratory Result [b]	ERA Result [c]	Control Limits	Acceptance
ERW-1444	4/6/2015	Sr-89	59.71 ± 5.44	63.20	51.10 - 71.20	Pass
ERW-1444	4/6/2015	Sr-90	43.41 ± 2.43	41.90	30.80 - 48.10	Pass
ERW-1448	4/6/2015	Ba-133	77.75 ± 4.69	82.50	69.30 - 90.80	Pass
ERW-1448	4/6/2015	Cs-134	68.82 ± 3.08	75.70	61.80 - 83.30	Pass
ERW-1448	4/6/2015	Cs-137	191.9 ± 5.9	189.0	170.0 - 210.0	Pass
ERW-1448	4/6/2015	Co-60	85.05 ± 4.59	84.50	76.00 - 95.30	Pass
ERW-1448	4/6/2015	Zn-65	196.0 ± 12.0	203.0	183.0 - 238.0	Pass
ERW-1450	4/6/2015	Gr. Alpha	34.05 ± 1.90	42.60	22.10 - 54.00	Pass
ERW-1450	4/6/2015	G. Beta	26.93 ± 1.12	32.90	21.30 - 40.60	Pass
ERW-1453	4/6/2015	I-131	22.47 ± 0.83	23.80	19.70 - 28.30	Pass
ERW-1456	4/6/2015	Ra-226	8.20 ± 0.56	8.43	6.33 - 9.90	Pass
ERW-1456	4/6/2015	Ra-228	5.00 ± 0.67	4.39	2.56 - 6.01	Pass
ERW-1456	4/6/2015	Uranium	5.98 ± 0.31	6.59	4.99 - 7.83	Pass
ERW-1461	4/6/2015	H-3	3,254 ± 180	3280	2,770 - 3,620	Pass
ERW-5528	10/5/2015	Sr-89	34.76 ± 0.06	35.70	26.70 - 42.50	Pass
ERW-5528	10/5/2015	Sr-90	29.23 ± 0.06	31.10	22.70 - 36.10	Pass
ERW-5531	10/5/2015	Ba-133	30.91 ± 0.53	32.50	25.90 - 36.70	Pass
ERW-5531	10/5/2015	Cs-134	57.40 ± 2.57	62.30	50.69 - 68.50	Pass
ERW-5531	10/5/2015	Cs-137	163.1 ± 4.8	157.0	141.0 - 175.0	Pass
ERW-5531	10/5/2015	Co-60	73.41 ± 1.72	71.10	64.00 - 80.70	Pass
ERW-5531	10/5/2015	Zn-65	138.9 ± 5.7	126.0	113.0 - 149.0	Pass
ERW-5534	10/5/2015	Gr. Alpha	29.99 ± 0.08	51.60	26.90 - 64.70	Pass
ERW-5534	10/5/2015	G. Beta	27.52 ± 0.04	36.60	24.10 - 44.20	Pass
ERW-5537	10/5/2015	I-131	25.54 ± 0.60	26.30	21.90 - 31.00	Pass
ERW-5540	10/5/2015	Ra-226	7.32 ± 0.37	7.29	5.49 - 8.63	Pass
ERW-5540 [d]	10/5/2015	Ra-228	7.80 ± 0.02	4.25	2.46 - 5.85	Fail
ERW-5540 [e]	10/5/2015	Ra-228	4.45 ± 0.96	4.25	2.46 - 5.85	Pass
ERW-5540	10/5/2015	Uranium	53.30 ± 0.55	56.20	45.70 - 62.40	Pass
ERW-5543	10/5/2015	H-3	21,260 ± 351	21,300	18,700 - 23,400	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 Resources Associates (ERA).

[b] Unless otherwise indicated, the laboratory result is given as the mean ± standard deviation for three determinations.

[c] Results are presented as the known values, expected laboratory precision (1 sigma, 1 determination) and control limits as provided by ERA.

[d] Ra-228 spike was at a level close to the detection level. The high result was likely caused by interference from short-lived Rn-222 daughters.

[e] The result of reanalysis (Compare to original result, footnoted "e" above).

TABLE A-2.1. Thermoluminescent Dosimetry, (TLD, $CaSO_4$: Dy Cards). [a]

Lab Code	Irradiation Date	Description	Known Value (mR)	Lab Result (mR)	Control Limits	Acceptance
Environmental, Inc.						
2015-1	6/24/2015	30 cm.	98.81	103.67 ± 6.05	69.20 - 128.50	Pass
2015-1	6/24/2015	30 cm.	98.81	111.32 ± 15.97	69.20 - 128.50	Pass
2015-1	6/24/2015	60 cm.	24.70	27.23 ± 1.33	17.30 - 32.10	Pass
2015-1	6/24/2015	60 cm.	24.70	26.98 ± 4.98	17.30 - 32.10	Pass
2015-1	6/24/2015	120 cm.	6.18	6.71 ± 1.77	4.30 - 8.00	Pass
2015-1	6/24/2015	120 cm.	6.18	6.78 ± 0.38	4.30 - 8.00	Pass
2015-1	6/24/2015	120 cm.	6.18	6.43 ± 2.00	4.30 - 8.00	Pass
2015-1	6/24/2015	150 cm.	3.95	4.13 ± 0.72	2.80 - 5.10	Pass
2015-1	6/24/2015	150 cm.	3.95	4.12 ± 1.36	2.80 - 5.10	Pass
2015-1	6/24/2015	150 cm.	3.95	4.50 ± 1.51	2.80 - 5.10	Pass
2015-1	6/24/2015	180 cm.	2.74	3.27 ± 0.28	1.90 - 3.60	Pass
2015-1	6/24/2015	180 cm.	2.74	3.05 ± 1.11	1.90 - 3.60	Pass
2015-1	6/24/2015	180 cm.	2.74	3.14 ± 0.18	1.90 - 3.60	Pass

TABLE A-2.2 Thermoluminescent Dosimetry, (TLD, $CaSO_4$: Dy Cards). [b]

			mrem			
Lab Code	Irradiation Date	Description	Delivered Dose	Reported Dose	Performance [c] Quotient (P)	Acceptance [d]
Environmental, Inc.						
2015-2	12/15/2015	Spike 1	138.0	118.5 ± 2.1	-0.14	Pass
2015-2	12/15/2015	Spike 2	138.0	120.0 ± 1.6	-0.13	Pass
2015-2	12/15/2015	Spike 3	138.0	121.9 ± 1.9	-0.12	Pass
2015-2	12/15/2015	Spike 4	138.0	124.5 ± 3.3	-0.10	Pass
2015-2	12/15/2015	Spike 5	138.0	126.5 ± 3.2	-0.08	Pass
2015-2	12/15/2015	Spike 6	138.0	140.0 ± 4.2	0.01	Pass
2015-2	12/15/2015	Spike 7	138.0	128.2 ± 1.2	-0.07	Pass
2015-2	12/15/2015	Spike 8	138.0	128.0 ± 4.0	-0.07	Pass
2015-2	12/15/2015	Spike 9	138.0	124.9 ± 5.1	-0.09	Pass
2015-2	12/15/2015	Spike 10	138.0	122.9 ± 3.0	-0.11	Pass
2015-2	12/15/2015	Spike 11	138.0	123.3 ± 3.0	-0.11	Pass
2015-2	12/15/2015	Spike 12	138.0	119.0 ± 3.4	-0.14	Pass
2015-2	12/15/2015	Spike 13	138.0	123.0 ± 2.7	-0.11	Pass
2015-2	12/15/2015	Spike 14	138.0	125.4 ± 2.0	-0.09	Pass
2015-2	12/15/2015	Spike 15	138.0	122.0 ± 3.1	-0.12	Pass
2015-2	12/15/2015	Spike 16	138.0	120.8 ± 2.0	-0.12	Pass
2015-2	12/15/2015	Spike 17	138.0	118.8 ± 1.1	-0.14	Pass
2015-2	12/15/2015	Spike 18	138.0	117.0 ± 2.3	-0.15	Pass
2015-2	12/15/2015	Spike 19	138.0	120.8 ± 2.6	-0.12	Pass
2015-2	12/15/2015	Spike 20	138.0	122.6 ± 3.0	-0.11	Pass
Mean (Spike 1-20)				123.4	0.11	Pass
Standard Deviation (Spike 1-20)				5.0	0.04	Pass

[a] TLD's were irradiated at Environmental Inc. Midwest Laboratory. (Table A-2.1)

[b] 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.(Table A-2.2)

[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 mean of the P values, nor the standard deviation of the P values exceed 0.15.

e Tables A2.1 and A2.2 assume 1 roentgen = 1 rem (per NRC -Health Physics Positions Based on 10 CFR Part 20 - Question 96 - Page Last Reviewed/Updated Thursday, October 01, 2015).

TABLE A-3. In-House "Spiked" Samples

Lab Code [b]	Date	Concentration (pCi/L)[a] Analysis	Laboratory results 2s, n=1 [c]	Known Activity	Control Limits [d]	Acceptance
W-020315	2/3/2015	Ra-226	16.19 ± 0.42	16.70	13.36 - 20.04	Pass
W-021215	2/12/2015	Gr. Alpha	18.38 ± 0.39	20.10	16.08 - 24.12	Pass
W-021215	2/12/2015	Gr. Beta	27.98 ± 0.32	30.90	24.72 - 37.08	Pass
SPW-687	2/27/2015	Ni-63	239.6 ± 3.5	202.4	161.9 - 242.9	Pass
SPAP-689	3/2/2015	Gr. Beta	42.37 ± 3.50	43.61	34.89 - 52.33	Pass
SPAP-691	3/2/2015	Cs-134	1.77 ± 0.61	1.90	1.52 - 2.28	Pass
SPAP-691	3/2/2015	Cs-137	83.02 ± 2.60	97.20	77.76 - 116.64	Pass
SPW-693	3/2/2015	Cs-134	44.30 ± 2.53	53.40	42.72 - 64.08	Pass
SPW-693	3/2/2015	Cs-137	74.82 ± 3.50	73.80	59.04 - 88.56	Pass
SPW-693	3/2/2015	Sr-89	87.45 ± 3.62	87.48	69.98 - 104.98	Pass
SPW-693	3/25/2015	Sr-90	37.22 ± 1.55	38.10	30.48 - 45.72	Pass
SPMI-697	3/2/2015	Cs-134	96.67 ± 7.74	107.00	85.60 - 128.40	Pass
SPMI-697	3/2/2015	Cs-137	78.51 ± 7.02	73.84	59.07 - 88.61	Pass
SPMI-697	3/2/2015	Sr-89	72.98 ± 4.86	87.48	69.98 - 104.98	Pass
SPMI-697	3/2/2015	Sr-90	39.17 ± 1.51	38.10	30.48 - 45.72	Pass
SPW-699	3/2/2015	H-3	59,592 ± 703	58,445	46,756 - 70,134	Pass
W-031115	3/11/2015	Ra-226	13.73 ± 0.35	16.70	13.36 - 20.04	Pass
W-030215	3/2/2015	Ra-228	32.79 ± 2.31	31.44	25.15 - 37.73	Pass
SPF-1040	3/16/2015	Cs-134	787.5 ± 9.2	840.0	672.0 - 1,008.0	Pass
SPF-1040	3/16/2015	Cs-137	2,599 ± 24	2,360	1,888 - 2,832	Pass
SPW-1036	3/25/2015	Fe-55	1,792 ± 63	1961	1,569 - 2,353	Pass
SPW-1374	4/6/2015	U-238	46.03 ± 2.25	41.70	25.02 - 58.38	Pass
W-040815	4/8/2015	Gr. Alpha	20.18 ± 0.42	20.10	16.08 - 24.12	Pass
W-040815	4/8/2015	Gr. Beta	29.70 ± 0.33	30.90	24.72 - 37.08	Pass
SPW-1038	4/13/2015	C-14	3,497 ± 9	4,734	2,840 - 6,628	Pass
W-2165	4/20/2015	H-3	5550 ± 226	5,780	3,468 - 8,092	Pass
W-2165	4/20/2015	Sr-89	90.70 ± 8.20	108.70	65.22 - 152.18	Pass
W-2165	4/20/2015	Sr-90	76.80 ± 2.00	75.90	45.54 - 106.26	Pass
W-2165	4/20/2015	Cs-134	62.40 ± 6.40	57.30	34.38 - 80.22	Pass
W-2165	4/20/2015	Cs-137	91.30 ± 7.70	84.00	50.40 - 117.60	Pass
W-2392	4/13/2015	H-3	5032 ± 214	5780	3468 - 8092	Pass
W-2392	4/13/2015	Ni-63	222.4 ± 3.8	202.0	121.2 - 282.8	Pass
W-2392	4/13/2015	Cs-134	53.26 ± 5.01	57.30	34.38 - 80.22	Pass
W-2392	4/13/2015	Cs-137	91.90 ± 7.76	84.20	50.52 - 117.88	Pass
W-042415	4/24/2015	Ra-226	12.52 ± 0.39	16.70	10.02 - 23.38	Pass
W-050715	5/7/2015	Gr. Alpha	19.05 ± 0.41	20.10	12.06 - 28.14	Pass
W-050715	5/7/2015	Gr. Beta	27.30 ± 0.32	30.90	18.54 - 43.26	Pass
W-061215	6/12/2015	Gr. Alpha	20.72 ± 0.44	20.10	12.06 - 28.14	Pass
W-061215	6/12/2015	Gr. Beta	28.51 ± 0.33	30.90	18.54 - 43.26	Pass
U-2982	6/9/2015	Gr. Beta	500.1 ± 5.1	604.0	362.4 - 845.6	Pass
U-3200	6/9/2015	H-3	2229 ± 424	2346	1408 - 3284	Pass
W-70915	7/9/2015	Gr. Alpha	18.76 ± 0.40	20.10	12.1 - 28.1	Pass
W-70915	7/9/2015	Gr. Beta	29.71 ± 0.33	30.90	18.5 - 43.3	Pass
SPAP-3859	7/21/2015	Gr. Beta	41.59 ± 0.12	43.61	26.17 - 61.05	Pass
SPAP-3861	7/21/2015	Cs-134	1.69 ± 0.60	1.69	1.0 - 2.4	Pass

TABLE A-3. In-House "Spiked" Samples

Lab Code [b]	Date	Concentration (pCi/L)[a] Analysis	Laboratory results 2s, n=1 [c]	Known Activity	Control Limits [d]	Acceptance
SPAP-3861	7/21/2015	Cs-137	93.71 ± 2.64	96.45	57.87 - 135.03	Pass
SPMI-3863	7/21/2015	Cs-134	38.21 ± 5.12	47.02	28.21 - 65.83	Pass
SPMI-3863	7/21/2015	Cs-137	78.65 ± 7.94	73.18	43.91 - 102.45	Pass
SPMI-3863	7/21/2015	Sr-90	41.05 ± 1.62	37.78	22.67 - 52.89	Pass
SPW-3871	7/21/2015	Cs-134	45.59 ± 6.39	47.02	28.21 - 65.83	Pass
SPW-3871	7/21/2015	Cs-137	78.73 ± 7.03	73.18	43.91 - 102.45	Pass
SPW-3871	7/21/2015	Sr-90	38.36 ± 1.58	37.78	22.67 - 52.89	Pass
SPW-3873	7/21/2015	H-3	60,034 ± 671	57,199	34,319 - 80,079	Pass
SPW-3875	7/21/2015	Ni-63	451.3 ± 3.3	403.7	242.2 - 565.2	Pass
SPW-3877	7/21/2015	Tc-99	483.0 ± 8.3	539.1	323.5 - 754.7	Pass
SPMI-3879	7/21/2015	C-14	4,921 ± 19	4,736	2,842 - 6,630	Pass
SPSO-4037	7/21/2015	Ni-63	42,458 ± 309	40,370	24,222 - 56,518	Pass
SPW-072515	7/17/2015	Ra-228	35.48 ± 3	31.44	18.86 - 44.02	Pass
SPF-4104	7/29/2015	Cs-134	661.5 ± 115.9	740.0	444.0 - 1036.0	Pass
SPF-4104	7/29/2015	Cs-137	2,469 ± 59	2,340	1,404 - 3,276	Pass
SPW-81015	8/10/2015	Gr. Alpha	21.59 ± 0.46	20.10	12.06 - 28.14	Pass
SPW-81015	8/10/2015	Gr. Beta	27.58 ± 0.32	30.90	18.54 - 43.26	Pass
SPW-81315	8/13/2015	Ra-226	15.05 ± 0.36	16.70	10.02 - 23.38	Pass
SPW-90615	9/6/2015	Gr. Alpha	18.32 ± 0.40	20.10	12.06 - 28.14	Pass
SPW-90615	9/6/2015	Gr. Beta	29.43 ± 0.33	30.90	18.54 - 43.26	Pass
W-091415	9/14/2015	Gr. Alpha	19.35 ± 0.51	20.10	12.06 - 28.14	Pass
W-091415	9/14/2015	Gr. Beta	31.53 ± 0.35	30.90	18.54 - 43.26	Pass
W-100815	10/8/2015	Ra-228	12.27 ± 0.33	16.70	10.02 - 23.38	Pass
W-100615	10/6/2015	Gr. Alpha	20.62 ± 0.43	20.10	12.06 - 28.14	Pass
W-100615	10/6/2015	Gr. Beta	29.35 ± 0.33	30.90	18.54 - 43.26	Pass
W-5277	10/16/2015	H-3	5,224 ± 218	5,466	3,280 - 7,652	Pass
W-5277	10/16/2015	Cs-134	99.40 ± 6.64	99.20	59.52 - 138.88	Pass
W-5277	10/16/2015	Cs-137	89.60 ± 6.64	83.20	49.92 - 116.48	Pass
W-110415	11/4/2015	Ra-226	12.27 ± 0.33	16.70	10.02 - 23.38	Pass
W-111115	11/11/2015	Ra-228	31.78 ± 2.48	31.44	18.86 - 44.02	Pass
W-6086,6087	11/18/2015	H-3	10,882 ± 309	11,231	6,738 - 15,723	Pass
W-6086,6087	11/18/2015	Cs-134	92.98 ± 7.29	96.25	57.75 - 134.75	Pass
W-6086,6087	11/18/2015	Cs-137	76.65 ± 7.81	82.94	49.76 - 116.12	Pass
W-112515	11/25/2015	Gr. Alpha	20.91 ± 0.52	20.10	12.06 - 28.14	Pass
W-112515	11/25/2015	Gr. Beta	31.59 ± 0.35	30.90	18.54 - 43.26	Pass
W-120715	12/7/2015	Fe-55	2,431 ± 97	2,319	1,391 - 3,247	Pass
W-120815	12/8/2015	Gr. Alpha	20.72 ± 0.43	20.10	12.06 - 28.14	Pass
W-120815	12/8/2015	Gr. Beta	29.50 ± 0.33	30.90	18.54 - 43.26	Pass
W-121515	12/15/2015	Ra-226	14.77 ± 0.42	16.70	10.02 - 23.38	Pass

[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 (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 established from the precision values listed in Attachment A of this report, adjusted to ± 2s.

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

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

Lab Code	Sample Type	Date	Analysis[b]	Concentration (pCi/L)[a]		
				Laboratory results (4.66σ)		Acceptance
				LLD	Activity[c]	Criteria (4.66 σ)
W-020315	Water	2/3/2015	Ra-226	0.03	0.03 ± 0.02	1
W-021215	Water	2/12/2015	Gr. Alpha	0.47	-0.37 ± 0.30	2
W-021215	Water	2/12/2015	Gr. Beta	0.76	-0.62 ± 0.51	4
SPW-686	Water	2/27/2015	Ni-63	2.36	-0.74 ± 1.42	20
SPAP-688	Air Particulate	3/2/2015	Gr. Beta	0.003	-0.001 ± 0.002	0.01
SPAP-690	Air Particulate	3/2/2015	Cs-134	0.006	0.428 ± 0.927	0.05
SPAP-690	Air Particulate	3/2/2015	Cs-137	0.006	-0.785 ± 1.146	0.05
W-030215	Water	3/2/2015	Ra-228	0.76	0.22 ± 0.38	2
SPW-692	Water	3/2/2015	Cs-134	6.70	-1.57 ± 3.55	10
SPW-692	Water	3/2/2015	Cs-137	6.18	-0.15 ± 3.20	10
SPW-692	Water	3/2/2015	Sr-89	0.61	-0.51 ± 0.51	5
SPW-692	Water	3/2/2015	Sr-90	0.60	0.38 ± 0.33	1
SPMI-696	Milk	3/2/2015	Cs-134	3.75	-0.25 ± 2.24	10
SPMI-696	Milk	3/2/2015	Cs-137	4.36	-0.25 ± 2.24	10
SPMI-696	Milk	3/2/2015	Sr-89	0.80	-0.40 ± 0.84	5
SPMI-696	Milk	3/2/2015	Sr-90	0.49	0.98 ± 0.32	1
SPW-698	Water	3/2/2015	H-3	144.0	28.6 ± 88.9	200
SPW-1035	Water	3/16/2015	Fe-55	599.7	72.6 ± 368.1	1000
SPW-1037	Water	3/16/2015	C-14	8.94	2.16 ± 5.47	200
SPF-1039	Fish	3/16/2015	Cs-134	13.54	-1.00 ± 6.80	100
SPF-1039	Fish	3/16/2015	Cs-137	9.80	4.87 ± 7.00	100
W-040615	Water	4/6/2015	Ra-226	0.04	0.01 ± 0.03	2
W-1373	Water	4/6/2015	U-238	0.08	0.01 ± 0.01	1
W-1375	Water	4/6/2015	Pu-238	0.03	0.00 ± 0.01	1
W-050715	Water	5/7/2015	Gr. Alpha	0.38	-0.10 ± 0.25	2
W-050715	Water	5/7/2015	Gr. Beta	0.74	-0.14 ± 0.51	4
W-061215	Water	6/12/2015	Gr. Alpha	0.42	-0.10 ± 0.29	2
W-061215	Water	6/12/2015	Gr. Beta	0.75	-0.04 ± 0.53	4
SPW-3858	Water	7/21/2015	Gr. Beta	0.003	0.004 ± 0.002	2
SPAP-3860	Air Particulate	7/21/2015	Cs-134	0.011	0.010 ± 0.005	0.05
SPAP-3860	Air Particulate	7/21/2015	Cs-137	0.009	0.000 ± 0.005	0.05
SPMI-3862	Milk	7/21/2015	Cs-134	3.13	1.56 ± 1.74	10
SPMI-3862	Milk	7/21/2015	Cs-137	3.20	1.69 ± 1.89	10
SPMI-3862	Milk	7/21/2015	Sr-89	2.17	-1.30 ± 2.05	5
SPMI-3862	Milk	7/21/2015	Sr-90	0.90	0.74 ± 0.50	1
SPW-3870	Water	7/21/2015	Cs-134	3.01	0.71 ± 1.66	10
SPW-3870	Water	7/21/2015	Cs-137	3.94	0.81 ± 1.86	10
SPW-3870	Water	7/21/2015	Sr-89	2.28	-0.42 ± 1.80	5
SPW-3870	Water	7/21/2015	Sr-90	0.84	0.25 ± 0.42	1

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

Lab Code	Sample Type	Date	Analysis[b]	Concentration (pCi/L)[a]		
				Laboratory results (4.66σ)		Acceptance
				LLD	Activity[c]	Criteria (4.66 σ)
SPW-3872	Water	7/21/2015	H-3	142.6	82.7 ± 79.4	200
SPW-3874	Water	7/21/2015	Ni-63	2.98	0.77 ± 1.82	20
SPW-3876	Water	7/21/2015	Tc-99	5.49	-3.81 ± 3.26	10
SPW-3878	Water	7/21/2015	C-14	17.06	8.52 ± 10.54	200
SPSO-4036	Soil	7/21/2015	Ni-63	135.7	51.3 ± 83.0	1000
SPF-4103	Fish	7/29/2015	Cs-134	14.17	-37.70 ± 9.67	100
SPF-4103	Fish	7/29/2015	Cs-137	12.39	1.13 ± 8.06	100
W-081015	Water	8/10/2015	Gr. Alpha	0.48	-0.10 ± 0.33	2
W-081015	Water	8/10/2015	Gr. Beta	0.78	-0.18 ± 0.54	4
W-081815	Water	8/18/2015	Ra-226	0.03	0.03 ± 0.02	2
W-090615	Water	9/6/2015	Gr. Alpha	0.40	0.00 ± 0.28	2
W-090615	Water	9/6/2015	Gr. Beta	0.77	0.22 ± 0.54	4
W-091415	Water	9/14/2015	Gr. Alpha	0.41	0.10 ± 0.30	2
W-091415	Water	9/14/2015	Gr. Beta	0.77	0.04 ± 0.54	4
W-100615	Water	10/6/2015	Gr. Alpha	0.41	-0.15 ± 0.27	2
W-100615	Water	10/6/2015	Gr. Beta	0.75	-0.12 ± 0.52	4
W-112515	Water	11/25/2015	Gr. Alpha	0.42	0.05 ± 0.30	2
W-112515	Water	11/25/2015	Gr. Beta	0.78	-0.31 ± 0.54	4
W-120815	Water	12/8/2015	Gr. Alpha	0.42	-0.08 ± 0.29	2
W-120815	Water	12/8/2015	Gr. Beta	0.76	0.17 ± 0.54	4
W-121515	Water	12/15/2015	Ra-226	0.01	0.01 ± 0.01	2

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

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

[c] Activity reported is a net activity result.

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

Lab Code	Date	Analysis	Concentration (pCi/L)[a] First Result	Second Result	Averaged Result	Acceptance
CF-62,63	1/7/2015	Gr. Beta	5.72 ± 0.12	5.78 ± 0.12	5.75 ± 0.42	Pass
CF-62,63	1/7/2015	Be-7	0.915 ± 0.135	0.919 ± 0.102	0.917 ± 0.15	Pass
CF-62,63	1/7/2015	K-40	3.97 ± 0.28	3.88 ± 0.23	3.92 ± 0.33	Pass
CF-62,63	1/7/2015	Sr-90	0.017 ± 0.006	0.011 ± 0.006	0.014 ± 0.004	Pass
SG-83,84	1/12/2015	K-40	10.11 ± 1.42	9.69 ± 1.20	9.90 ± 1.16	Pass
SG-83,84	1/12/2015	Tl-208	0.57 ± 0.07	0.56 ± 0.06	0.57 ± 0.05	Pass
SG-83,84	1/12/2015	Pb-212	1.73 ± 0.10	1.58 ± 0.09	1.65 ± 0.13	Pass
SG-83,84	1/12/2015	Pb-214	13.33 ± 0.33	13.88 ± 0.28	13.61 ± 0.22	Pass
SG-83,84	1/12/2015	Bi-214	13.48 ± 0.39	13.45 ± 0.29	13.47 ± 0.24	Pass
SG-83,84	1/12/2015	Ra-226	25.68 ± 2.19	26.22 ± 1.53	25.95 ± 1.34	Pass
SG-83,84	1/12/2015	Ac-228	13.33 ± 0.59	12.86 ± 0.43	13.09 ± 0.36	Pass
AP-011215A/B	1/12/2015	Gr. Beta	0.025 ± 0.004	0.023 ± 0.004	0.024 ± 0.003	Pass
WW-315,316	1/27/2015	H-3	1,961 ± 178	1,868 ± 174	1,915 ± 124	Pass
DW-60010,60011	1/28/2015	Ra-226	1.25 ± 0.14	1.40 ± 0.15	1.33 ± 0.10	Pass
DW-60010,60011	1/28/2015	Ra-228	2.00 ± 0.66	1.39 ± 0.60	1.70 ± 0.45	Pass
SG-336,337	1/30/2015	Bi-214	6.63 ± 0.20	6.45 ± 0.45	6.54 ± 0.21	Pass
SG-336,337	1/30/2015	Pb-214	6.45 ± 0.19	6.45 ± 0.37	6.45 ± 0.21	Pass
SG-336,337	1/30/2015	Ac-228	4.43 ± 0.24	4.20 ± 0.58	4.32 ± 0.31	Pass
AP-020415A/B	2/4/2015	Gr. Beta	0.021 ± 0.004	0.019 ± 0.035	0.035 ± 0.020	Pass
AP-021115A/B	2/11/2015	Gr. Beta	0.034 ± 0.004	0.040 ± 0.047	0.037 ± 0.003	Pass
DW-60023,60024	2/26/2015	Ra-226	1.52 ± 0.15	1.51 ± 0.15	1.52 ± 0.11	Pass
DW-60023,60024	2/26/2015	Ra-228	0.97 ± 0.48	1.66 ± 0.58	1.32 ± 0.38	Pass
S-799,800	2/26/2015	K-40	11.96 ± 0.98	11.49 ± 0.82	11.72 ± 0.64	Pass
S-799,800	2/26/2015	Tl-208	0.36 ± 0.04	0.31 ± 0.04	0.34 ± 0.03	Pass
S-799,800	2/26/2015	Pb-212	0.92 ± 0.06	0.91 ± 0.06	0.91 ± 0.05	Pass
S-799,800	2/26/2015	Bi-212	1.26 ± 0.45	1.50 ± 0.40	1.38 ± 0.30	Pass
S-799,800	2/26/2015	Ac-228	1.35 ± 0.22	1.23 ± 0.17	1.29 ± 0.14	Pass
SG-834,835	2/2/2015	Gr. Alpha	113.3 ± 6.3	117.2 ± 2.8	115.2 ± 3.4	Pass
SG-834,835	2/2/2015	Gr. Beta	82.27 ± 2.79	84.33 ± 2.74	83.30 ± 1.96	Pass
DW-60031,60032	3/4/2015	Gr. Alpha	185.4 ± 7.4	177.0 ± 7.2	181.2 ± 5.2	Pass
DW-60036,60037	3/4/2015	Ra-226	6.89 ± 0.34	6.88 ± 0.32	6.89 ± 0.23	Pass
DW-60036,60037	3/4/2015	Ra-228	4.43 ± 0.73	4.41 ± 0.72	4.42 ± 0.51	Pass
DW-60048,60049	3/4/2015	Ra-226	0.84 ± 0.10	0.94 ± 0.11	0.89 ± 0.07	Pass
DW-60048,60049	3/4/2015	Ra-228	0.68 ± 0.41	1.42 ± 0.58	1.05 ± 0.36	Pass
AP-1169,1170	3/19/2015	Be-7	0.20 ± 0.02	0.24 ± 0.10	0.22 ± 0.07	Pass
DW-60069,60070	4/8/2015	Gr. Alpha	3.58 ± 0.88	3.92 ± 0.88	3.75 ± 0.62	Pass
AP-040915	4/9/2015	Gr. Beta	0.027 ± 0.005	0.023 ± 0.005	0.025 ± 0.003	Pass
WW-2394,2395	4/13/2015	H-3	1,628 ± 139	1,695 ± 141	1,662 ± 99	Pass
SG-1847,1848	4/20/2015	K-40	3.24 ± 1.18	1.99 ± 0.76	2.62 ± 0.70	Pass
SG-1847,1848	4/20/2015	Pb-214	5.80 ± 0.22	6.23 ± 0.76	6.02 ± 0.40	Pass
SG-1847,1848	4/20/2015	Ac-228	5.26 ± 0.51	5.00 ± 0.42	5.13 ± 0.33	Pass
XWW-2267,2268	4/23/2015	H-3	6,584 ± 244	6,164 ± 237	6,374 ± 170	Pass
XWW-2078,2079	4/27/2015	H-3	359.0 ± 89.6	418.7 ± 92.3	388.9 ± 64.3	Pass

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

Lab Code	Date	Analysis	Concentration (pCi/L)[a] First Result	Second Result	Averaged Result	Acceptance
XWW-2162,2163	4/28/2015	H-3	4,408 ± 201	4,242 ± 198	4,325 ± 141	Pass
SG-1868,1869	4/28/2015	Gr. Alpha	47.57 ± 3.63	43.61 ± 3.58	45.59 ± 2.55	Pass
SG-1868,1869	4/28/2015	Gr. Beta	50.90 ± 1.94	51.90 ± 2.02	51.40 ± 1.40	Pass
SG-1868,1869	4/28/2015	Pb-214	13.80 ± 0.52	13.54 ± 0.62	13.67 ± 0.40	Pass
SG-1868,1869	4/28/2015	Ra-228	20.10 ± 0.92	22.10 ± 1.29	21.10 ± 0.79	Pass
AP-042915	4/29/2015	Gr. Beta	0.014 ± 0.003	0.014 ± 0.003	0.014 ± 0.002	Pass
DW-60076,60077	5/4/2015	Ra-228	2.89 ± 0.61	2.45 ± 0.57	2.67 ± 0.42	Pass
AP-050515	5/5/2015	Gr. Beta	0.026 ± 0.004	0.025 ± 0.004	0.026 ± 0.003	Pass
AP-051115	5/11/2015	Gr. Beta	0.006 ± 0.005	0.010 ± 0.005	0.008 ± 0.004	Pass
DW-60087,60088	5/14/2015	Ra-226	1.58 ± 0.17	1.52 ± 0.17	1.55 ± 0.12	Pass
DW-60087,60088	5/14/2015	Ra-228	0.94 ± 0.50	0.94 ± 0.50	0.94 ± 0.35	Pass
SG-2436,2437	5/15/2015	Pb-214	22.90 ± 2.31	24.10 ± 2.43	23.50 ± 1.68	Pass
SG-2436,2437	5/15/2015	Ra-228	47.95 ± 0.61	47.80 ± 0.71	47.88 ± 0.47	Pass
SG-2436,2437	5/15/2015	Gr. Alpha	267.8 ± 7.9	254.6 ± 7.6	261.2 ± 5.5	Pass
SG-2458,2459	5/19/2015	Pb-214	75.00 ± 1.66	77.70 ± 1.75	76.35 ± 1.21	Pass
SG-2458,2459	5/19/2015	Ra-228	41.10 ± 0.92	40.80 ± 0.83	40.95 ± 0.62	Pass
DW-60095,60096	5/26/2015	Gr. Alpha	1.34 ± 0.69	0.91 ± 0.62	1.13 ± 0.46	Pass
AP-052715	5/27/2015	Gr. Beta	0.010 ± 0.003	0.010 ± 0.003	0.010 ± 0.002	Pass
S-2627,2628	5/29/2015	Pb-214	0.85 ± 0.07	0.85 ± 0.07	0.85 ± 0.05	Pass
S-2627,2628	5/29/2015	Ac-228	0.85 ± 0.14	1.08 ± 0.12	0.97 ± 0.09	Pass
S-2627,2628	5/29/2015	Cs-137	0.07 ± 0.02	0.07 ± 0.02	0.07 ± 0.01	Pass
S-2605,2606	6/1/2015	Ac-228	0.42 ± 0.06	0.38 ± 0.07	0.40 ± 0.05	Pass
S-2605,2606	6/1/2015	Ra-226	0.44 ± 0.03	0.49 ± 0.03	0.47 ± 0.02	Pass
S-2605,2606	6/1/2015	K-40	10.89 ± 0.51	11.40 ± 0.48	11.15 ± 0.35	Pass
S-2605,2606	6/1/2015	Cs-137	0.05 ± 0.01	0.05 ± 0.01	0.05 ± 0.01	Pass
S-2858,2859	6/2/2015	Cs-137	34.30 ± 16.05	40.66 ± 17.79	37.48 ± 11.98	Pass
S-2858,2859	6/2/2015	Be-7	1501 ± 264	1171 ± 214	1336 ± 170	Pass
S-2858,2859	6/2/2015	K-40	22,122 ± 658	20,987 ± 600	21,555 ± 445	Pass
AP-060315	6/3/2015	Gr. Beta	0.022 ± 0.004	0.021 ± 0.004	0.022 ± 0.003	Pass
DW-30107,30108	6/8/2015	Gr. Alpha	1.34 ± 0.82	1.47 ± 0.85	1.41 ± 0.59	Pass
SG-2900,2901	6/9/2015	Ac-228	10.22 ± 1.36	8.32 ± 1.07	9.27 ± 0.87	Pass
SG-2900,2901	6/9/2015	Pb-214	7.55 ± 0.43	7.27 ± 0.41	7.41 ± 0.30	Pass
AP-061515	6/15/2015	Gr. Beta	0.022 ± 0.004	0.021 ± 0.004	0.022 ± 0.003	Pass
XWW-3173,3174	6/18/2015	H-3	841.9 ± 123.6	799.3 ± 122.4	820.6 ± 87.0	Pass
AP-062215	6/22/2015	Gr. Beta	0.023 ± 0.004	0.018 ± 0.004	0.020 ± 0.003	Pass
S-3216,3217	6/24/2015	K-40	10.38 ± 0.51	10.51 ± 0.53	10.45 ± 0.37	Pass
S-3216,3217	6/24/2015	Be-7	3.65 ± 0.24	3.38 ± 0.27	3.52 ± 0.18	Pass
VE-3300,3301	6/24/2015	Be-7	0.78 ± 0.15	0.83 ± 0.23	0.81 ± 0.14	Pass
VE-3300,3301	6/24/2015	K-40	29.12 ± 0.62	29.36 ± 0.64	29.24 ± 0.45	Pass
AP-062915	6/29/2015	Gr. Beta	0.023 ± 0.005	0.023 ± 0.005	0.023 ± 0.003	Pass
WW-3632,3633	6/30/2015	H-3	5,169 ± 225	5,058 ± 223	5,114 ± 158	Pass

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

			Concentration (pCi/L)[a]			
Lab Code	Date	Analysis	First Result	Second Result	Averaged Result	Acceptance
AP-3822, 3823	7/1/2015	Be-7	0.075 ± 0.011	0.068 ± 0.012	0.072 ± 0.008	Pass
AP-3969, 3970	7/1/2015	Be-7	0.063 ± 0.008	0.064 ± 0.010	0.063 ± 0.006	Pass
WW-3632, 3633	7/6/2015	H-3	5,169 ± 225	5,058 ± 223	5,114 ± 159	Pass
W-4368, 4369	7/6/2015	Gr. Alpha	26.70 ± 4.00	24.10 ± 3.90	25.40 ± 2.79	Pass
W-4368, 4369	7/6/2015	Gr. Beta	34.62 ± 2.10	33.30 ± 2.02	33.96 ± 1.46	Pass
DW-60138, 60139	7/7/2015	Ra-226	0.07 ± 0.04	0.11 ± 0.05	0.09 ± 0.03	Pass
DW-60138, 60139	7/7/2015	Ra-228	1.04 ± 0.41	1.15 ± 0.47	1.10 ± 0.31	Pass
WW-4158, 4159	7/9/2015	H-3	138.8 ± 82.4	174.0 ± 84.1	156.4 ± 58.9	Pass
MI-2902, 2903	7/10/2015	K-40	1271 ± 118	1308 ± 115	1289 ± 82	Pass
SG-3533, 3534	7/10/2015	Gr. Alpha	238.0 ± 8.2	249.5 ± 8.5	243.8 ± 5.9	Pass
DW-60150, 60151	7/10/2015	Ra-226	1.53 ± 0.16	1.49 ± 0.12	1.51 ± 0.10	Pass
DW-60150, 60151	7/10/2015	Ra-228	2.68 ± 0.68	1.89 ± 0.62	2.29 ± 0.46	Pass
VE-3716, 3717	7/14/2015	K-40	3.85 ± 0.33	3.71 ± 0.31	3.78 ± 0.23	Pass
MI-3759, 3760	7/15/2015	K-40	1819 ± 127	1764 ± 140	1791 ± 94	Pass
MI-3759, 3760	7/15/2015	Sr-90	1.00 ± 0.36	0.61 ± 0.32	0.80 ± 0.24	Pass
AP-072115	7/21/2015	Gr. Beta	0.022 ± 0.004	0.027 ± 0.004	0.024 ± 0.003	Pass
VE-4053, 4054	7/21/2015	Be-7	0.52 ± 0.15	0.49 ± 0.11	0.50 ± 0.09	Pass
VE-4053, 4054	7/21/2015	K-40	8.00 ± 0.42	7.61 ± 0.31	7.81 ± 0.26	Pass
AP-4200, 4201	7/29/2015	Be-7	1.06 ± 0.12	0.96 ± 0.11	1.01 ± 0.08	Pass
AP-4200, 4201	7/29/2015	K-40	5.03 ± 0.24	4.96 ± 0.23	4.99 ± 0.16	Pass
W-4137, 4138	7/31/2015	Ra-226	0.58 ± 0.13	0.45 ± 0.14	0.52 ± 0.10	Pass
XWW-4431, 4432	8/5/2015	H-3	4,773 ± 213	4,915 ± 216	4,844 ± 152	Pass
SG-4305, 4306	8/6/2015	Ra-228	10.34 ± 0.58	11.46 ± 0.62	10.90 ± 0.42	Pass
AP-081015	8/10/2015	Gr. Beta	0.038 ± 0.005	0.039 ± 0.005	0.039 0.004	Pass
AP-081115	8/11/2015	Gr. Beta	0.024 ± 0.004	0.020 ± 0.004	0.022 0.003	Pass
VE-4452, 4453	8/11/2015	K-40	3.77 ± 0.29	3.78 ± 0.26	3.77 ± 0.20	Pass
AP-081715	8/17/2015	Gr. Beta	0.030 ± 0.005	0.030 ± 0.005	0.030 ± 0.003	Pass
DW-60195, 60196	8/17/2015	Ra-226	0.39 ± 0.10	0.37 ± 0.10	0.38 ± 0.07	Pass
DW-60195, 60196	8/17/2015	Ra-228	1.43 ± 0.51	1.97 ± 0.61	1.70 ± 0.40	Pass
DW-60198, 60199	8/17/2015	Gr. Alpha	2.93 ± 0.94	2.11 ± 0.96	2.52 ± 0.67	Pass
VE-4578, 4579	8/18/2015	K-40	4.14 ± 0.25	4.32 ± 0.24	4.23 ± 0.17	Pass
SW-4662, 4663	8/25/2015	H-3	351.3 ± 89.8	415.6 ± 92.8	383.4 ± 64.6	Pass
DW-60212, 60213	8/25/2015	Ra-226	0.09 ± 0.07	0.10 ± 0.08	0.10 ± 0.05	Pass
LW-4788, 4789	8/27/2015	Gr. Beta	0.97 ± 0.51	1.68 ± 0.59	1.32 ± 0.39	Pass
AP-083115	8/31/2015	Gr. Beta	0.032 ± 0.005	0.031 ± 0.005	0.031 ± 0.003	Pass
AP-4875, 4876	9/3/2015	Be-7	0.294 ± 0.125	0.202 ± 0.109	0.248 ± 0.083	Pass
VE-5083, 5084	9/14/2015	Be-7	0.47 ± 0.23	0.56 ± 0.19	0.52 ± 0.15	Pass
VE-5083, 5084	9/14/2015	K-40	6.20 ± 0.51	6.36 ± 0.50	6.28 ± 0.36	Pass
VE-5167, 5168	9/16/2015	Be-7	0.40 ± 0.11	0.41 ± 0.10	0.41 ± 0.07	Pass
VE-5167, 5168	9/16/2015	K-40	3.56 ± 0.27	3.91 ± 0.24	3.74 ± 0.18	Pass
BS-5188, 5189	9/16/2015	K-40	9.69 ± 0.51	10.51 ± 0.52	10.10 ± 0.36	Pass
F-5419, 5420	9/17/2015	K-40	3.48 ± 0.47	3.49 ± 0.56	3.49 ± 0.36	Pass
DW-60238, 60239	9/18/2015	Ra-226	1.93 ± 0.23	2.31 ± 0.26	2.12 ± 0.17	Pass
DW-60238, 60239	9/18/2015	Ra-228	4.44 ± 0.78	5.61 ± 0.84	5.03 ± 0.57	Pass
AP-092215A/B	9/22/2015	Gr. Beta	0.021 ± 0.004	0.025 ± 0.004	0.023 ± 0.00	Pass
WW-5398, 5399	9/22/2015	H-3	1,857 ± 145	1,846 ± 144	1,852 ± 102	Pass
AP-6007, 6008	9/28/2015	Be-7	0.08 ± 0.01	0.08 ± 0.01	0.08 ± 0.01	Pass

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

Lab Code	Date	Analysis	Concentration (pCi/L)[a] First Result	Second Result	Averaged Result	Acceptance
XW-7490, 7491	9/29/2015	Ni-63	2,332 ± 233	2,108 ± 211	2,220 ± 157	Pass
WW-5377, 5378	9/30/2015	H-3	220.0 ± 84.6	197.0 ± 83.5	208.5 ± 59.4	Pass
AP-6028, 6029	9/30/2015	Be-7	0.073 ± 0.009	0.083 ± 0.012	0.078 ± 0.007	Pass
G-5461,2	10/1/2015	Be-7	2.02 ± 0.32	1.98 ± 0.25	2.00 ± 0.20	Pass
G-5461,2	10/1/2015	K-40	8.77 ± 0.66	9.31 ± 0.59	9.04 ± 0.44	Pass
SO-5482, 5483	10/1/2015	Ac-228	0.76 ± 0.12	0.74 ± 0.30	0.75 ± 0.16	Pass
SO-5482, 5483	10/1/2015	Bi-214	0.53 ± 0.04	0.52 ± 0.04	0.52 ± 0.03	Pass
SO-5482, 5483	10/1/2015	Cs-137	0.12 ± 0.03	0.12 ± 0.03	0.12 ± 0.02	Pass
SO-5482, 5483	10/1/2015	K-40	2.17 ± 0.73	2.10 ± 0.72	2.13 ± 0.51	Pass
SO-5482, 5483	10/1/2015	Pb-214	0.57 ± 0.04	0.55 ± 0.04	0.56 ± 0.03	Pass
SO-5482, 5483	10/1/2015	Ra-226	1.45 ± 0.27	1.46 ± 0.30	1.45 ± 0.20	Pass
SO-5482, 5483	10/1/2015	Tl-208	0.24 ± 0.03	0.25 ± 0.03	0.24 ± 0.02	Pass
WW-5524, 5525	10/5/2015	H-3	1,192 ± 123	1,318 ± 127	1,255 ± 89	Pass
AP-5881, 5882	10/5/2015	Be-7	0.078 ± 0.008	0.085 ± 0.011	0.082 ± 0.007	Pass
AP-5881, 5882	10/5/2015	K-40	0.009 ± 0.004	0.010 ± 0.006	0.010 ± 0.004	Pass
SG-6400,1	10/5/2015	Gr. Alpha	19.09 ± 3.14	19.45 ± 3.25	19.27 ± 2.26	Pass
SG-6400,1	10/5/2015	Gr. Beta	31.36 ± 2.08	29.80 ± 2.13	30.58 ± 1.49	Pass
VE-5923, 5924	10/12/2015	K-40	4.29 ± 0.29	4.13 ± 0.33	4.21 ± 0.22	Pass
SS-5818, 5819	10/14/2015	Ac-228	0.20 ± 0.06	0.24 ± 0.06	0.22 ± 0.04	Pass
SS-5818, 5819	10/14/2015	Cs-137	0.03 ± 0.02	0.02 ± 0.01	0.03 ± 0.01	Pass
SS-5818, 5819	10/14/2015	Gr. Beta	8.10 ± 0.87	8.08 ± 0.96	8.09 ± 0.65	Pass
SS-5818, 5819	10/14/2015	Pb-212	0.19 ± 0.03	0.17 ± 0.02	0.18 ± 0.02	Pass
SS-5818, 5819	10/14/2015	Ra-226	0.47 ± 0.24	0.45 ± 0.19	0.46 ± 0.15	Pass
SS-5818, 5819	10/14/2015	Tl-208	0.06 ± 0.02	0.06 ± 0.02	0.06 ± 0.01	Pass
DW-60251, 60252	10/15/2015	Ra-226	0.56 ± 0.12	0.50 ± 0.08	0.53 ± 0.07	Pass
DW-60251, 60252	10/15/2015	Ra-228	0.79 ± 0.48	1.16 ± 0.59	0.98 ± 0.38	Pass
SO-5944, 5945	10/21/2015	Ac-228	1.08 ± 0.15	1.14 ± 0.15	1.11 ± 0.10	Pass
SO-5944, 5945	10/21/2015	Bi-214	0.89 ± 0.08	0.82 ± 0.06	0.85 ± 0.05	Pass
SO-5944, 5945	10/21/2015	Cs-137	0.06 ± 0.02	0.08 ± 0.03	0.07 ± 0.02	Pass
SO-5944, 5945	10/21/2015	Pb-212	1.06 ± 0.06	0.99 ± 0.05	1.03 ± 0.04	Pass
SO-5944, 5945	10/21/2015	Pb-214	1.00 ± 0.09	0.89 ± 0.06	0.95 ± 0.05	Pass
SO-5944, 5945	10/21/2015	Ra-226	2.13 ± 0.43	2.16 ± 0.37	2.14 ± 0.28	Pass
SO-5944, 5945	10/21/2015	Tl-208	0.36 ± 0.04	0.34 ± 0.04	0.35 ± 0.03	Pass
S-6175, 6176	10/23/2015	K-40	16.86 ± 1.92	14.28 ± 1.66	15.57 ± 1.27	Pass
XWW-6196, 6197	10/26/2015	H-3	2,856 ± 170	2,815 ± 169	2,836 ± 120	Pass
SO-6259, 6260	10/28/2015	Ac-228	0.60 ± 0.10	0.53 ± 0.08	0.57 ± 0.07	Pass
SO-6259, 6260	10/28/2015	Bi-214	0.40 ± 0.06	0.50 ± 0.05	0.45 ± 0.04	Pass
SO-6259, 6260	10/28/2015	Cs-137	0.17 ± 0.03	0.19 ± 0.03	0.18 ± 0.02	Pass
SO-6259, 6260	10/28/2015	Gr. Beta	21.6 ± 1.1	23.36 ± 1.21	22.48 ± 0.82	Pass
SO-6259, 6260	10/28/2015	Pb-212	0.53 ± 0.04	0.49 ± 0.04	0.51 ± 0.03	Pass
SO-6259, 6260	10/28/2015	Tl-208	0.16 ± 0.03	0.19 ± 0.04	0.18 ± 0.02	Pass

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

			Concentration (pCi/L)[a]			
Lab Code	Date	Analysis	First Result	Second Result	Averaged Result	Acceptance
LW-6280, 6281	10/29/2015	Gr. Beta	2.03 ± 0.91	1.97 ± 0.97	2.00 ± 0.67	Pass
MI-6484, 6485	11/11/2015	K-40	1,384 ± 82	1,432 ± 89	1,408 ± 60	Pass
SO-6841, 6842	11/24/2015	Cs-137	0.18 ± 0.03	0.16 ± 0.03	0.17 ± 0.02	Pass
SO-6841, 6842	11/24/2015	K-40	13.62 ± 0.76	13.67 ± 0.69	13.64 ± 0.51	Pass
WW-6978, 6979	11/30/2015	H-3	569.0 ± 97.7	480.3 ± 93.9	524.7 ± 67.8	Pass
SW-6936, 6937	12/10/2015	H-3	151.9 ± 80.0	176.2 ± 81.2	164.0 ± 57.0	Pass
SW-7017, 7018	12/10/2015	H-3	584.3 ± 98.7	451.6 ± 93.9	518.0 ± 68.1	Pass
LW-7020, 7021	12/10/2015	H-3	236.9 ± 84.2	285.6 ± 86.5	261.2 ± 60.3	Pass
AP-7351, 7352	12/29/2015	Be-7	0.099 ± 0.020	0.084 ± 0.018	0.091 ± 0.014	Pass
AP-7414, 7415	12/30/2015	Be-7	0.049 ± 0.013	0.048 ± 0.011	0.048 ± 0.008	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, sediment (pCi/g).

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

			Concentration [a]			
Lab Code [b]	Date	Analysis	Laboratory result	Known Activity	Control Limits [c]	Acceptance
MASO-975	2/1/2015	Ni-63	341 ± 18	448	314 - 582	Pass
MASO-975	2/1/2015	Sr-90	523 ± 12	653	457 - 849	Pass
MASO-975	2/1/2015	Tc-99	614 ± 12	867	607 - 1,127	Pass
MASO-975	2/1/2015	Cs-134	533 ± 6	678	475 - 881	Pass
MASO-975	2/1/2015	Cs-137	0.8 ± 2.5	0.0	NA [c]	Pass
MASO-975	2/1/2015	Co-57	0.5 ± 1.0	0.0	NA [c]	Pass
MASO-975	2/1/2015	Co-60	741 ± 8	817	572 - 1,062	Pass
MASO-975	2/1/2015	Mn-54	1,153 ± 9	1,198	839 - 1,557	Pass
MASO-975	2/1/2015	Zn-65	892 ± 18	1064	745 - 1,383	Pass
MAW-969	2/1/2015	Am-241	0.650 ± 0.078	0.654	0.458 - 0.850	Pass
MAW-969	2/1/2015	Cs-134	21.1 ± 0.3	23.5	16.5 - 30.6	Pass
MAW-969	2/1/2015	Cs-137	19.6 ± 0.3	19.1	13.4 - 24.8	Pass
MAW-969 [d]	2/1/2015	Co-57	10.2 ± 0.4	29.9	20.9 - 38.9	Fail
MAW-969	2/1/2015	Co-60	0.02 ± 0.05	0.00	NA [c]	Pass
MAW-969	2/1/2015	H-3	569 ± 13	563	394 - 732	Pass
MAW-969	2/1/2015	Fe-55	6.00 ± 6.60	6.88	4.82 - 8.94	Pass
MAW-969	2/1/2015	Mn-54	0.02 ± 0.07	0.00	NA [c]	Pass
MAW-969	2/1/2015	Ni-63	2.9 ± 3.0	0.00	NA [c]	Pass
MAW-969	2/1/2015	Zn-65	16.5 ± 0.9	18.3	12.8 - 23.8	Pass
MAW-969	2/1/2015	Tc-99	3.40 ± 0.60	3.18	2.23 - 4.13	Pass
MAW-969	2/1/2015	Pu-238	0.02 ± 0.03	0.01	NA [e]	Pass
MAW-969	2/1/2015	Pu-239/240	0.81 ± 0.10	0.83	0.58 - 1.08	Pass
MAW-969	2/1/2015	U-233/234	0.150 ± 0.040	0.148	0.104 - 0.192	Pass
MAW-969	2/1/2015	U-238	0.84 ± 0.09	0.97	0.68 - 1.26	Pass
MAW-969	2/1/2015	Sr-90	9.40 ± 1.30	9.48	6.64 - 12.32	Pass
MAW-950	2/1/2015	Gr. Alpha	0.66 ± 0.05	1.07	0.32 - 1.81	Pass
MAW-950	2/1/2015	Gr. Beta	2.72 ± 0.06	2.79	1.40 - 4.19	Pass
MAW-947	2/1/2015	I-129	1.26 ± 0.12	1.49	1.04 - 1.94	Pass
MAAP-978	2/1/2015	Am-241	0.069 ± 0.200	0.068	0.048 - 0.089	Pass
MAAP-978	2/1/2015	Cs-134	1.00 ± 0.04	1.15	0.81 - 1.50	Pass
MAAP-978	2/1/2015	Cs-137	0.004 ± 0.023	0.00	NA [c]	Pass
MAAP-978 [f]	2/1/2015	Co-57	0.04 ± 0.04	1.51	1.06 - 1.96	Fail
MAAP-978	2/1/2015	Co-60	0.01 ± 0.02	0.00	NA [c]	Pass
MAAP-978	2/1/2015	Mn-54	1.11 ± 0.08	1.02	0.71 - 1.33	Pass
MAAP-978	2/1/2015	Zn-65	0.83 ± 0.10	0.83	0.58 - 1.08	Pass
MAAP-978	2/1/2015	Pu-238	-0.003 ± 0.010	0.000	NA [c]	Pass
MAAP-978	2/1/2015	Pu-239/240	0.090 ± 0.022	0.085	0.059 - 0.110	Pass
MAAP-978	2/1/2015	U-233/234	0.020 ± 0.010	0.016	0.011 - 0.020	Pass
MAAP-978	2/1/2015	U-238	0.073 ± 0.018	0.099	0.069 - 0.129	Pass

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

			Concentration [a]			
Lab Code [b]	Date	Analysis	Laboratory result	Known Activity	Control Limits [c]	Acceptance
MAAP-981	2/1/2015	Sr-89	38.1 ± 1.0	47.5	33.3 - 61.8	Pass
MAAP-981	2/1/2015	Sr-90	1.22 ± 0.13	1.06	0.74 - 1.38	Pass
MAAP-984	2/1/2015	Gr. Alpha	0.59 ± 0.06	1.77	0.53 - 3.01	Pass
MAAP-984	2/1/2015	Gr. Beta	0.95 ± 0.07	0.75	0.38 - 1.13	Pass
MAVE-972	2/1/2015	Cs-134	6.98 ± 0.13	7.32	5.12 - 9.52	Pass
MAVE-972	2/1/2015	Cs-137	9.73 ± 0.21	9.18	6.43 - 11.93	Pass
MAVE-972	2/1/2015	Co-57	0.01 ± 0.04	0.00	NA [c]	Pass
MAVE-972	2/1/2015	Co-60	3.89 ± 0.20	5.55	3.89 - 7.22	Pass
MAVE-972	2/1/2015	Mn-54	0.04 ± 0.07	0.00	NA [c]	Pass
MAVE-972	2/1/2015	Zn-65	0.09 ± 0.12	0.00	NA [c]	Pass
MAAP-978	2/1/2015	Pu-238	-0.003 ± 0.010	0.000	NA [c]	Pass
MAAP-978	2/1/2015	Pu-239/240	0.090 ± 0.022	0.085	0.059 - 0.110	Pass
MAAP-978	2/1/2015	U-233/234	0.020 ± 0.010	0.016	0.011 - 0.020	Pass
MAAP-978	2/1/2015	U-238	0.073 ± 0.018	0.099	0.069 - 0.129	Pass
MAAP-981	2/1/2015	Sr-89	38.1 ± 1.0	47.5	33.3 - 61.8	Pass
MAAP-981	2/1/2015	Sr-90	1.22 ± 0.13	1.06	0.74 - 1.38	Pass
MAAP-984	2/1/2015	Gr. Alpha	0.59 ± 0.06	1.77	0.53 - 3.01	Pass
MAAP-984	2/1/2015	Gr. Beta	0.95 ± 0.07	0.75	0.38 - 1.13	Pass
MAVE-972	2/1/2015	Cs-134	6.98 ± 0.13	7.32	5.12 - 9.52	Pass
MAVE-972	2/1/2015	Cs-137	9.73 ± 0.21	9.18	6.43 - 11.93	Pass
MAVE-972	2/1/2015	Co-57	0.01 ± 0.04	0.00	NA [c]	Pass
MAVE-972	2/1/2015	Co-60	3.89 ± 0.20	5.55	3.89 - 7.22	Pass
MAVE-972	2/1/2015	Mn-54	0.04 ± 0.07	0.00	NA [c]	Pass
MAVE-972	2/1/2015	Zn-65	0.09 ± 0.12	0.00	NA [c]	Pass
MASO-4903	8/1/2015	Ni-63	556 ± 18	682	477 - 887	Pass
MASO-4903 [g]	8/1/2015	Sr-90	231 ± 7	425	298 - 553	Fail
MASO-4903 [g]	8/1/2015	Sr-90	352 ± 10	425	298 - 553	Pass
MASO-4903 [h]	8/1/2015	Tc-99	411 ± 11	631	442 - 820	Fail
MASO-4903	8/1/2015	Cs-134	833 ± 10	1,010	707 - 1,313	Pass
MASO-4903	8/1/2015	Cs-137	808 ± 11	809.00	566 - 1,052	Pass
MASO-4903	8/1/2015	Co-57	1,052 ± 10	1,180	826 - 1,534	Pass
MASO-4903	8/1/2015	Co-60	2 ± 2	1.3	NA [e]	Pass
MASO-4903	8/1/2015	Mn-54	1,331 ± 13	1,340	938 - 1,742	Pass
MASO-4903	8/1/2015	Zn-65	686 ± 15	662	463 - 861	Pass

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

			Concentration [a]			
Lab Code [b]	Date	Analysis	Laboratory result	Known Activity	Control Limits [c]	Acceptance
MAW-5007	8/1/2015	Cs-134	16.7 ± 0.4	23.1	16.2 - 30.0	Pass
MAW-5007	8/1/2015	Cs-137	-0.4 ± 0.1	0.0	NA [c]	Pass
MAW-5007	8/1/2015	Co-57	21.8 ± 0.4	20.8	14.6 - 27.0	Pass
MAW-5007	8/1/2015	Co-60	17.3 ± 0.3	17.1	12.0 - 22.2	Pass
MAW-5007	8/1/2015	H-3	227.5 ± 8.9	216.0	151.0 - 281.0	Pass
MAW-5007 [l]	8/1/2015	Fe-55	4.2 ± 14.1	13.1	9.2 - 17.0	Fail
MAW-5007	8/1/2015	Mn-54	16.6 ± 0.5	15.6	10.9 - 20.3	Pass
MAW-5007	8/1/2015	Ni-63	9.1 ± 2.6	8.6	6.0 - 11.1	Pass
MAW-5007	8/1/2015	Zn-65	15.5 ± 0.9	13.9	9.7 - 18.1	Pass
MAW-5007	8/1/2015	Tc-99	6.80 ± 0.60	7.19	5.03 - 9.35	Pass
MAW-5007	8/1/2015	Sr-90	4.80 ± 0.50	4.80	3.36 - 6.24	Pass
MAW-5007	8/1/2015	Gr. Alpha	0.41 ± 0.04	0.43	0.13 - 0.73	Pass
MAW-5007	8/1/2015	Gr. Beta	3.45 ± 0.07	3.52	1.76 - 5.28	Pass
MAW-5007	8/1/2015	I-129	1.42 ± 0.13	1.49	1.04 - 1.94	Pass
MAAP-4911	8/1/2015	Sr-89	3.55 ± 0.67	3.98	2.79 - 5.17	Pass
MAAP-4911	8/1/2015	Sr-90	0.94 ± 0.16	1.05	0.74 - 1.37	Pass
MAAP-4907	8/1/2015	Gr. Alpha	0.30 ± 0.04	0.90	0.27 - 1.53	Pass
MAAP-4907	8/1/2015	Gr. Beta	1.85 ± 0.09	1.56	0.78 - 2.34	Pass
MAVE-4901	8/1/2015	Cs-134	5.56 ± 0.16	5.80	4.06 - 7.54	Pass
MAVE-4901	8/1/2015	Cs-137	-0.02 ± 0.06	0.00	NA [c]	Pass
MAVE-4901	8/1/2015	Co-57	7.74 ± 0.18	6.62	4.63 - 8.61	Pass
MAVE-4901	8/1/2015	Co-60	4.84 ± 0.15	4.56	3.19 - 5.93	Pass
MAVE-4901	8/1/2015	Mn-54	8.25 ± 0.25	7.68	5.38 - 9.98	Pass
MAVE-4901	8/1/2015	Zn-65	5.78 ± 0.29	5.46	3.82 - 7.10	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), 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] Lab result was 27.84. Data entry error resulted in a non-acceptable result.

[e] Provided in the series for "sensitivity evaluation". MAPEP does not provide control limits.

[f] Lab result was 1.58. Data entry error resulted in a non-acceptable result.

[g] The incomplete separation of calcium from strontium caused a failed low result. The result of reanalysis acceptable.

[h] The complex sample matrix is interfering with yield calculations causing a failed low result. An investigation is in process to determine a more reliable yield determination.

[l] The known activity was below the routine laboratory detection limits for the available aliquot fraction.

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

Lab Code [b]	Date	Analysis	Concentration (pCi/L) [b] Laboratory Result [c]	ERA Result [d]	Control Limits	Acceptance
ERAP-1091	3/16/2015	Am-241	46.8 ± 2.2	49.8	30.7 - 67.4	Pass
ERAP-1091	3/16/2015	Co-60	85.1 ± 2.9	79.1	61.2 - 98.8	Pass
ERAP-1091	3/16/2015	Cs-134	825.6 ± 34.7	909.0	578.0 - 1,130.0	Pass
ERAP-1091	3/16/2015	Cs-137	1,312 ± 12	1,170	879 - 1,540	Pass
ERAP-1091	3/16/2015	Fe-55	760.6 ± 48.2	836.0	259.0 - 1630.0	Pass
ERAP-1091	3/16/2015	Mn-54	<2.7	<50	0.0 - 50.0	Pass
ERAP-1091	3/16/2015	Pu-238	51.0 ± 3.9	52.1	35.7 - 68.5	Pass
ERAP-1091	3/16/2015	Pu-239/240	38.3 ± 1.3	40.3	29.20 - 52.70	Pass
ERAP-1091	3/16/2015	Sr-90	95.3 ± 11.4	96.6	47.2 - 145.0	Pass
ERAP-1091	3/16/2015	U-233/234	29.0 ± 1.2	34.3	21.3 - 51.7	Pass
ERAP-1091	3/16/2015	U-238	31.0 ± 1.1	34.0	22.0 - 47.0	Pass
ERAP-1091	3/16/2015	Zn-65	1099.3 ± 146.5	986.0	706.0 - 1360.0	Pass
ERAP-1094	3/16/2015	Gr. Alpha	73.7 ± 0.7	62.2	20.8 - 96.6	Pass
ERAP-1094	3/16/2015	Gr. Beta	69.6 ± 0.8	58.4	36.9 - 85.1	Pass
ERSO-1098	3/16/2015	Am-241	1571.8 ± 209.6	1,500	878 - 1,950	Pass
ERSO-1098	3/16/2015	Ac-228	1198.8 ± 140.4	1,250	802 - 1,730	Pass
ERSO-1098	3/16/2015	Bi-212	1420.1 ± 455.7	1,780	474 - 2,620	Pass
ERSO-1098	3/16/2015	Bi-214	3466.9 ± 86.9	4,430	2,670 - 6,380	Pass
ERSO-1098	3/16/2015	Co-60	1779.8 ± 41.0	1,880	1,270 - 2,590	Pass
ERSO-1098	3/16/2015	Cs-134	5204.6 ± 64.5	6,390	4,180 - 7,680	Pass
ERSO-1098	3/16/2015	Cs-137	1417.1 ± 41.9	1,490	1,140 - 1,920	Pass
ERSO-1098	3/16/2015	K-40	10,597 ± 380	10,700	7,810 - 14,400	Pass
ERSO-1098	3/16/2015	Mn-54	<62.2	< 1000	0.0 - 1,000	Pass
ERSO-1098	3/16/2015	Pb-212	1,032 ± 41	1,230	806 - 1,710	Pass
ERSO-1098	3/16/2015	Pb-214	3,629 ± 93	4,530	2,640 - 6,760	Pass
ERSO-1098	3/16/2015	Pu-238	942.9 ± 128.8	998.0	600.0 - 1,380.0	Pass
ERSO-1098	3/16/2015	Pu-239/240	1,185 ± 140	1,210	791 - 1,670	Pass
ERSO-1098	3/16/2015	Sr-90	1,724 ± 125	1,940	740 - 3,060	Pass
ERSO-1098	3/16/2015	Th-234	3,666 ± 948	3,890	1,230 - 7,320	Pass
ERSO-1098	3/16/2015	U-233/234	3,474 ± 226	3,920	2,400 - 5,020	Pass
ERSO-1098	3/16/2015	U-238	3,620 ± 232	3,890	2,410 - 4,930	Pass
ERSO-1098	3/16/2015	Zn-65	7,362 ± 145	7,130	5,680 - 9,470	Pass
ERW-1095	3/16/2015	Gr. Alpha	93.4 ± 11.5	119.0	42.2 - 184.0	Pass
ERW-1095	3/16/2015	Gr. Beta	145.2 ± 4.8	158.0	90.5 - 234.0	Pass
ERW-1110	3/16/2015	H-3	10,573 ± 78	10,300	6,900 - 14,700	Pass
ERVE-1100	3/16/2015	Am-241	4,537 ± 266	4,340	2,650 - 5,770	Pass
ERVE-1100	3/16/2015	Cm-244	1,338 ± 146	1,360	666 - 2,120	Pass

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

Lab Code [b]	Date	Analysis	Concentration (pCi/L) [b] Laboratory Result [c]	ERA Result [d]	Control Limits	Acceptance
ERVE-1100 [e]	3/16/2015	Co-60	1,030 ± 29	1,540	1,060 - 2,150	Fail
ERVE-1100 [f]	3/16/2015	Co-60	1,684 ± 48	1,540	1,060 - 2,150	Pass
ERVE-1100 [e]	3/16/2015	Cs-134	1,615 ± 27	2,650	1,700 - 3,440	Fail
ERVE-1100 [f]	3/16/2015	Cs-134	2,554 ± 49	2,650	1,700 - 3,440	Pass
ERVE-1100 [e]	3/16/2015	Cs-137	1,248 ± 29	1,810	1,310 - 2,520	Fail
ERVE-1100 [f]	3/16/2015	Cs-137	2,078 ± 68	1,810	1,310 - 2,520	Pass
ERVE-1100 [e]	3/16/2015	K-40	22,037 ± 463	30,900	22,300 - 43,400	Fail
ERVE-1100 [f]	3/16/2015	K-40	34,895 ± 764	30,900	22,300 - 43,400	Pass
ERVE-1100 [e]	3/16/2015	Mn-54	<13.8	<300	0.0 - 300.0	Pass
ERVE-1100 [f]	3/16/2015	Mn-54	<24.4	<300	0.0 - 300.0	Pass
ERVE-1100	3/16/2015	Pu-238	3,232 ± 232	3,680	2,190 - 5,040	Pass
ERVE-1100	3/16/2015	Pu-239/240	3,606 ± 240	4,180	2,570 - 5,760	Pass
ERVE-1100	3/16/2015	Sr-90	6,023 ± 326	6,590	3,760 - 8,740	Pass
ERVE-1100	3/16/2015	U-233/234	2,653 ± 153	3,150	2,070 - 4,050	Pass
ERVE-1100	3/16/2015	U-238	2,717 ± 163	3,130	2,090 - 3,980	Pass
ERVE-1100 [e]	3/16/2015	Zn-65	<94.6	1,090	786 - 1,530	Fail
ERVE-1100 [f]	3/16/2015	Zn-65	1,306 ± 75	1,090	786 - 1,530	Pass
ERW-1103	3/16/2015	Am-241	47.1 ± 4.0	46.0	31.0 - 61.7	Pass
ERW-1103	3/16/2015	Co-60	1,217 ± 17	1,250	1,090 - 1,460	Pass
ERW-1103	3/16/2015	Cs-134	1,121 ± 18	1,260	925 - 1,450	Pass
ERW-1103	3/16/2015	Cs-137	1,332 ± 31	1,360	1,150 - 1,630	Pass
ERW-1103	3/16/2015	Mn-54	<3.7	<100	0.00 - 100.00	Pass
ERW-1103	3/16/2015	Pu-238	54.5 ± 1.6	72.4	53.6 - 90.1	Pass
ERW-1103 [g]	3/16/2015	Pu-239/240	140.2 ± 7.8	184.0	143.0 - 232.0	Fail
ERW-3742 [h]	9/27/2012	Pu-239/240	89.3 ± 4.9	97.7	66.6 - 108.0	Pass
ERW-1103	3/16/2015	U-233/234	56.5 ± 6.4	61.8	46.4 - 79.7	Pass
ERW-1103	3/16/2015	U-238	58.4 ± 5.8	61.3	46.7 - 75.2	Pass
ERW-1103	3/16/2015	Zn-65	1,191 ± 136	1,180	984 - 1,490	Pass
ERW-1103	3/16/2015	Fe-55	1,149 ± 144	1,070	638 - 1,450	Pass
ERW-1103	3/16/2015	Sr-90	860.0 ± 37.0	912.0	594.0 - 1,210.0	Pass

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

[b] Laboratory codes as follows: ERW (water), ERAP (air filter), ERSO (soil), ERVE (vegetation). Results are reported in units of pCi/L, except for air filters (pCi/Filter), vegetation and soil (pCi/kg).

[c] Unless otherwise indicated, the laboratory result is given as the mean ± standard deviation for three determinations.

[d] Results are presented as the known values, expected laboratory precision (1 sigma, 1 determination) and control limits as provided by ERA. A known value of "zero" indicates an analysis was included in the testing series as a "false positive". Control limits are not provided.

[e] Technician error weighing sample caused submitted gamma results to be understated and outside the control limits.(low)

[f] The result of reanalysis with the correct sample volume (Compare to original result, footnoted "e" above).

[g] The results of reanalysis were outside the control limits (low).

[h] Sample ERW-3742 was ordered from ERA to determine why ERW-1103 results for Pu-239 were outside the acceptable range. The results for ERW-3742 were acceptable. No reason for the unacceptable results for ERW-1103 was determined.

APPENDIX B. DATA REPORTING CONVENTIONS

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

2.0. Single Measurements

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

where: x = value of the measurement;

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

In cases where the activity is less than the lower limit of detection L, it is reported as: < L,

where L = the lower limit of detection based on 4.66σ uncertainty for a background sample.

3.0. Duplicate analyses

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

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

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

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

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

4.0. Computation of Averages and Standard Deviations

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

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

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

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

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

4.5 In rounding off, the following rules are followed:

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

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

APPENDIX C

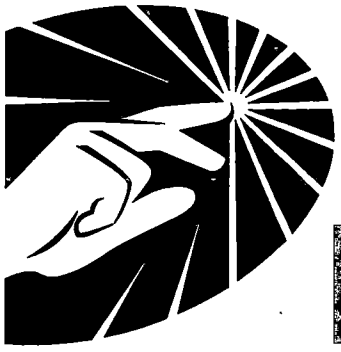
Table C-1. Maximum permissible concentrations of radioactivity in air and water above natural background in unrestricted areas[a].

	Air (pCi/m^3)		Water (pCi/L)
Gross alpha	1×10^{-3}	Strontium-89	8,000
Gross beta	1	Strontium-90	500
Iodine-131[b]	2.8×10^{-1}	Cesium-137	1,000
		Barium-140	8,000
		Iodine-131	1,000
		Potassium-40[c]	4,000
		Gross alpha	2
		Gross beta	10
		Tritium	1×10^6

[a] Taken from Table 2 of Appendix B to Code of Federal Regulations Title 10, Part 20, and appropriate footnotes. Concentrations may be averaged over a period not greater than one year.

[b] Value adjusted by a factor of 700 to reduce the dose resulting from the air-grass-cow-milk-child pathway.

[c] A natural radionuclide.



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2015 Annual Radiological Environmental Operating Report

Kewaunee Power Station

Part II, Data Tabulations And Analyses

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REPORT TO

DOMINION NUCLEAR

RADIOLOGICAL MONITORING PROGRAM FOR THE KEWAUNEE POWER STATION KEWAUNEE, WISCONSIN

ANNUAL REPORT - PART II DATA TABULATIONS AND ANALYSES

January 1 to December 31, 2015

Prepared and submitted by

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PREFACE

Staff members of ATI Environmental, Inc., Midwest Laboratory were responsible for the acquisition of data presented in this report. Samples were collected by personnel of ATI Environmental, Inc., Midwest Laboratory and the Kewaunee Power Station.

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1.0 INTRODUCTION

The following constitutes Part II of the final report for the 2015 Radiological Monitoring Program conducted at the Kewaunee Power Station (KPS), Kewaunee, Wisconsin.

Included are tabulations of data for all samples collected in 2015 along with graphs of data trends. A summary and interpretation of the data presented here are published in Part I of the 2015 Annual Report on the Radiological Monitoring Program for the Kewaunee Power Station.

Figure 1. Sampling locations, Kewaunee Power Station

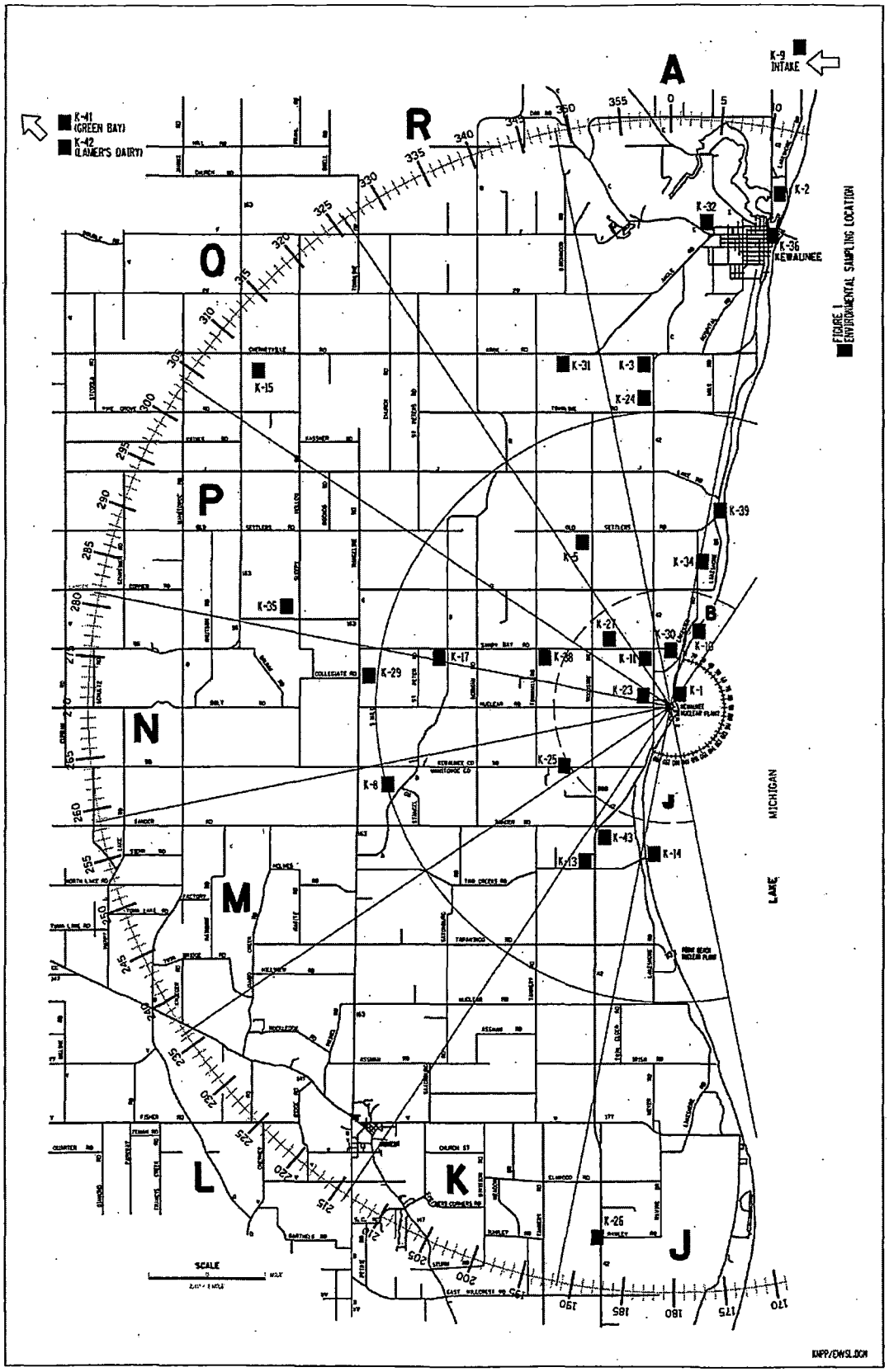

Table 1. Sampling locations, Kewaunee Power Station.

Code	Type[a]	Distance (miles)[b] and Sector	Location
K-1	I		Onsite
K-1a	I	0.62 N	North Creek
K-1b	I	0.12 N	Middle Creek
K-1c	I	0.10 N	500' north of condenser discharge
K-1d	I	0.10 E	Condenser discharge
K-1e	I	0.12 S	South Creek
K-1f	I	0.12 S	Meteorological Tower
K-1g	I	0.06 W	South Well
K-1h	I	0.12 NW	North Well
K-1j	I	0.10 S	500' south of condenser discharge
K-1k	I	0.60 SW	Drainage Pond, south of plant
K-1l	I	0.13 N	ISFSI Southeast
K-1m	I	0.15 N	ISFSI East
K-1n	I	0.16 N	ISFSI Northwest
K-1o	I	0.16 N	ISFSI North
K-1p	I	0.17 N	ISFSI Northwest
K-1q	I	0.16 N	ISFSI West
K-1r	I	0.13 N	ISFSI West
K-1s	I	0.12 N	ISFSI Southwest
K-2	C	8.91 NNE	WPS Operations Building in Kewaunee
K-3	C	5.9 N	Lyle and John Siegmund Farm, N2815 Hy 42, Kewaunee
K-5	I	3.2 NNW	Ed Paplham Farm, E4160 Old Settlers Rd, Kewaunee
K-8	C	4.85 WSW	St. Isadore the Farmer Church, 18424 Tisch Mills Rd, Tisch Mills
K-9	C	11.5 NNE	Green Bay Municipal Pumping Station, six miles east of Green Bay (sample source is Lake Michigan water from Rostok Intake, two miles north of Kewaunee).
K-10	I	1.35 NNE	Turner Farm, Kewaunee site
K-11	I	0.96 NW	Harlan Ihlenfeld Farm, N879 Hy 42, Kewaunee
K-13	C	3.0 SSW	Rand's General Store, Two Creeks
K-14	I	2.6 S	Two Creeks Park, 2.6 miles south of site
K-15	C	9.25 NW	Gas Substation, 1.5 miles north of Stangelville
K-17	I	4.0 W	Jansky's Farm, N885 Tk B, Kewaunee
K-23a	I	0.5 W	0.5 miles west of plant, Kewaunee site
K-23b	I	0.6 N	0.6 miles north of plant, Kewaunee site
K-24	I	5.4 N	Fictum Farm, N2653 Hy 42, Kewaunee
K-25	I	1.9 SW	Wotachek Farm, 3968 E. Cty Tk BB, Two Rivers
K-26	C	9.1 SSW	Sandy's Vegetable Stand (8.0 miles south of "BB")

Table 1. Sampling locations, Kewaunee Power Station (continued).

Code	Type[a]	Distance (miles)[b] and Sector	Location
K-27	I	1.53 NW	Schleis Farm, E4298 Sandy Bay Rd, Kewaunee
K-29	I	5.34 W	Kunesh Farm, E3873 Cty Tk G, Kewaunee
K-30	I	0.8 N	End of site boundary
K-31	C	6.35 NNW	E. Krok Substation, Krok Road
K-32	C	7.8 N	Piggly Wiggly, 931 Marquette Dr., Kewaunee
K-34	I	2.7 N	Leon and Vicki Struck, N1549 Lakeshore Dr., Kewaunee
K-35	C	6.71 mi. WNW	Duane Ducat, N1215 Sleepy Hollow Rd., Kewaunee
K-36	I	8.0 mi. NNE	Fiala's Fish market, 216 Milwaukee, Kewaunee
K-38	I	2.45 mi. WNW	Dave Sinkula Farm, N890 Town Hall Road, Kewaunee
K-39	I	3.46 mi. N	Francis Wojta, N1859 Lakeshore Dr., Kewaunee
K-41	C	22 NW	Point Beach-EOF, 3060 Voyager Dr. , Green Bay
K-42	C	28.1 W	Lamers Dairy Products obtained from Green Bay markets.
K-43	I	2.71 SSW	Gary Maigatter Property, 17333 Hwy 42, Two Rivers
K-44	I	2.63 SW	Gerald Schleis Property, 4728 Schleis Rd., Two Rivers

[a] I = indicator; C = control.

[b] Distances are measured from reactor stack.

Table 2. Type and frequency of collection.

Location	Weekly	Monthly	Quarterly	Semiannually	Annually
K-1a		SW		SL [f]	
K-1b		SW	GR [a]	SL [f]	
K-1c				BS [b]	
K-1d		SW	FI [a]	SL [f] BS [b]	
K-1e		SW		SL [f]	
K-1f	AP [g], AI		GR [a] TLD	SO	
K-1g, K-1h			WW		
K-1j				BS [b]	
K-1k		SW		SL [f]	
K-1l through K-1s			TLD		
K-2	AP [g], AI		TLD		
K-3, K-5		MI [c]	GR [a] TLD	SO	CF [d]
K-8	AP [g], AI		TLD		
K-9		SW [i]		SL [f] BS [b]	
K-10, K-13			WW		
K-11		PR	WW		
K-14		SW [h]		SL [f] BS [b]	
K-15, K-17			TLD		
K-23a, b					GRN / GLV [e]
K-24			EG		DM
K-25			TLD		
K-26					VE / GLV [e]
K-27			TLD		
K-29					DM
K-30			TLD		
K-31	AP [g], AI		TLD		
K-32			EG		DM
K-34, K-35		MI [c]	GR [a]	SO	CF [d]
K-36			FI [a,j]		
K-38		MI [c]	GR [a] WW	SO	CF [d]
K-39		MI [c]	GR [a] TLD	SO	CF [d]
K-41	AP [g], AI		TLD		
K-42		MI [c]			
K-43	AP [g], AI		TLD		
K-44		MI [c]			

[a] Three times a year, second, third and fourth quarters.
[b] Collected in May and November.
[c] Monthly November - April; semimonthly May-October.
[d] First quarter (January, February or March) only.
[e] Alternate, if milk is not available.
[f] Second and third quarters.
[g] Frequency may be increased dependent on dust loading.
[h] Two samples are collected, North (K-14a) and South (K-14b) of Two Creeks Road.
[i] Two samples, raw and tap water.
[j] Collected at K-36 if K-1d is unavailable

Table 3. Sample Codes:

Code	Description
AI	Airborne Iodine
AP	Airborne particulates
BS	Bottom sediments
CF	Cattlefeed
DM	Domestic Meat
EG	Eggs
FI	Fish
GLV	Green Leafy Vegetables
GRN	Grain
GR	Grass
MI	Milk
PR	Precipitation
SL	Slime
SO	Soil
SW	Surface water
TLD	Thermoluminescent Dosimeter
VE	Vegetables
WW	Well water

GRAPHS OF DATA TRENDS

Note: Conventions used in trending data.

The following conventions should be used in the interpretation of the graphs of data trends:

1. Both solid and open data points may be used in the graphs. A solid point indicates an activity, an open point, a lower limit of detection (LLD) value.
2. Data points are connected by a solid line. A break in the plot indicates missing data.

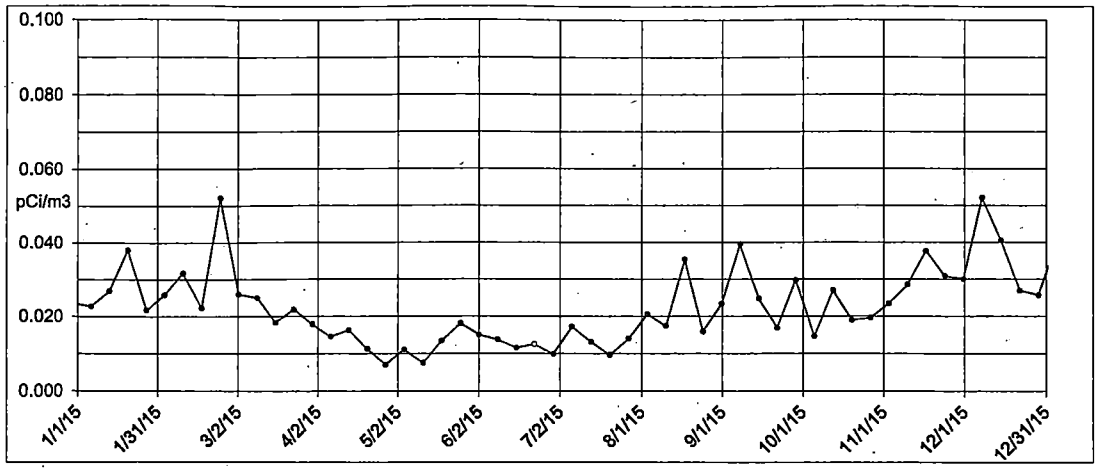

Figure 2. Location K-1f (weekly samples, 2015).

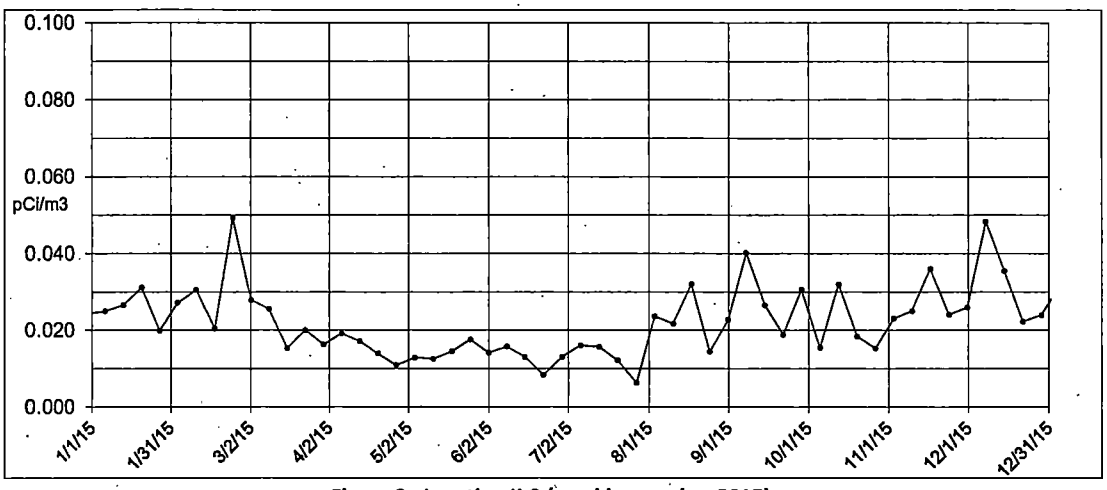

Figure 3. Location K-2 (weekly samples, 2015).

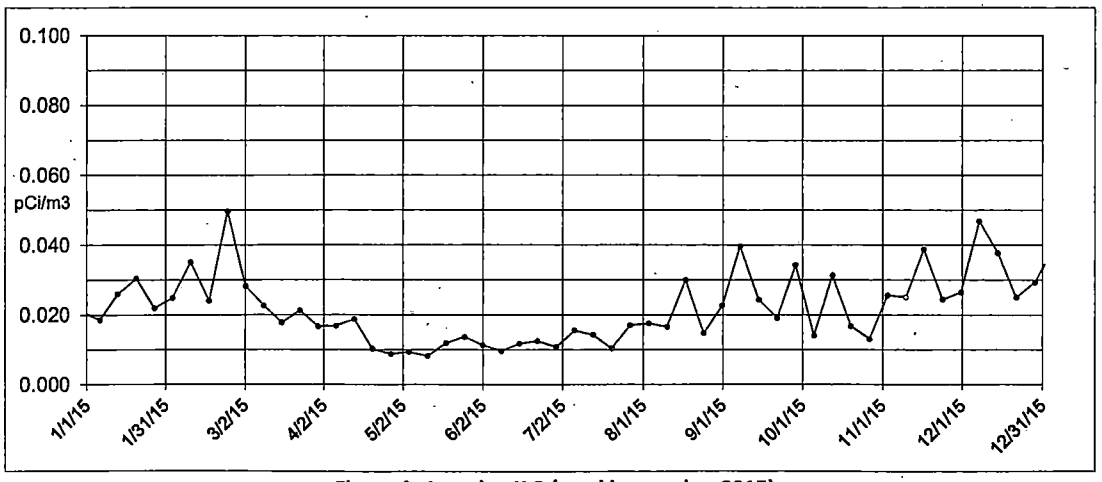

Figure 4. Location K-8 (weekly samples, 2015)

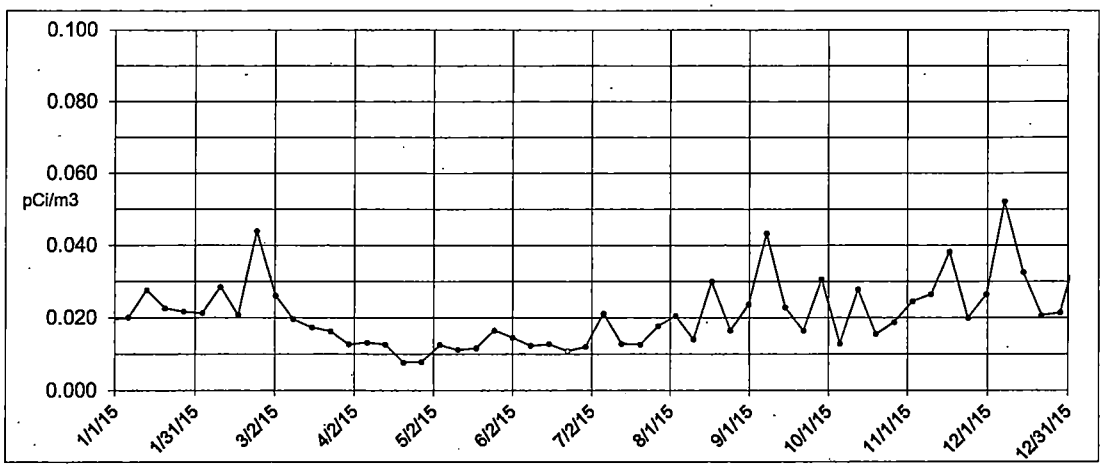

Figure 5. Location K-31 (weekly samples, 2015)

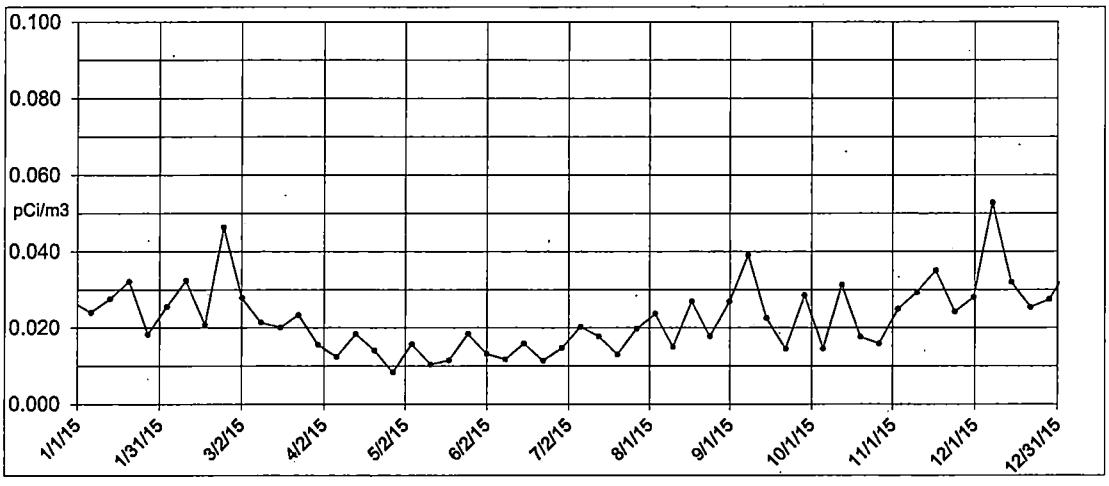

Figure 6. Location K-41 (weekly samples, 2015)

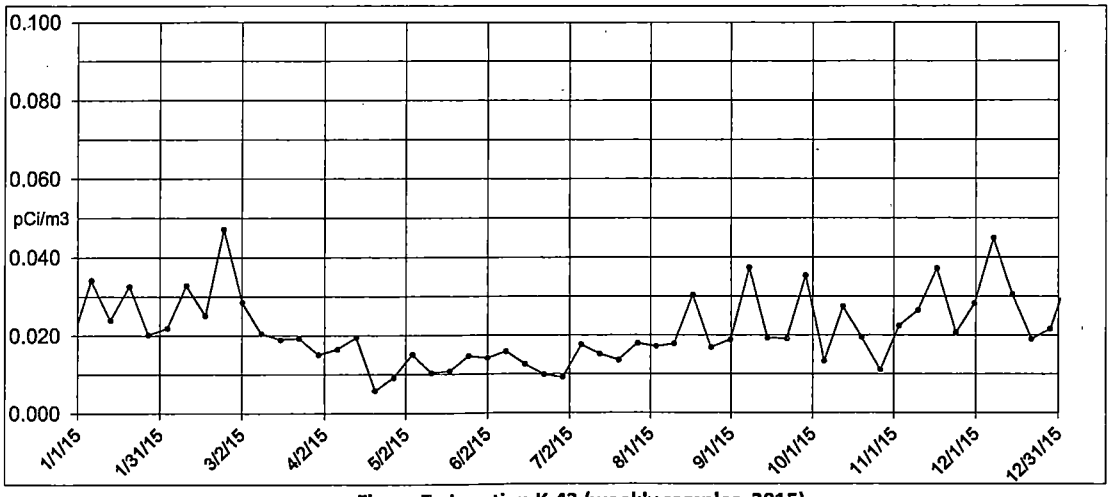

Figure 7. Location K-43 (weekly samples, 2015)

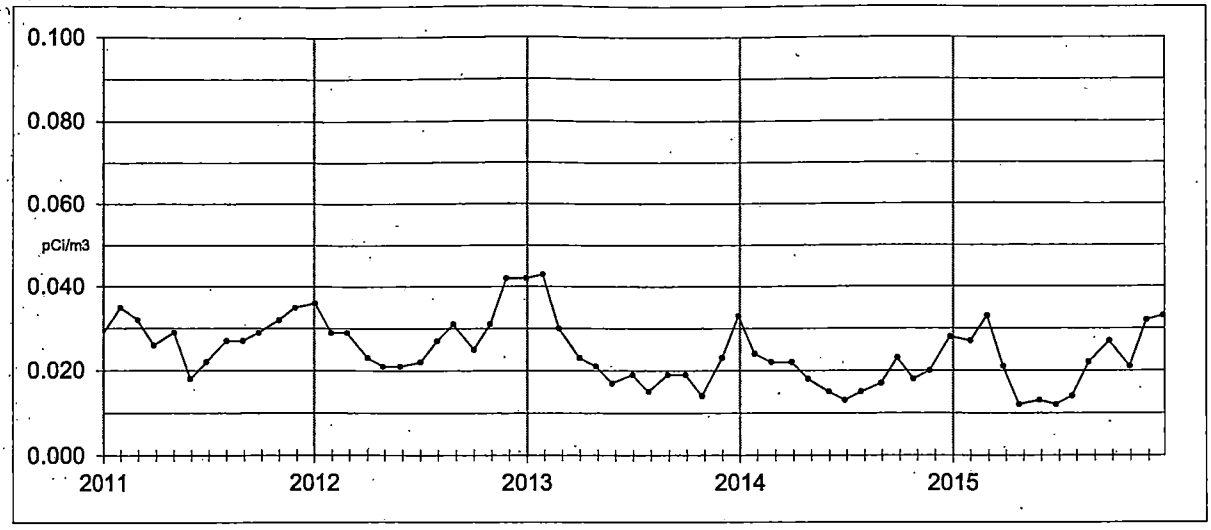

Figure 8. Location K-1f (monthly averages, 2011-2015)

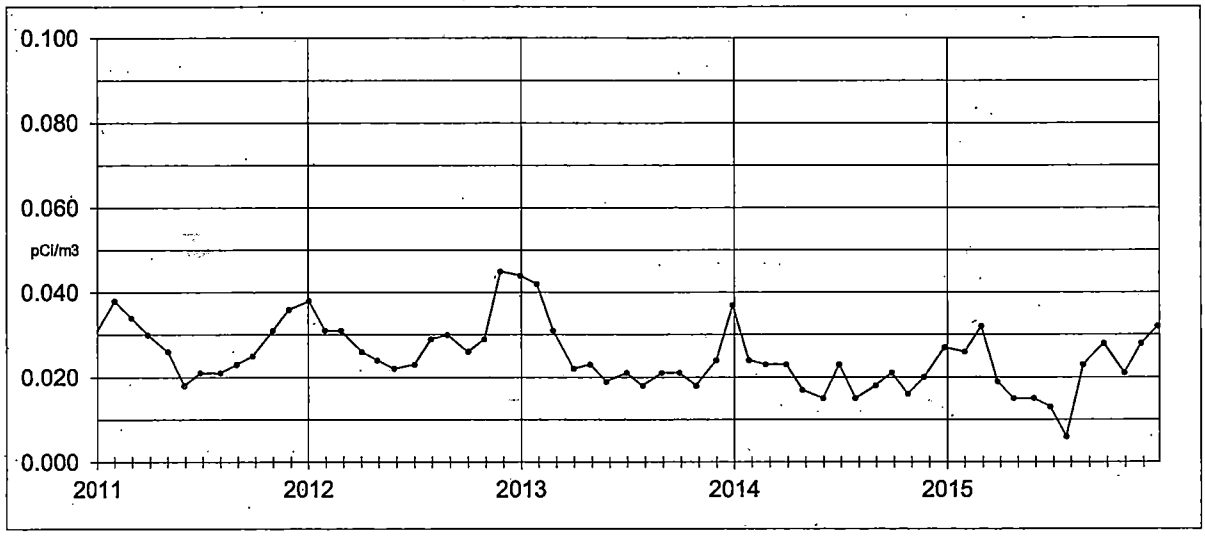

Figure 9. Location K-2 (monthly averages, 2011-2015).

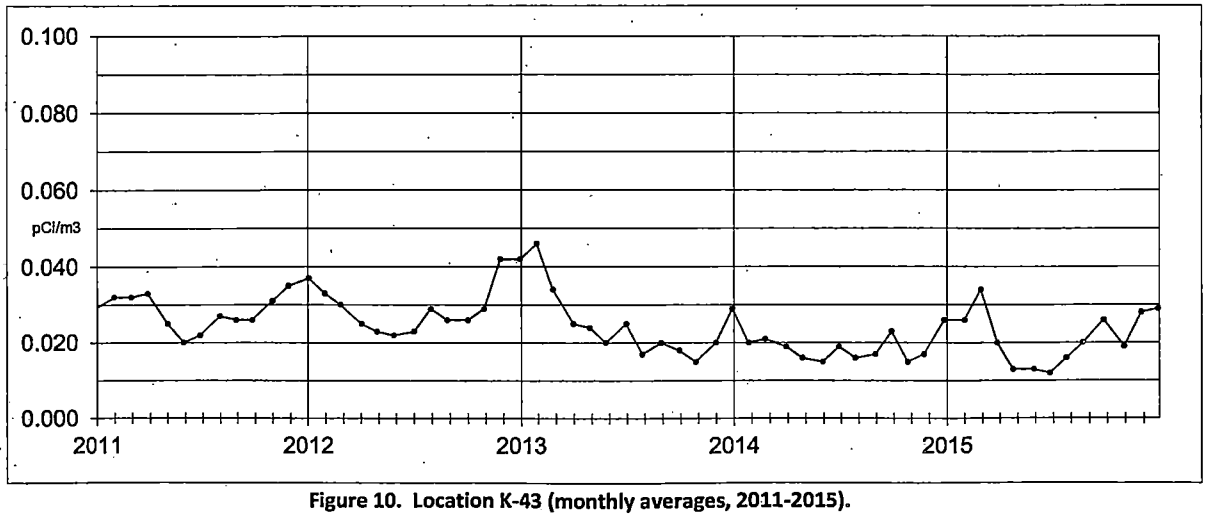

Figure 10. Location K-43 (monthly averages, 2011-2015).

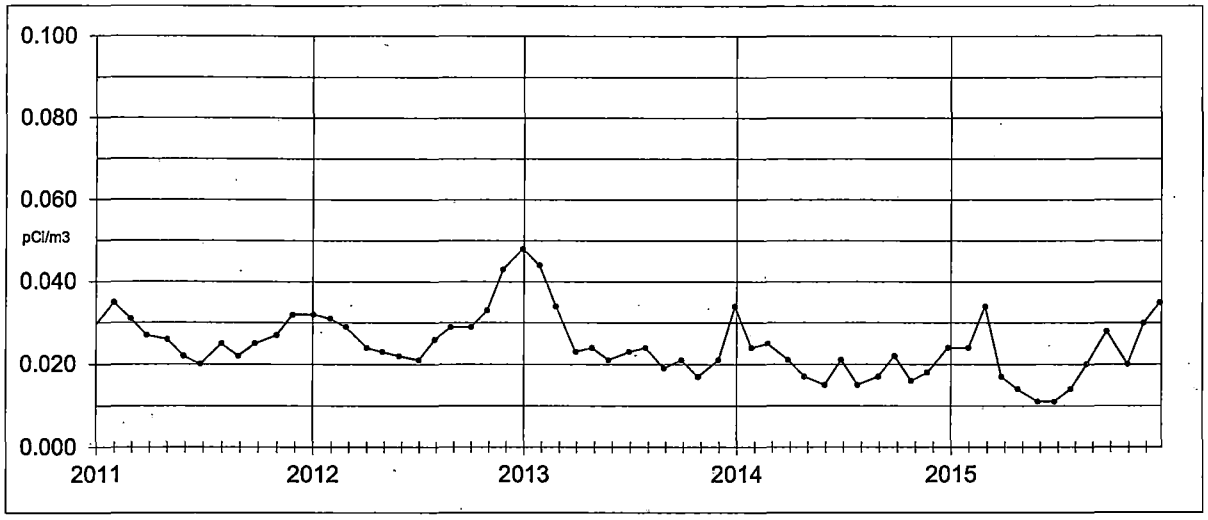

Figure 11. Location K-8 (monthly averages, 2011-2015).

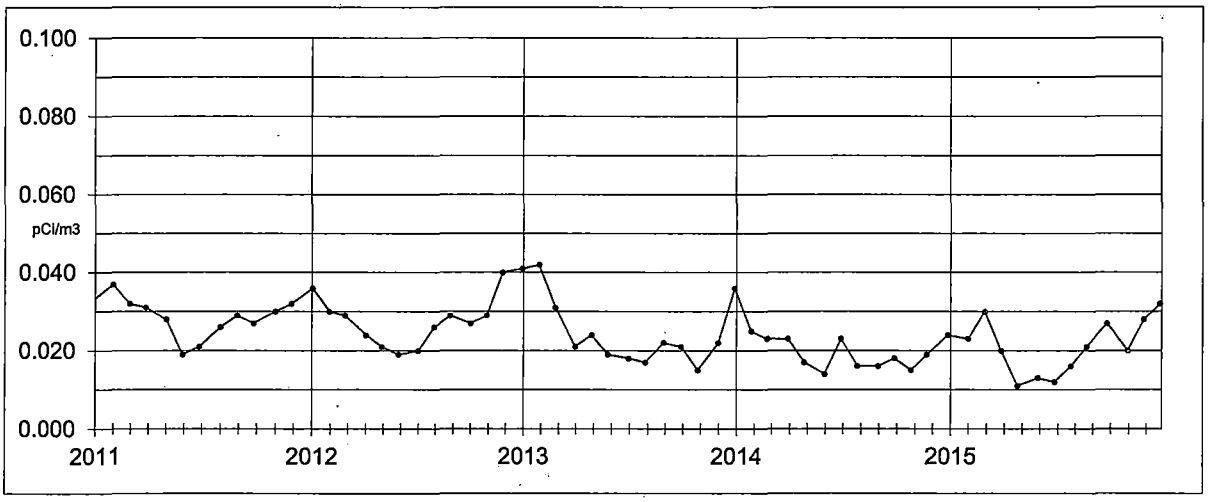

Figure 12. Location K-31 (monthly averages, 2011-2015).

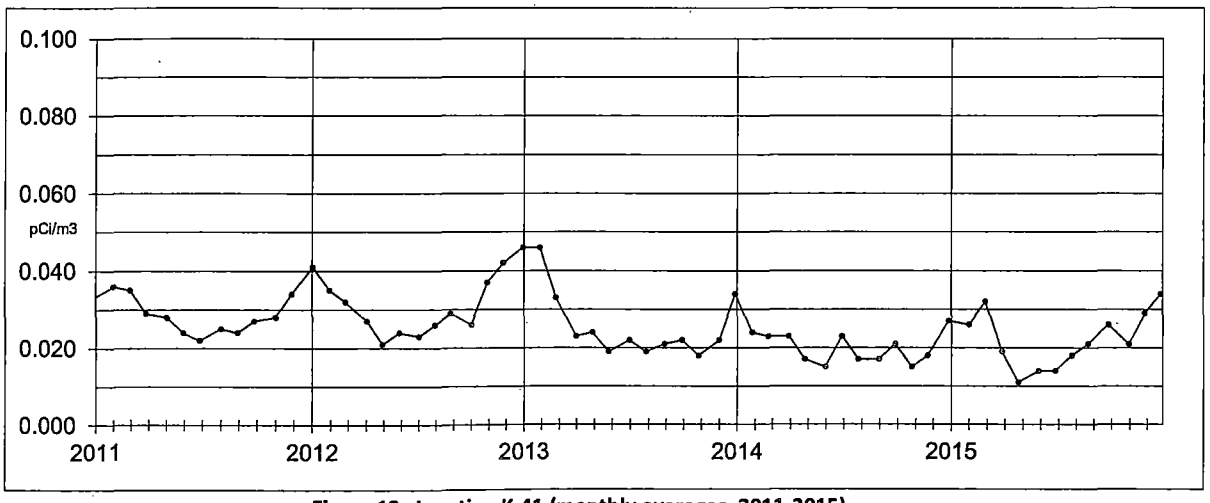

Figure 13. Location K-41 (monthly averages, 2011-2015).

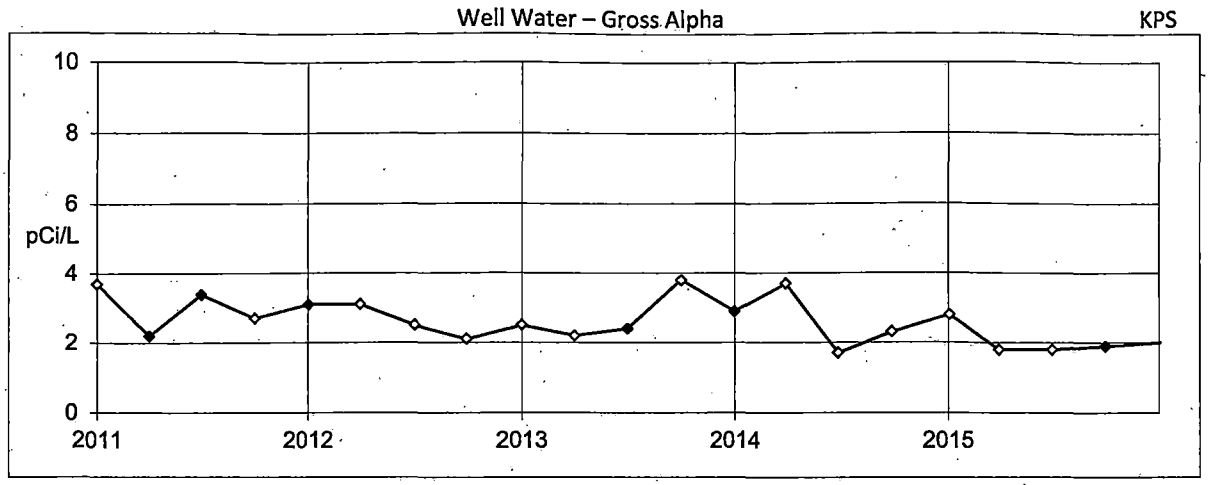

Figure 14. Location K-1g. Total Residue. Quarterly collection.

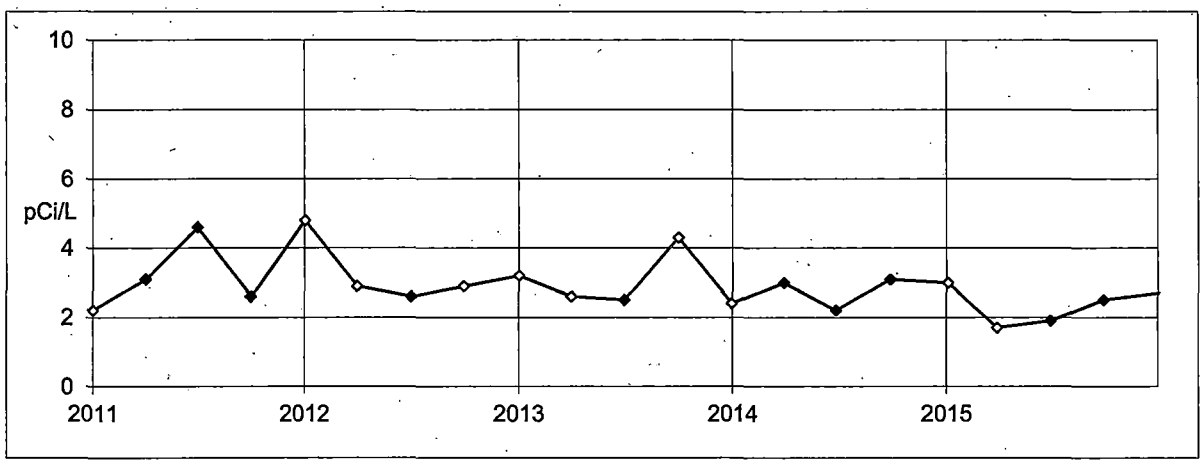

Figure 15. Location K-1h. Total Residue. Quarterly collection.

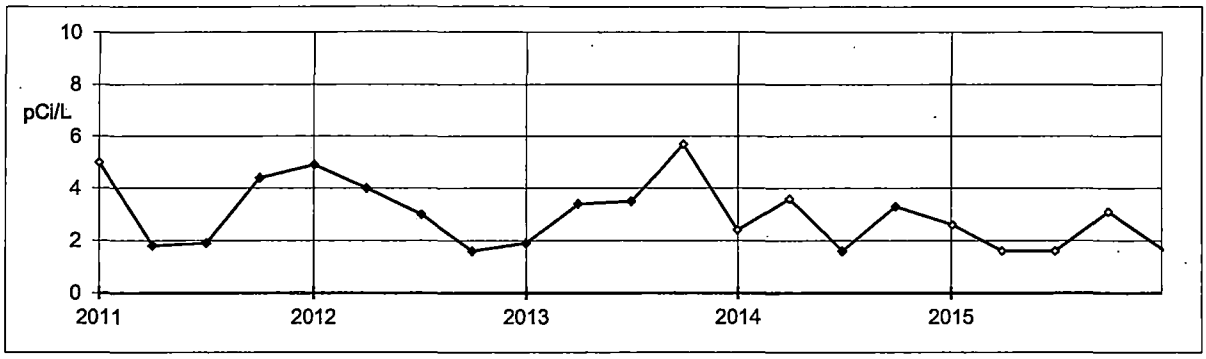

Figure 16. Location K-1g. Total Residue. Quarterly collection.

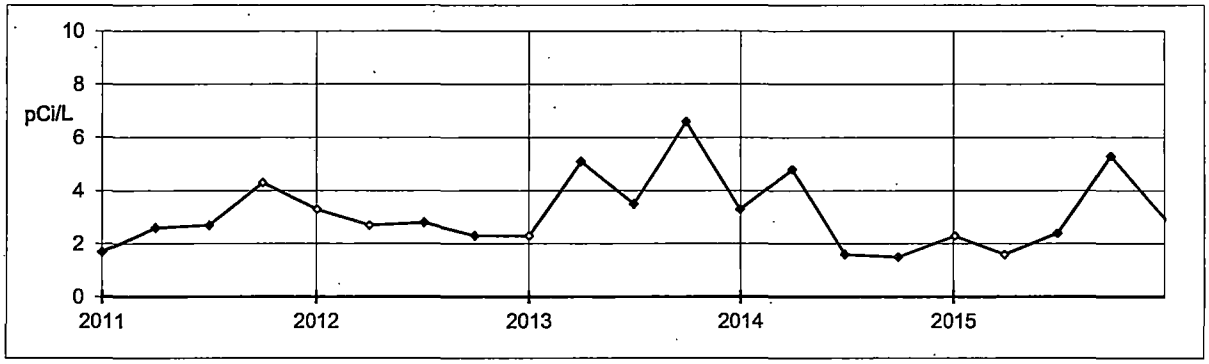

Figure 17. Location K-1h. Total Residue. Quarterly collection.

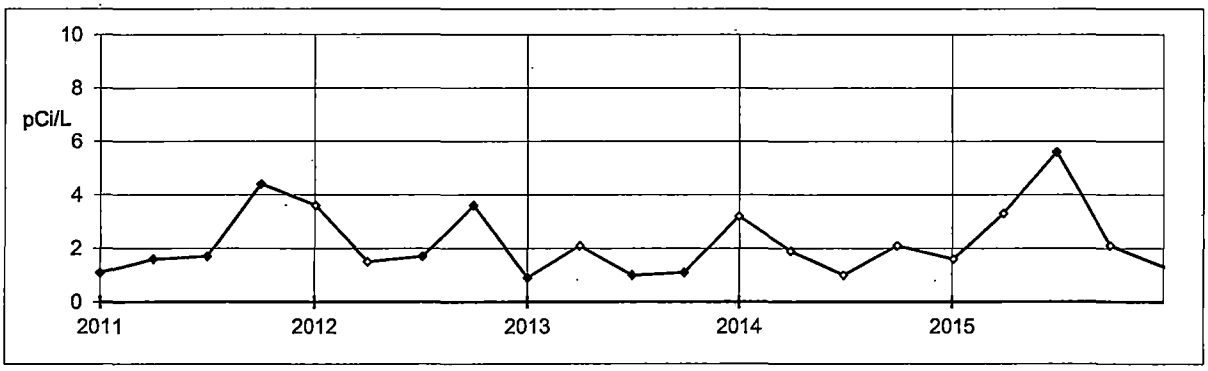

Figure 18. Location K-10. Total Residue. Quarterly collection.

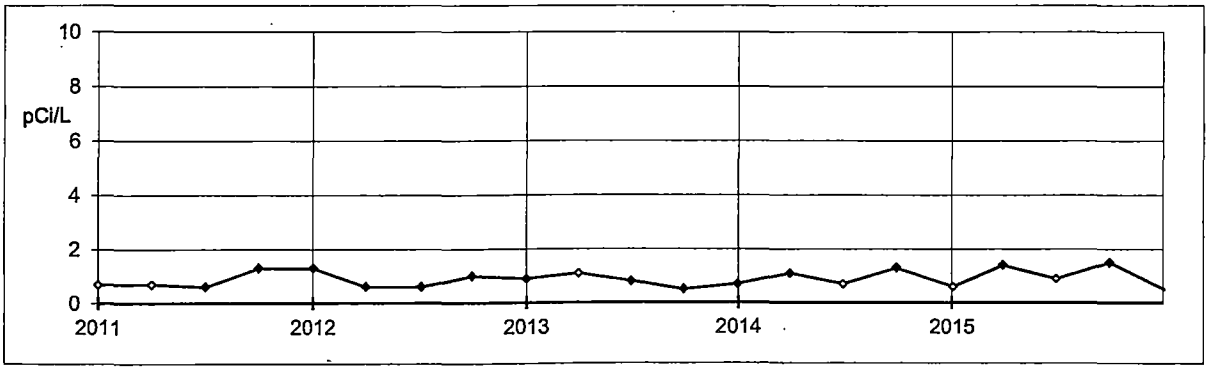

Figure 19. Location K-11. Total Residue. Quarterly collection.

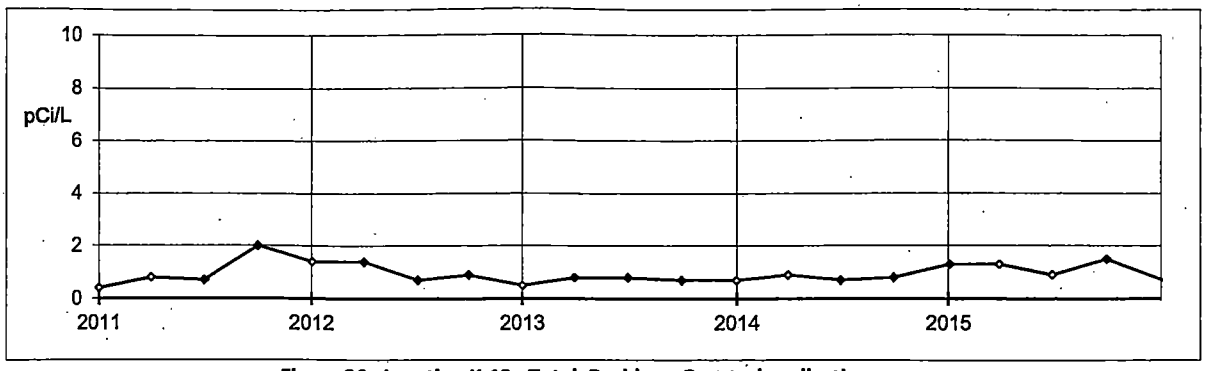

Figure 20. Location K-13. Total Residue. Quarterly collection.

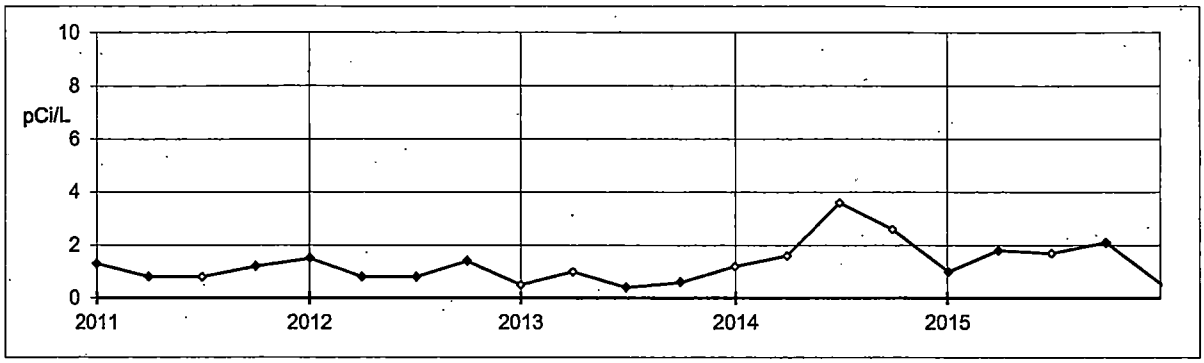

Figure 21. Location K-38. Total Residue. Quarterly collection.

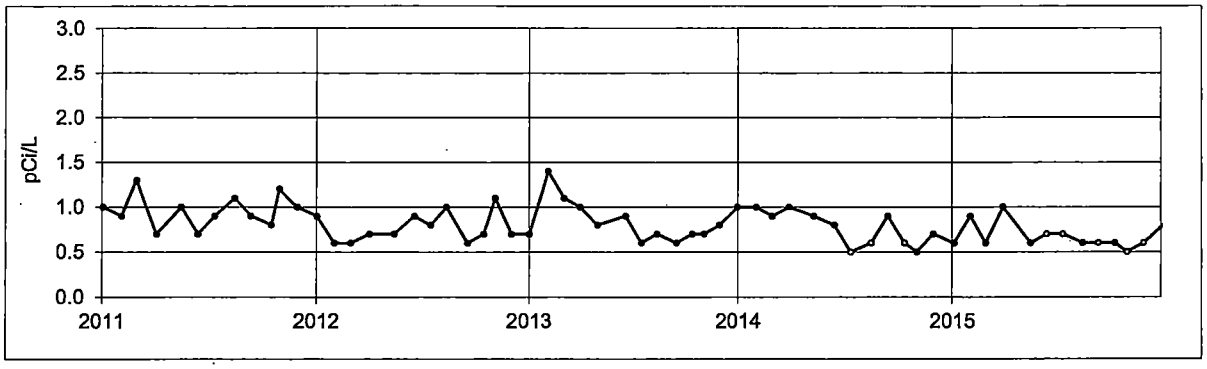

Figure 22. Milk samples. Location K-3.

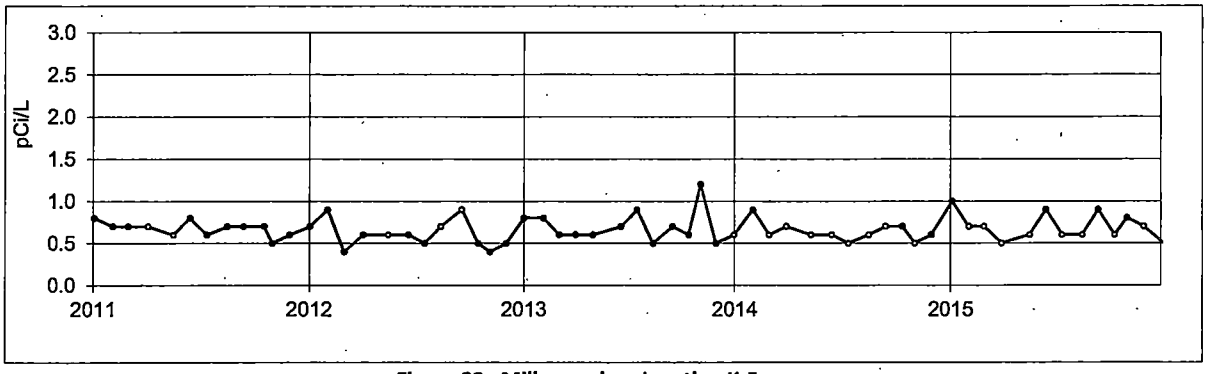

Figure 23. Milk samples. Location K-5.

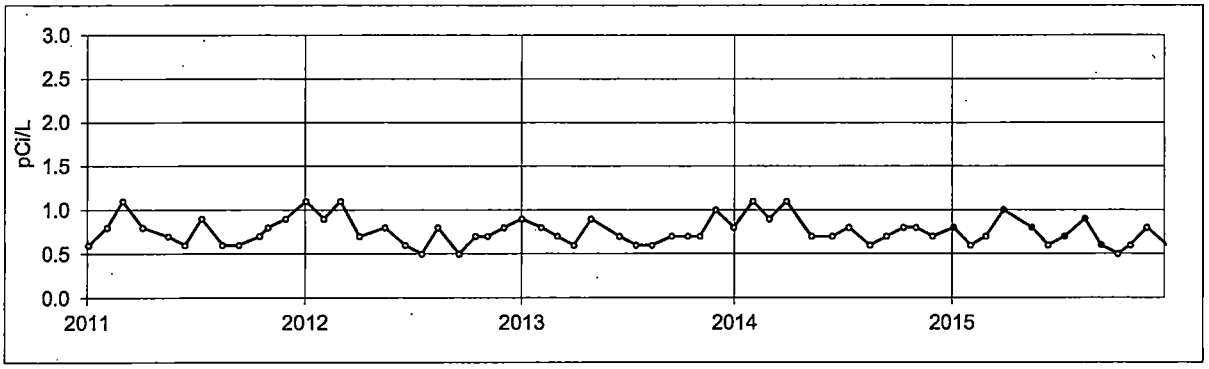

Figure 24. Milk samples. Location K-42

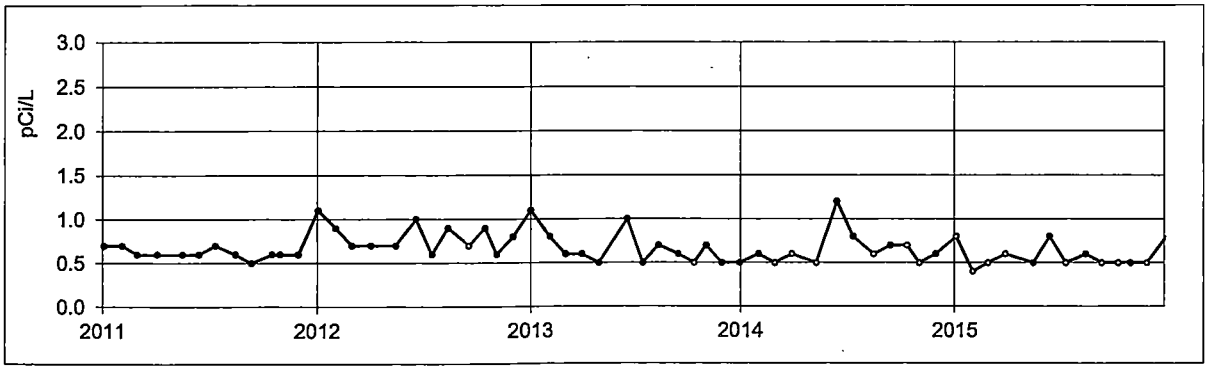

Figure 25. Milk samples. Location K-34.

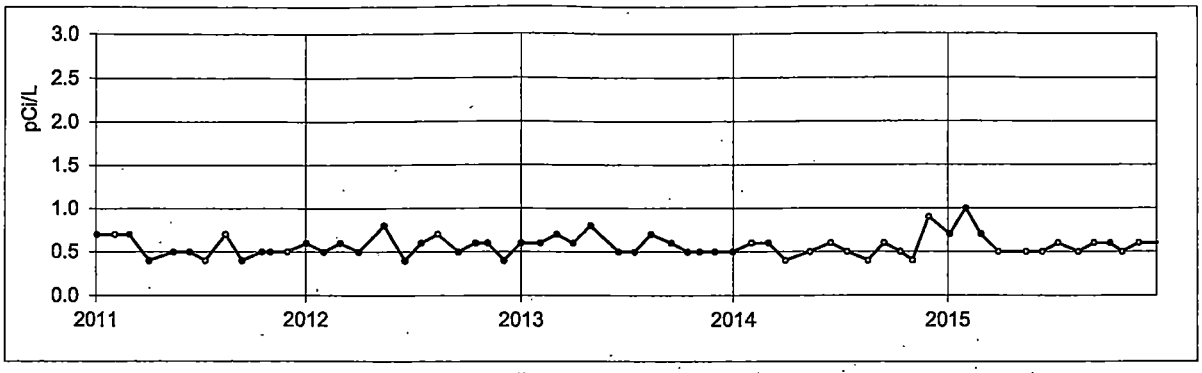

Figure 26. Milk Samples. Location K-35.

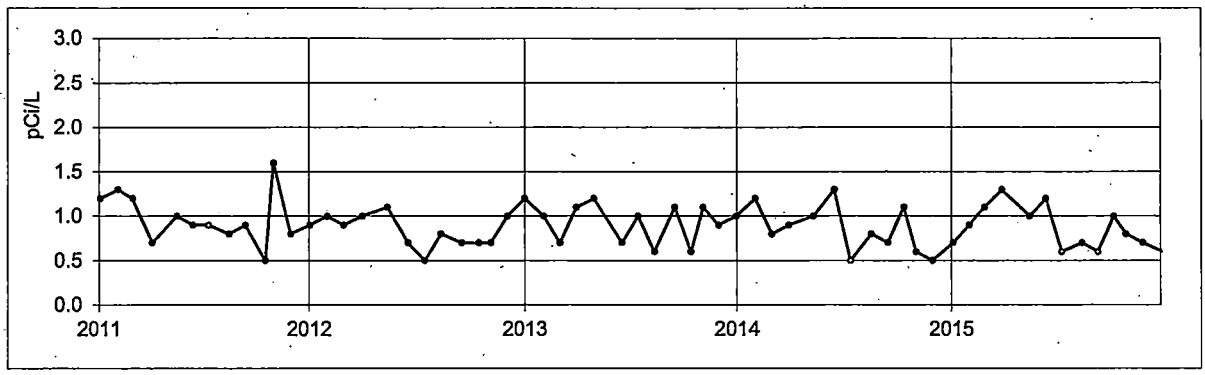

Figure 27. Milk samples. Location K-38

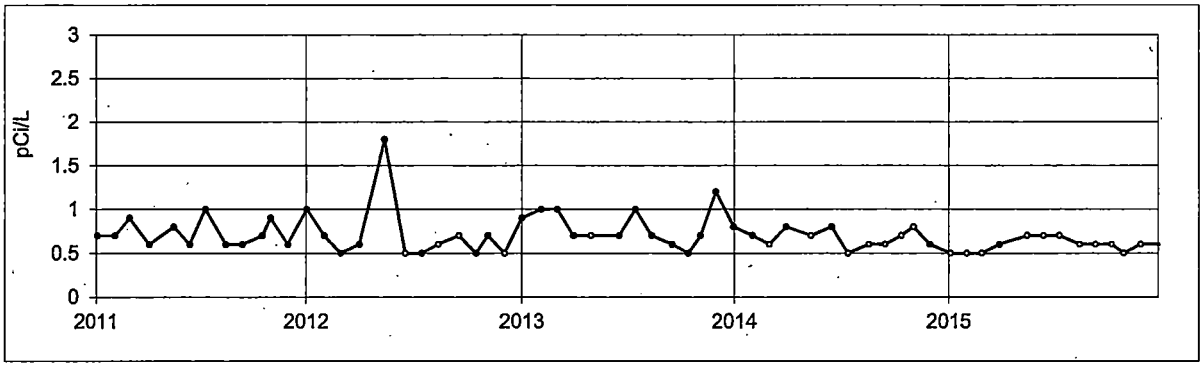

Figure 28. Milk Samples. Location K-39.

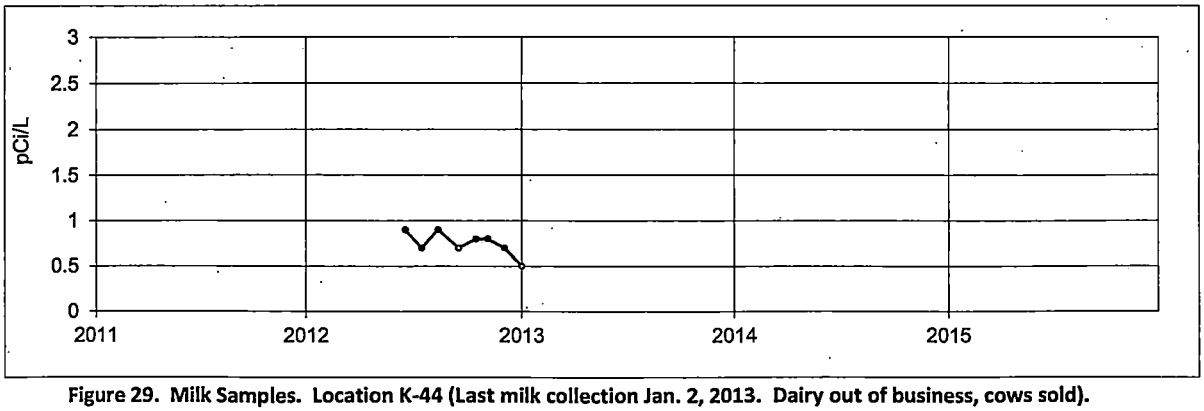

Figure 29. Milk Samples. Location K-44 (Last milk collection Jan. 2, 2013. Dairy out of business, cows sold).

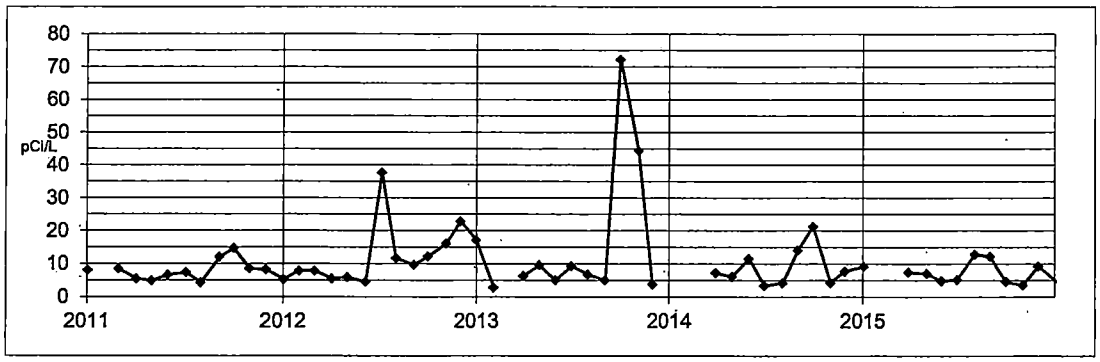

Figure 30. Surface Water. North Creek, Onsite (K-1a).

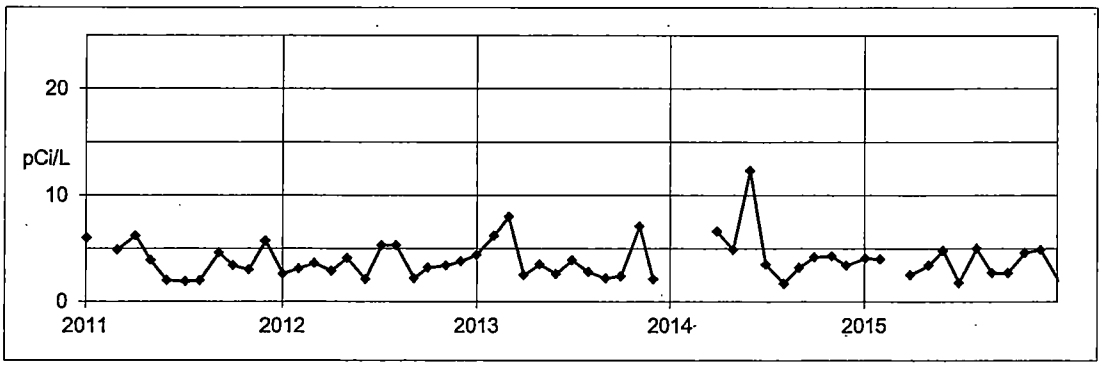

Figure 31. Surface Water. Middle Creek, Onsite (K-1b).

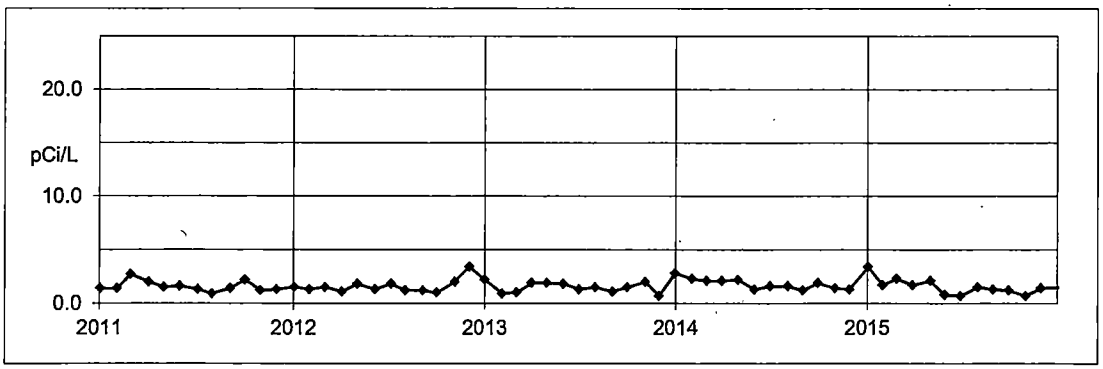

Figure 32. Surface Water. Lake Michigan, condenser discharge, Onsite (K-1d).

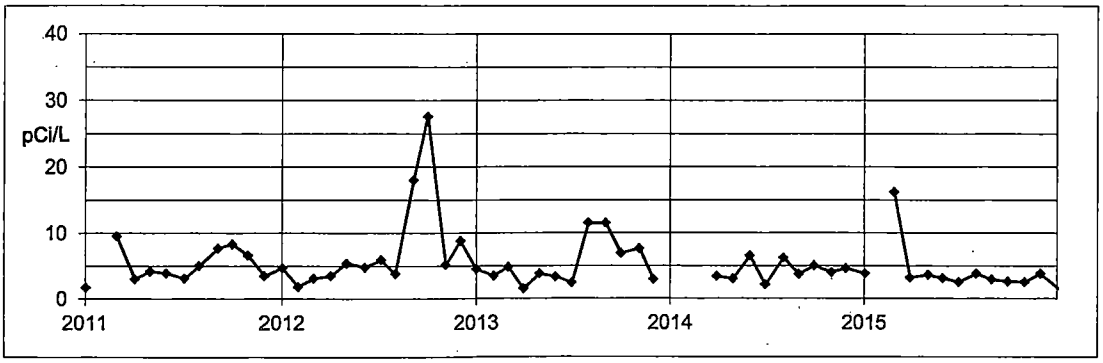

Figure 33. Surface Water. South Creek, Onsite (K-1e).

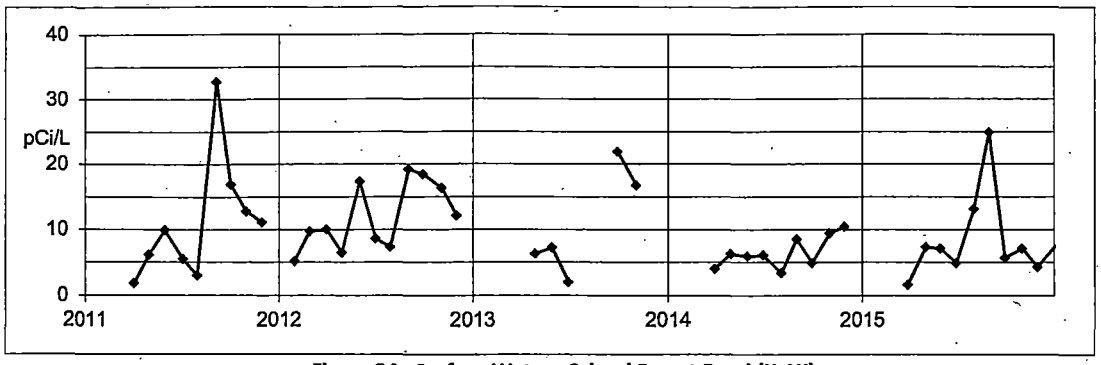

Figure 34. Surface Water. School Forest Pond (K-1K).

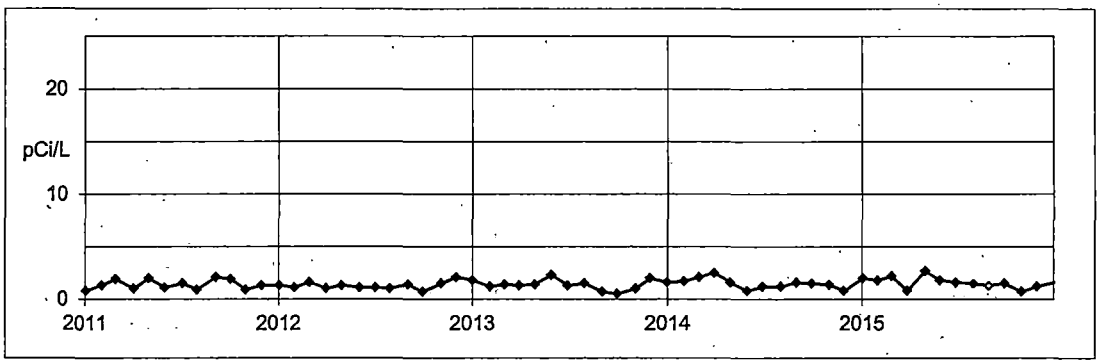

Figure 35. Surface water (raw). Lake Michigan, Rostok Intake (K-9).

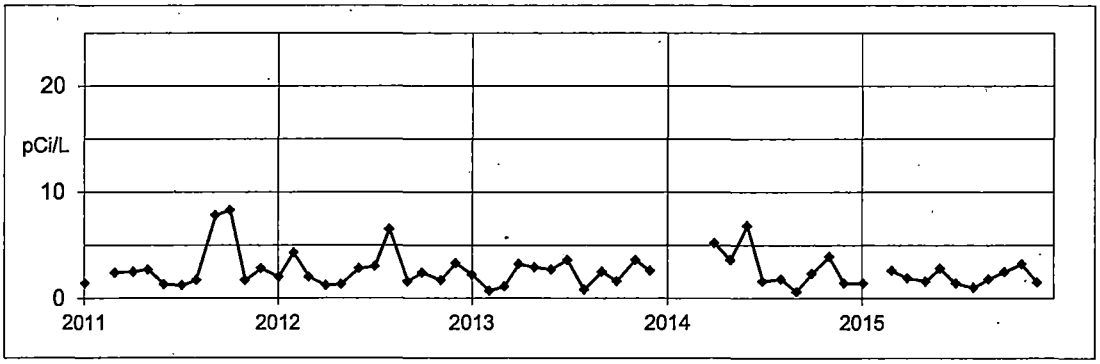

Figure 36. Surface Water. Lake Michigan, Two Creeks Park (K-14a).

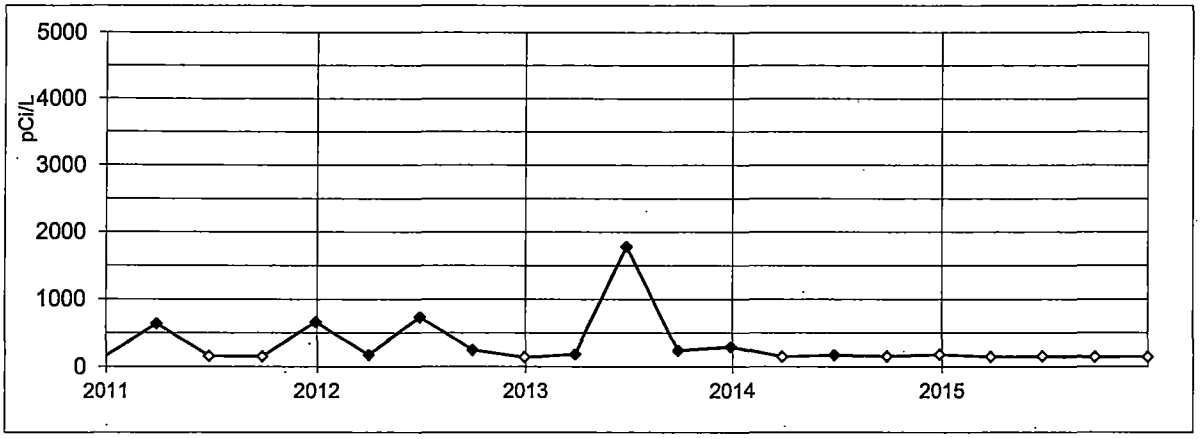

Figure 37. Surface Water. Lake Michigan, condenser discharge, K-1d. Quarterly collection.

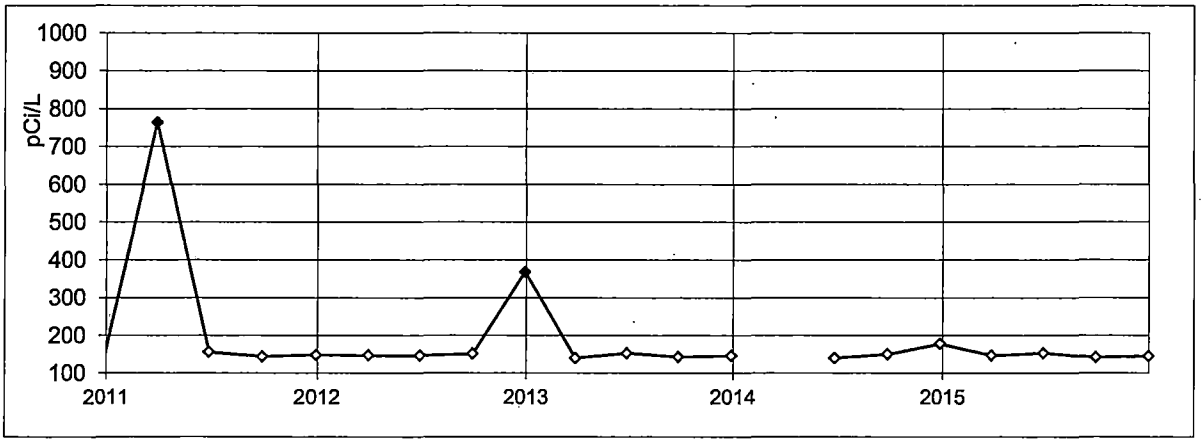

Figure 38. Surface Water. Lake Michigan, Two Creeks Park, K-14a. Quarterly collection.

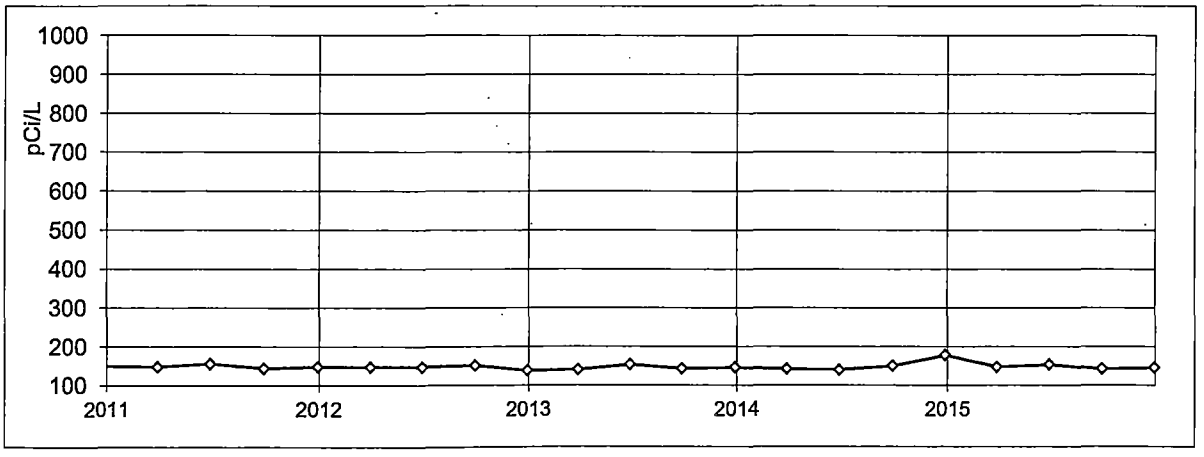

Figure 39. Surface water. Lake Michigan, Rostok Intake, K-9. Quarterly collection.

DATA TABULATIONS

Table 4. Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131[a].

Location: K-1f

Units: pCi/m^3

Collection: Continuous, weekly exchange.

Date Collected	Volume (m^3)	Gross Beta	Date Collected	Volume (m^3)	Gross Beta
Required LLD		0.010	Required LLD		0.010
01-06-15	298	0.023 ± 0.004	07-07-15	303	0.017 ± 0.004
01-13-15	300	0.027 ± 0.004	07-14-15	302	0.013 ± 0.004
01-20-15	302	0.038 ± 0.005	07-21-15	302	0.010 ± 0.004
01-27-15	303	0.022 ± 0.004	07-28-15	305	0.014 ± 0.004
02-03-15	302	0.026 ± 0.003			
			08-04-15	301	0.021 ± 0.004
02-10-15	302	0.032 ± 0.004	08-11-15	303	0.017 ± 0.004
02-17-15	303	0.022 ± 0.004	08-18-15	303	0.035 ± 0.005
02-24-15	303	0.052 ± 0.005	08-25-15	304	0.016 ± 0.004
03-03-15	302	0.026 ± 0.005			
			09-01-15	300	0.023 ± 0.004
03-10-15	301	0.025 ± 0.004	09-08-15	301	0.039 ± 0.005
03-17-15	302	0.018 ± 0.004	09-15-15	303	0.025 ± 0.004
03-24-15	303	0.022 ± 0.004	09-22-15	306	0.017 ± 0.005
03-31-15	302	0.018 ± 0.004	09-29-15	302	0.030 ± 0.005
1st Quarter Mean ± s.d.		0.027 ± 0.009	3rd Quarter Mean ± s.d.		0.021 ± 0.009
04-07-15	302	0.015 ± 0.004	10-06-15	300	0.015 ± 0.004
04-14-15	303	0.016 ± 0.004	10-13-15	301	0.027 ± 0.004
04-21-15	304	0.011 ± 0.004	10-20-15	303	0.019 ± 0.004
04-28-15	302	0.007 ± 0.004	10-27-15	301	0.020 ± 0.005
			11-03-15	306	0.023 ± 0.004
05-05-15	302	0.011 ± 0.004			
05-12-15	302	0.007 ± 0.004	11-10-15	301	0.029 ± 0.005
05-19-15	303	0.013 ± 0.004	11-17-15	307	0.038 ± 0.005
05-26-15	302	0.018 ± 0.004	11-24-15	300	0.031 ± 0.004
06-02-15	304	0.015 ± 0.004	12-01-15	301	0.030 ± 0.004
06-09-15	302	0.014 ± 0.004	12-08-15	304	0.052 ± 0.006
06-16-15	302	0.012 ± 0.004	12-15-15	300	0.041 ± 0.005
06-23-15	303	0.012 ± 0.004	12-22-15	303	0.027 ± 0.005
06-30-15	302	0.010 ± 0.004	12-29-15	313	0.026 ± 0.005
2nd Quarter Mean ± s.d.		0.012 ± 0.003	4th Quarter Mean ± s.d.		0.029 ± 0.010
			Cumulative Average		0.022

[a] Iodine-131 concentrations are < 0.03 pCi/m^3 unless otherwise noted.

Table 5. Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131[a].

Location: K-2

Units: pCi/m^3

Collection: Continuous, weekly exchange.

Date Collected	Volume (m^3)	Gross Beta	Date Collected	Volume (m^3)	Gross Beta
Required LLD		0.010	Required LLD		0.010
01-06-15	298	0.025 ± 0.005	07-07-15	312	0.016 ± 0.004
01-13-15	305	0.027 ± 0.004	07-14-15	315	0.016 ± 0.004
01-20-15	302	0.031 ± 0.004	07-21-15	298	0.012 ± 0.004
01-27-15	304	0.020 ± 0.004	07-28-15	79	0.006 ± 0.014 [b]
02-03-15	303	0.027 ± 0.004			
			08-04-15	286	0.024 ± 0.004
02-10-15	294	0.031 ± 0.004	08-11-15	304	0.022 ± 0.004
02-17-15	303	0.021 ± 0.004	08-18-15	302	0.032 ± 0.005
02-24-15	311	0.049 ± 0.005	08-25-15	307	0.014 ± 0.004
03-03-15	302	0.028 ± 0.005			
			09-01-15	298	0.023 ± 0.004
03-10-15	300	0.026 ± 0.004	09-08-15	302	0.040 ± 0.005
03-17-15	301	0.015 ± 0.004	09-15-15	302	0.027 ± 0.004
03-24-15	300	0.020 ± 0.004	09-22-15	305	0.019 ± 0.005
03-31-15	305	0.016 ± 0.004	09-29-15	302	0.031 ± 0.005
1st Quarter Mean ± s.d.		0.026 ± 0.009	3rd Quarter Mean ± s.d.		0.022 ± 0.009
04-07-15	302	0.019 ± 0.004	10-06-15	301	0.015 ± 0.004
04-14-15	303	0.017 ± 0.004	10-13-15	302	0.032 ± 0.005
04-21-15	300	0.014 ± 0.004	10-20-15	302	0.018 ± 0.004
04-28-15	302	0.011 ± 0.004	10-27-15	301	0.015 ± 0.005
			11-03-15	303	0.023 ± 0.004
05-05-15	305	0.013 ± 0.004			
05-12-15	300	0.013 ± 0.004	11-10-15	302	0.025 ± 0.005
05-19-15	303	0.015 ± 0.004	11-17-15	308	0.036 ± 0.005
05-26-15	297	0.018 ± 0.004	11-24-15	299	0.024 ± 0.004
06-02-15	304	0.014 ± 0.004	12-01-15	301	0.026 ± 0.004
06-09-15	305	0.016 ± 0.004	12-08-15	305	0.048 ± 0.005
06-16-15	304	0.013 ± 0.004	12-15-15	300	0.035 ± 0.005
06-23-15	302	0.008 ± 0.004	12-22-15	302	0.022 ± 0.004
06-30-15	302	0.013 ± 0.004	12-29-15	316	0.024 ± 0.004
2nd Quarter Mean ± s.d.		0.014 ± 0.003	4th Quarter Mean ± s.d.		0.026 ± 0.009
			Cumulative Average		0.022

[a] Iodine-131 concentrations are < 0.03 pCi/m^3 unless otherwise noted.

[b] Pump found not working. See Condition Report number 88.

Table 6. Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131[a].

Location: K-8

Units: pCi/m^3

Collection: Continuous, weekly exchange.

Date Collected	Volume (m^3)	Gross Beta	Date Collected	Volume (m^3)	Gross Beta
Required LLD		0.010	Required LLD		0.010
01-06-15	298	0.019 ± 0.004	07-07-15	304	0.015 ± 0.004
01-13-15	300	0.026 ± 0.004	07-14-15	303	0.014 ± 0.004
01-20-15	302	0.030 ± 0.004	07-21-15	301	0.010 ± 0.004
01-27-15	303	0.022 ± 0.004	07-28-15	303	0.017 ± 0.005
02-03-15	302	0.025 ± 0.003			
			08-04-15	301	0.018 ± 0.004
02-10-15	302	0.035 ± 0.004	08-11-15	303	0.017 ± 0.004
02-17-15	303	0.024 ± 0.004	08-18-15	305	0.030 ± 0.030
02-24-15	303	0.050 ± 0.005	08-25-15	302	0.015 ± 0.004
03-03-15	302	0.028 ± 0.005			
			09-01-15	300	0.023 ± 0.004
03-10-15	301	0.023 ± 0.004	09-08-15	301	0.040 ± 0.005
03-17-15	302	0.018 ± 0.004	09-15-15	307	0.024 ± 0.004
03-24-15	303	0.021 ± 0.004	09-22-15	304	0.019 ± 0.005
03-31-15	302	0.017 ± 0.004	09-29-15	302	0.034 ± 0.005
1st Quarter Mean ± s.d.		0.026 ± 0.009	3rd Quarter Mean ± s.d.		0.021 ± 0.009
04-07-15	302	0.017 ± 0.004	10-06-15	299	0.014 ± 0.004
04-14-15	303	0.019 ± 0.004	10-13-15	305	0.031 ± 0.005
04-21-15	304	0.010 ± 0.004	10-20-15	300	0.017 ± 0.004
04-28-15	302	0.009 ± 0.004	10-27-15	301	0.013 ± 0.005
			11-03-15	305	0.026 ± 0.004
05-05-15	302	0.009 ± 0.004			
05-12-15	302	0.008 ± 0.004	11-10-15	302	0.029 ± 0.005
05-19-15	305	0.012 ± 0.004	11-17-15	307	0.039 ± 0.005
05-26-15	300	0.014 ± 0.004	11-24-15	300	0.024 ± 0.004
06-02-15	303	0.011 ± 0.004	12-01-15	301	0.026 ± 0.004
06-09-15	302	0.010 ± 0.004	12-08-15	305	0.047 ± 0.005
06-16-15	302	0.012 ± 0.004	12-15-15	300	0.038 ± 0.005
06-23-15	303	0.011 ± 0.004	12-22-15	302	0.025 ± 0.005
06-30-15	302	0.011 ± 0.004	12-29-15	313	0.029 ± 0.005
2nd Quarter Mean ± s.d.		0.012 ± 0.003	4th Quarter Mean ± s.d.		0.028 ± 0.010
			Cumulative Average		0.022

[a] Iodine-131 concentrations are < 0.03 pCi/m^3 unless otherwise noted.

Table 7. Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131[a].

Location: K-31

Units: pCi/m^3

Collection: Continuous, weekly exchange.

Date Collected	Volume (m^3)	Gross Beta	Date Collected	Volume (m^3)	Gross Beta
Required LLD		0.010	Required LLD		0.010
01-06-15	298	0.020 ± 0.004	07-07-15	301	0.021 ± 0.004
01-13-15	307	0.028 ± 0.004	07-14-15	299	0.013 ± 0.004
01-20-15	302	0.023 ± 0.004	07-21-15	307	0.013 ± 0.004
01-27-15	313	0.022 ± 0.004	07-28-15	302	0.018 ± 0.005
02-03-15	294	0.021 ± 0.003			
			08-04-15	298	0.020 ± 0.004
02-10-15	293	0.028 ± 0.004	08-11-15	303	0.014 ± 0.004
02-17-15	303	0.021 ± 0.004	08-18-15	302	0.030 ± 0.005
02-24-15	312	0.044 ± 0.004	08-25-15	308	0.016 ± 0.004
03-03-15	302	0.026 ± 0.005			
			09-01-15	297	0.024 ± 0.004
03-10-15	300	0.020 ± 0.004	09-08-15	302	0.043 ± 0.005
03-17-15	301	0.017 ± 0.004	09-15-15	302	0.023 ± 0.004
03-24-15	300	0.016 ± 0.004	09-22-15	305	0.016 ± 0.005
03-31-15	304	0.013 ± 0.004	09-29-15	302	0.031 ± 0.005
1st Quarter Mean ± s.d.		0.023 ± 0.008	3rd Quarter Mean ± s.d.		0.022 ± 0.009
04-07-15	304	0.013 ± 0.004	10-06-15	301	0.013 ± 0.004
04-14-15	303	0.013 ± 0.004	10-13-15	302	0.028 ± 0.004
04-21-15	299	0.008 ± 0.004	10-20-15	302	0.015 ± 0.004
04-28-15	302	0.008 ± 0.004	10-27-15	301	0.019 ± 0.005
			11-03-15	305	0.024 ± 0.004
05-05-15	305	0.012 ± 0.004			
05-12-15	301	0.011 ± 0.004	11-10-15	302	0.026 ± 0.005
05-19-15	303	0.012 ± 0.004	11-17-15	308	0.038 ± 0.005
05-26-15	296	0.016 ± 0.004	11-24-15	299	0.020 ± 0.004
06-02-15	304	0.014 ± 0.004	12-01-15	301	0.026 ± 0.004
06-09-15	305	0.012 ± 0.004	12-08-15	305	0.052 ± 0.005
06-16-15	304	0.013 ± 0.004	12-15-15	300	0.032 ± 0.005
06-23-15	303	0.011 ± 0.004	12-22-15	302	0.021 ± 0.004
06-30-15	294	0.012 ± 0.004	12-29-15	315	0.021 ± 0.004
2nd Quarter Mean ± s.d.		0.012 ± 0.002	4th Quarter Mean ± s.d.		0.026 ± 0.010
			Cumulative Average		0.021

[a] Iodine-131 concentrations are < 0.03 pCi/m^3 unless otherwise noted.

Table 8. Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131[a].

Location: K-41

Units: pCi/m^3

Collection: Continuous, weekly exchange.

Date Collected	Volume (m^3)	Gross Beta	Date Collected	Volume (m^3)	Gross Beta
Required LLD		0.010	Required LLD		0.010
01-06-15	297	0.024 ± 0.004	07-07-15	305	0.020 ± 0.004
01-13-15	303	0.028 ± 0.004	07-14-15	303	0.018 ± 0.004
01-20-15	299	0.032 ± 0.004	07-21-15	302	0.013 ± 0.004
01-27-15	307	0.018 ± 0.004	07-28-15	301	0.020 ± 0.020
02-03-15	303	0.026 ± 0.003			
			08-04-15	302	0.024 ± 0.004
02-10-15	302	0.032 ± 0.004	08-11-15	303	0.015 ± 0.004
02-17-15	302	0.021 ± 0.004	08-18-15	302	0.027 ± 0.005
02-24-15	304	0.046 ± 0.005	08-25-15	302	0.018 ± 0.004
03-03-15	302	0.028 ± 0.005			
			09-01-15	302	0.027 ± 0.005
03-10-15	300	0.021 ± 0.004	09-08-15	301	0.039 ± 0.005
03-17-15	301	0.020 ± 0.004	09-15-15	305	0.023 ± 0.004
03-24-15	301	0.023 ± 0.004	09-22-15	303	0.014 ± 0.005
03-31-15	305	0.016 ± 0.004	09-29-15	303	0.029 ± 0.005
1st Quarter Mean ± s.d.		0.026 ± 0.008	3rd Quarter Mean ± s.d.		0.022 ± 0.007
04-07-15	302	0.012 ± 0.004	10-06-15	299	0.015 ± 0.004
04-14-15	302	0.018 ± 0.004	10-13-15	305	0.031 ± 0.005
04-21-15	300	0.014 ± 0.004	10-20-15	301	0.018 ± 0.004
04-28-15	302	0.008 ± 0.004	10-27-15	305	0.016 ± 0.005
			11-03-15	302	0.025 ± 0.004
05-05-15	305	0.016 ± 0.004			
05-12-15	301	0.010 ± 0.004	11-10-15	301	0.029 ± 0.005
05-19-15	305	0.011 ± 0.004	11-17-15	306	0.035 ± 0.005
05-26-15	300	0.018 ± 0.004	11-24-15	300	0.024 ± 0.004
06-02-15	305	0.013 ± 0.004	12-01-15	304	0.028 ± 0.004
06-09-15	301	0.012 ± 0.004	12-08-15	300	0.053 ± 0.006
06-16-15	304	0.016 ± 0.004	12-15-15	300	0.032 ± 0.005
06-23-15	303	0.011 ± 0.004	12-22-15	302	0.025 ± 0.005
06-30-15	299	0.015 ± 0.004	12-29-15	313	0.027 ± 0.005
2nd Quarter Mean ± s.d.		0.013 ± 0.003	4th Quarter Mean ± s.d.		0.028 ± 0.010
			Cumulative Average		0.022

[a] Iodine-131 concentrations are < 0.03 pCi/m^3 unless otherwise noted.

Table 9. Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131[a].

Location: K-43

Units: pCi/m^3

Collection: Continuous, weekly exchange.

Date Collected	Volume (m^3)	Gross Beta	Date Collected	Volume (m^3)	Gross Beta
Required LLD		0.010	Required LLD		0.010
01-06-15	298	0.034 ± 0.005	07-07-15	304	0.018 ± 0.004
01-13-15	300	0.024 ± 0.004	07-14-15	303	0.015 ± 0.004
01-20-15	302	0.033 ± 0.004	07-21-15	301	0.014 ± 0.004
01-27-15	303	0.020 ± 0.004	07-28-15	303	0.018 ± 0.005
02-03-15	302	0.022 ± 0.003			
			08-04-15	301	0.017 ± 0.004
02-10-15	303	0.033 ± 0.004	08-11-15	303	0.018 ± 0.004
02-17-15	303	0.025 ± 0.004	08-18-15	305	0.030 ± 0.005
02-24-15	303	0.047 ± 0.005	08-25-15	302	0.017 ± 0.004
03-03-15	302	0.029 ± 0.005			
			09-01-15	300	0.019 ± 0.004
03-10-15	301	0.021 ± 0.004	09-08-15	301	0.037 ± 0.005
03-17-15	302	0.019 ± 0.004	09-15-15	306	0.019 ± 0.004
03-24-15	303	0.019 ± 0.004	09-22-15	304	0.019 ± 0.005
03-31-15	302	0.015 ± 0.004	09-29-15	302	0.035 ± 0.005
1st Quarter Mean ± s.d.		0.026 ± 0.009	3rd Quarter Mean ± s.d.		0.021 ± 0.008
04-07-15	302	0.017 ± 0.017	10-06-15	299	0.013 ± 0.004
04-14-15	303	0.019 ± 0.004	10-13-15	305	0.027 ± 0.004
04-21-15	304	0.006 ± 0.003	10-20-15	300	0.020 ± 0.004
04-28-15	302	0.009 ± 0.004	10-27-15	301	0.011 ± 0.005
			11-03-15	305	0.022 ± 0.004
05-05-15	302	0.015 ± 0.004			
05-12-15	302	0.010 ± 0.004	11-10-15	302	0.026 ± 0.005
05-19-15	305	0.011 ± 0.004	11-17-15	307	0.037 ± 0.005
05-26-15	300	0.015 ± 0.004	11-24-15	300	0.021 ± 0.004
06-02-15	303	0.014 ± 0.004	12-01-15	301	0.028 ± 0.004
06-09-15	302	0.016 ± 0.004	12-08-15	305	0.045 ± 0.005
06-16-15	302	0.013 ± 0.004	12-15-15	300	0.031 ± 0.005
06-23-15	303	0.010 ± 0.004	12-22-15	302	0.019 ± 0.004
06-30-15	301	0.009 ± 0.004	12-29-15	313	0.022 ± 0.004
2nd Quarter Mean ± s.d.		0.013 ± 0.004	4th Quarter Mean ± s.d.		0.025 ± 0.009
			Cumulative Average		0.021

[a] Iodine-131 concentrations are < 0.03 pCi/m^3 unless otherwise noted.

Table 10. Airborne particulate data, gross beta analyses, monthly averages, minima and maxima.

January

Location	Average	Minima	Maxima
Indicators	0.027	0.020	0.038
K-1f	0.027	0.022	0.038
K-43	0.027	0.020	0.034
Controls	0.025	0.018	0.032
K-2	0.026	0.020	0.031
K-8	0.024	0.019	0.030
K-31	0.023	0.020	0.028
K-41	0.026	0.018	0.032

February

Location	Average	Minima	Maxima
Indicators	0.034	0.022	0.052
K-1f	0.033	0.022	0.052
K-43	0.034	0.025	0.047
Controls	0.032	0.021	0.050
K-2	0.032	0.021	0.049
K-8	0.034	0.024	0.050
K-31	0.030	0.021	0.044
K-41	0.032	0.021	0.046

March

Location	Average	Minima	Maxima
Indicators	0.020	0.015	0.025
K-1f	0.021	0.018	0.025
K-43	0.019	0.015	0.021
Controls	0.019	0.013	0.026
K-2	0.019	0.015	0.026
K-8	0.020	0.017	0.023
K-31	0.017	0.013	0.020
K-41	0.020	0.016	0.023

April

Location	Average	Minima	Maxima
Indicators	0.013	0.006	0.019
K-1f	0.012	0.007	0.016
K-43	0.013	0.006	0.019
Controls	0.013	0.008	0.019
K-2	0.015	0.011	0.019
K-8	0.014	0.009	0.019
K-31	0.011	0.008	0.013
K-41	0.011	0.008	0.013

May

Location	Average	Minima	Maxima
Indicators	0.013	0.007	0.032
K-1f	0.013	0.007	0.018
K-43	0.013	0.010	0.015
Controls	0.013	0.008	0.018
K-2	0.015	0.013	0.018
K-8	0.011	0.008	0.014
K-31	0.013	0.011	0.016
K-41	0.014	0.010	0.018

June

Location	Average	Minima	Maxima
Indicators	0.012	0.009	0.016
K-1f	0.012	0.010	0.014
K-43	0.012	0.009	0.016
Controls	0.016	0.008	0.032
K-2	0.013	0.008	0.016
K-8	0.011	0.010	0.012
K-31	0.012	0.011	0.013
K-41	0.014	0.011	0.016

Note: Samples collected on the first, second or third day of the month are grouped with data of the previous month.

Table 10. Airborne particulate data, gross beta analyses, monthly averages, minima and maxima.

July

Location	Average	Minima	Maxima
Indicators	0.015	0.010	0.018
K-1f	0.014	0.010	0.017
K-43	0.016	0.014	0.018
Controls	0.015	0.006	0.021
K-2	0.013	0.006	0.016
K-8	0.014	0.010	0.017
K-31	0.016	0.013	0.021
K-41	0.018	0.013	0.020

August

Location	Average	Minima	Maxima
Indicators	0.022	0.016	0.035
K-1f	0.022	0.016	0.035
K-43	0.021	0.017	0.030
Controls	0.021	0.014	0.032
K-2	0.023	0.014	0.032
K-8	0.020	0.015	0.030
K-31	0.020	0.014	0.030
K-41	0.021	0.015	0.027

September

Location	Average	Minima	Maxima
Indicators	0.027	0.017	0.039
K-1f	0.027	0.017	0.039
K-43	0.026	0.019	0.037
Controls	0.027	0.014	0.043
K-2	0.028	0.019	0.040
K-8	0.028	0.019	0.040
K-31	0.027	0.016	0.043
K-41	0.026	0.014	0.039

October

Location	Average	Minima	Maxima
Indicators	0.020	0.011	0.027
K-1f	0.021	0.015	0.027
K-43	0.019	0.011	0.027
Controls	0.021	0.013	0.032
K-2	0.021	0.015	0.032
K-8	0.020	0.013	0.031
K-31	0.020	0.013	0.028
K-41	0.021	0.015	0.031

November

Location	Average	Minima	Maxima
Indicators	0.030	0.021	0.038
K-1f	0.032	0.029	0.038
K-43	0.028	0.021	0.037
Controls	0.029	0.020	0.039
K-2	0.028	0.024	0.036
K-8	0.030	0.024	0.039
K-31	0.028	0.020	0.038
K-41	0.029	0.024	0.035

December

Location	Average	Minima	Maxima
Indicators	0.033	0.019	0.052
K-1f	0.037	0.026	0.052
K-43	0.029	0.019	0.045
Controls	0.033	0.021	0.053
K-2	0.032	0.022	0.048
K-8	0.035	0.025	0.047
K-31	0.032	0.021	0.052
K-41	0.034	0.025	0.053

Note: Samples collected on the first, second or third day of the month are grouped with data of the previous month.

Table 11. Airborne particulate samples, quarterly composites of weekly samples, analysis for gamma-emitting isotopes.

	Sample Description and Concentration (pCi/m^3)			
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Indicator				
K-1f				
Lab Code	KAP- 1977	KAP- 3804	KAP- 6017	KAP- 7425
Volume (m^3)	3923	3933	3935	3940
Be-7	0.075 ± 0.017	0.070 ± 0.013	0.057 ± 0.015	0.061 ± 0.011
Nb-95	< 0.0011	< 0.0009	< 0.0011	< 0.0013
Zr-95	< 0.0010	< 0.0015	< 0.0020	< 0.0010
Ru-103	< 0.0013	< 0.0011	< 0.0015	< 0.0008
Ru-106	< 0.0046	< 0.0063	< 0.0083	< 0.0059
Cs-134	< 0.0006	< 0.0009	< 0.0009	< 0.0007
Cs-137	< 0.0006	< 0.0005	< 0.0007	< 0.0005
Ce-141	< 0.0019	< 0.0016	< 0.0023	< 0.0021
Ce-144	< 0.0045	< 0.0034	< 0.0044	< 0.0034
K-43				
Lab Code	KAP- 1982	KAP- 3809	KAP- 6018	KAP- 7430
Volume (m^3)	3924	3931	3935	3940
Be-7	0.061 ± 0.013	0.057 ± 0.012	0.086 ± 0.025	0.060 ± 0.015
Nb-95	< 0.0015	< 0.0007	< 0.0022	< 0.0009
Zr-95	< 0.0020	< 0.0015	< 0.0015	< 0.0009
Ru-103	< 0.0012	< 0.0009	< 0.0013	< 0.0006
Ru-106	< 0.0077	< 0.0060	< 0.0064	< 0.0051
Cs-134	< 0.0009	< 0.0008	< 0.0011	< 0.0007
Cs-137	< 0.0007	< 0.0005	< 0.0008	< 0.0005
Ce-141	< 0.0017	< 0.0015	< 0.0019	< 0.0011
Ce-144	< 0.0032	< 0.0035	< 0.0051	< 0.0035

Table 11. Airborne particulate samples, quarterly composites of weekly samples, analysis for gamma-emitting isotopes, (continued).

	Sample Description and Concentration (pCi/m^3)			
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Control				
K-2				
Lab Code	KAP- 1978	KAP- 3805	KAP- 6019	KAP- 7426
Volume (m^3)	3928	3929	3712	3942
Be-7	0.060 ± 0.014	0.061 ± 0.014	0.079 ± 0.018	0.057 ± 0.013
Nb-95	< 0.0008	< 0.0009	< 0.0013	< 0.0009
Zr-95	< 0.0009	< 0.0016	< 0.0026	< 0.0015
Ru-103	< 0.0005	< 0.0014	< 0.0017	< 0.0007
Ru-106	< 0.0049	< 0.0076	< 0.0057	< 0.0041
Cs-134	< 0.0010	< 0.0010	< 0.0009	< 0.0008
Cs-137	< 0.0007	< 0.0011	< 0.0010	< 0.0006
Ce-141	< 0.0022	< 0.0014	< 0.0025	< 0.0022
Ce-144	< 0.0041	< 0.0035	< 0.0039	< 0.0043
K-8				
Lab Code	KAP- 1979	KAP- 3806	KAP- 6020	KAP- 7427
Volume (m^3)	3923	3932	3936	3940
Be-7	0.058 ± 0.015	0.051 ± 0.012	0.089 ± 0.017	0.052 ± 0.014
Nb-95	< 0.0013	< 0.0007	< 0.0011	< 0.0012
Zr-95	< 0.0009	< 0.0006	< 0.0017	< 0.0017
Ru-103	< 0.0008	< 0.0007	< 0.0009	< 0.0007
Ru-106	< 0.0061	< 0.0053	< 0.0079	< 0.0093
Cs-134	< 0.0010	< 0.0008	< 0.0009	< 0.0009
Cs-137	< 0.0007	< 0.0004	< 0.0006	< 0.0005
Ce-141	< 0.0011	< 0.0011	< 0.0024	< 0.0025
Ce-144	< 0.0043	< 0.0044	< 0.0033	< 0.0036

Table 11. Airborne particulate samples, quarterly composites of weekly samples, analysis for gamma-emitting isotopes, (continued).

	Sample Description and Concentration (pCi/m^3)			
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Control				
K-31				
Lab Code	KAP- 1980	KAP- 3807	KAP- 6021	KAP- 7428
Volume (m^3)	3929	3923	3928	3943
Be-7	0.055 ± 0.015	0.064 ± 0.017	0.068 ± 0.015	0.054 ± 0.012
Nb-95	< 0.0009	< 0.0016	< 0.0011	< 0.0011
Zr-95	< 0.0009	< 0.0026	< 0.0012	< 0.0009
Ru-103	< 0.0008	< 0.0014	< 0.0014	< 0.0012
Ru-106	< 0.0070	< 0.0083	< 0.0081	< 0.0079
Cs-134	< 0.0011	< 0.0011	< 0.0009	< 0.0006
Cs-137	< 0.0006	< 0.0011	< 0.0007	< 0.0007
Ce-141	< 0.0010	< 0.0020	< 0.0023	< 0.0013
Ce-144	< 0.0042	< 0.0067	< 0.0041	< 0.0022
K-41				
Lab Code	KAP- 1981	KAP- 3808	KAP- 6022	KAP- 7429
Volume (m^3)	3926	3929	3934	3938
Be-7	0.084 ± 0.015	0.070 ± 0.016	0.069 ± 0.016	0.059 ± 0.014
Nb-95	< 0.0015	< 0.0009	< 0.0008	< 0.0010
Zr-95	< 0.0013	< 0.0017	< 0.0019	< 0.0011
Ru-103	< 0.0004	< 0.0007	< 0.0011	< 0.0011
Ru-106	< 0.0056	< 0.0055	< 0.0042	< 0.0071
Cs-134	< 0.0006	< 0.0008	< 0.0008	< 0.0009
Cs-137	< 0.0007	< 0.0005	< 0.0010	< 0.0005
Ce-141	< 0.0016	< 0.0013	< 0.0021	< 0.0020
Ce-144	< 0.0042	< 0.0049	< 0.0038	< 0.0043

Table 12. Ambient gamma radiation (TLD), quarterly exposure.

	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	
Date Placed	01-06-15	04-01-15	07-01-15	10-01-15	
Date Removed	04-01-15	07-01-15	10-01-15	01-04-16	
	mR/91 days				
Indicator					Mean±s.d.
K-1f	14.0 ± 0.7	16.1 ± 1.0	14.3 ± 0.9	17.4 ± 0.9	15.5 ± 1.6
K-5	16.8 ± 0.7	14.4 ± 0.4	16.6 ± 0.8	15.1 ± 0.6	15.7 ± 1.2
K-17	13.7 ± 0.6	17.3 ± 1.0	13.8 ± 0.4	18.6 ± 1.0	15.9 ± 2.5
K-25	13.9 ± 0.6	16.4 ± 0.5	15.0 ± 0.8	17.8 ± 0.7	15.8 ± 1.7
K-27	20.1 ± 0.8	17.9 ± 0.6	20.1 ± 0.9	19.3 ± 0.9	19.4 ± 1.0
K-30	14.5 ± 1.1	16.9 ± 0.9	14.0 ± 0.9	18.7 ± 1.1	16.0 ± 2.2
K-39	13.6 ± 0.8	18.2 ± 0.6	13.0 ± 0.8	20.6 ± 1.0	16.4 ± 3.7
K-43	14.3 ± 0.8	16.6 ± 0.8	14.9 ± 0.7	15.5 ± 0.6	15.3 ± 1.0
Mean ± s.d.	15.1 ± 2.3	16.7 ± 1.2	15.2 ± 2.2	17.9 ± 1.9	16.2 ± 1.3
Control					
K-2	17.1 ± 0.8	16.2 ± 0.7	17.6 ± 0.9	17.9 ± 0.8	17.2 ± 0.7
K-3	17.4 ± 0.9	17.0 ± 0.5	17.3 ± 1.1	18.5 ± 0.9	17.6 ± 0.7
K-8	14.7 ± 0.8	13.3 ± 0.4	16.5 ± 0.7	14.5 ± 0.4	14.8 ± 1.3
K-15	14.6 ± 0.5	15.6 ± 0.3	14.4 ± 0.6	17.3 ± 1.0	15.5 ± 1.3
K-31	15.1 ± 0.8	11.6 ± 0.7	14.2 ± 0.8	12.7 ± 0.4	13.4 ± 1.6
K-41	19.0 ± 1.0	17.1 ± 1.2	19.4 ± 1.3	18.1 ± 1.2	18.4 ± 1.0
Mean ± s.d.	16.3 ± 1.8	15.1 ± 2.2	16.6 ± 2.0	16.5 ± 2.3	16.1 ± 0.7
Inside the Protected Area					
Date Placed	01-06-15	03-30-15	06-29-15	09-29-15	
Date Removed	03-30-15	06-29-15	09-29-15	01-01-16	
K-1L	14.0 ± 0.7	14.3 ± 1.3	15.7 ± 0.8	14.6 ± 1.0	14.7 ± 0.7
K-1M	19.0 ± 0.8	19.1 ± 1.2	18.0 ± 0.7	14.5 ± 1.0	17.7 ± 2.2
K-1N	13.1 ± 0.7	14.1 ± 0.7	14.1 ± 0.9	14.5 ± 1.3	14.0 ± 0.6
K-1O	11.8 ± 0.4	11.4 ± 0.8	10.4 ± 0.3	12.7 ± 1.0	11.6 ± 1.0
K-1P	11.4 ± 0.6	11.8 ± 1.1	12.1 ± 0.4	12.9 ± 0.9	12.1 ± 0.6
K-1Q	10.8 ± 0.6	10.8 ± 0.4	10.1 ± 0.6	11.6 ± 0.4	10.8 ± 0.6
K-1R	15.1 ± 0.9	18.2 ± 0.4	17.0 ± 0.6	18.9 ± 0.4	17.3 ± 1.7
K-1S	14.7 ± 0.5	18.2 ± 0.5	18.1 ± 1.0	19.4 ± 0.3	17.6 ± 2.0
Mean ± s.d.	13.7 ± 2.6	14.7 ± 3.4	14.4 ± 3.3	14.9 ± 2.8	14.5 ± 2.9

Table 13. Precipitation samples collected at Location K-11; analysis for tritium.

Date Collected	Lab Code	H-3	
		pCi/L	T.U. (100 T.U. = 320 pCi/L)
01/06/15	KP- 17	< 194	< 61
02/03/15	KP- 394	< 189	< 59
03/02/15	KP- 757	< 151	< 47
04/01/15	KP- 1354	< 149	< 47
05/05/15	KP- 2141	< 151	< 47
06/01/15	KP- 2664	< 155	< 48
07/01/15	KP- 3371	< 147	< 46
08/03/15	KP- 4271	< 142	< 44
09/01/15	KP- 4808	< 145	< 45
10/01/15	KP- 5395	< 147	< 46
11/02/15	KP- 6316	< 143	< 45
12/01/15	KP- 6730	< 144	< 45

Table 14. Milk, analyses for iodine-131 and gamma-emitting isotopes.
Collection: Semimonthly during grazing season, monthly at other times.

Collection Date	Lab Code	Concentration (pCi/L) I-131	Cs-134	Cs-137	Ba-La-140	K-40
Indicators						
K-5						
01-07-15	KMI- 4	< 0.2	< 3.3	< 3.9	< 2.2	1408 ± 113
02-04-15	KMI- 384	< 0.2	< 3.1	< 2.5	< 2.9	1436 ± 105
03-03-15	KMI- 760	< 0.5	< 3.7	< 3.0	< 2.2	1408 ± 116
04-01-15	KMI- 1322	< 0.3	< 2.3	< 2.6	< 3.6	1422 ± 93
05-06-15	KMI- 2135	< 0.4	< 3.8	< 4.1	< 2.1	1286 ± 131
05-19-15	KMI- 2503	< 0.3	< 3.9	< 2.0	< 3.0	1411 ± 107
06-02-15	KMI- 2656	< 0.2	< 3.8	< 3.8	< 2.7	1468 ± 107
06-16-15	KMI- 2997	< 0.2	< 3.6	< 2.4	< 2.5	1437 ± 106
07-02-15	KMI- 3345	< 0.3	< 3.7	< 3.3	< 3.1	1320 ± 113
07-14-15	KMI- 3681	< 0.2	< 3.9	< 4.3	< 2.1	1432 ± 113
08-04-15	KMI- 4227	< 0.2	< 4.6	< 3.4	< 4.3	1429 ± 117
08-18-15	KMI- 4528	< 0.4	< 3.4	< 3.9	< 1.5	1285 ± 108
09-01-15	KMI- 4817	< 0.3	< 4.1	< 4.9	< 5.6	1439 ± 115
09-15-15	KMI- 5051	< 0.3	< 3.7	< 2.7	< 2.9	1320 ± 114
10-01-15	KMI- 5380	< 0.2	< 3.4	< 2.6	< 8.4	1400 ± 107
10-13-15	KMI- 5738	< 0.1	< 4.7	< 4.3	< 4.1	1388 ± 128
11-02-15	KMI- 6295	< 0.5	< 1.4	< 1.8	< 2.4	1328 ± 45
12-02-15	KMI- 6708	< 0.5	< 3.9	< 4.2	< 6.9	1442 ± 111
K-34						
01-07-15	KMI- 5	< 0.2	< 2.8	< 2.8	< 2.4	1312 ± 98
02-03-15	KMI- 385	< 0.2	< 5.3	< 4.9	< 4.5	1358 ± 157
03-02-15	KMI- 761	< 0.4	< 4.5	< 3.7	< 2.7	1460 ± 120
04-01-15	KMI- 1323	< 0.4	< 3.4	< 3.6	< 3.6	1396 ± 83
05-05-15	KMI- 2136	< 0.4	< 4.6	< 4.7	< 2.0	1333 ± 127
05-19-15	KMI- 2504	< 0.5	< 4.3	< 4.3	< 2.1	1395 ± 116
06-01-15	KMI- 2657	< 0.2	< 3.1	< 3.2	< 2.3	1349 ± 110
06-16-15	KMI- 2998	< 0.4	< 4.5	< 4.0	< 4.6	1271 ± 109
07-01-15	KMI- 3346	< 0.3	< 4.1	< 3.9	< 2.6	1435 ± 120
07-14-15	KMI- 3682	< 0.4	< 3.8	< 3.7	< 1.3	1410 ± 117
08-03-15	KMI- 4228	< 0.3	< 3.7	< 4.0	< 3.7	1346 ± 114
08-18-15	KMI- 4529	< 0.3	< 1.5	< 2.1	< 1.5	1238 ± 49
09-01-15	KMI- 4818	< 0.5	< 3.8	< 4.2	< 7.7	1326 ± 98
09-15-15	KMI- 5052	< 0.3	< 3.7	< 2.1	< 3.5	1233 ± 111
10-01-15	KMI- 5381	< 0.3	< 4.3	< 4.4	< 6.2	1482 ± 122
10-13-15	KMI- 5739	< 0.2	< 3.7	< 3.8	< 2.2	1301 ± 108
11-02-15	KMI- 6296	< 0.3	< 1.6	< 1.0	< 4.8	1373 ± 46
12-01-15	KMI- 6709	< 0.3	< 2.5	< 2.3	< 4.0	1346 ± 87

Table 14. Milk, analyses for iodine-131 and gamma-emitting isotopes (continued).

Collection Date	Lab Code	Concentration (pCi/L) I-131	Cs-134	Cs-137	Ba-La-140	K-40
Indicators						
K-38						
01-07-15	KMI- 7	< 0.2	< 3.1	< 3.3	< 7.0	1290 ± 93
02-04-15	KMI- 387	< 0.3	< 3.0	< 3.2	< 2.3	1280 ± 93
03-02-15	KMI- 763	< 0.2	< 3.2	< 4.1	< 3.0	1359 ± 114
04-01-15	KMI- 1325	< 0.2	< 4.3	< 5.0	< 4.0	1326 ± 82
05-05-15	KMI- 2138	< 0.4	< 4.3	< 3.6	< 2.3	1324 ± 121
05-21-15	KMI- 2519	< 0.3	< 4.3	< 3.2	< 3.5	1211 ± 117
06-02-15	KMI- 2659	< 0.2	< 3.2	< 2.6	< 3.7	1466 ± 105
06-16-15	KMI- 3000	< 0.4	< 3.2	< 2.8	< 1.6	1191 ± 111
07-01-15	KMI- 3348	< 0.2	< 3.3	< 3.2	< 2.3	1453 ± 115
07-14-15	KMI- 3684	< 0.3	< 4.1	< 3.0	< 1.4	1257 ± 114
08-04-15	KMI- 4230	< 0.1	< 3.8	< 4.8	< 2.6	1269 ± 116
08-18-15	KMI- 4531	< 0.4	< 1.8	< 2.3	< 0.9	1425 ± 55
09-01-15	KMI- 4820	< 0.3	< 3.3	< 2.2	< 7.0	1357 ± 90
09-15-15	KMI- 5054	< 0.3	< 4.4	< 3.9	< 2.6	1370 ± 122
10-01-15	KMI- 5383	< 0.4	< 3.3	< 2.9	< 5.4	1383 ± 96
10-13-15	KMI- 5741	< 0.3	< 3.3	< 3.3	< 1.9	1254 ± 102
11-03-15	KMI- 6298	< 0.2	< 2.9	< 2.8	< 5.3	1447 ± 98
12-01-15	KMI- 6711	< 0.4	< 3.1	< 2.2	< 5.5	1380 ± 102
K-39						
01-07-15	KMI- 8	< 0.2	< 2.5	< 3.0	< 4.6	1365 ± 89
02-04-15	KMI- 388	< 0.2	< 4.3	< 4.4	< 3.7	1321 ± 113
03-02-15	KMI- 764	< 0.4	< 4.9	< 4.0	< 3.8	1304 ± 124
04-01-15	KMI- 1326	< 0.2	< 2.8	< 3.2	< 3.8	1306 ± 83
05-05-15	KMI- 2139	< 0.5	< 4.4	< 3.4	< 4.0	1249 ± 120
05-19-15	KMI- 2506	< 0.4	< 3.6	< 3.5	< 2.6	1334 ± 112
06-02-15	KMI- 2660	< 0.4	< 3.0	< 3.1	< 4.3	1264 ± 89
06-16-15	KMI- 3001	< 0.2	< 3.9	< 3.9	< 2.1	1313 ± 118
07-02-15	KMI- 3349	< 0.2	< 4.1	< 4.6	< 4.3	1288 ± 119
07-14-15	KMI- 3685	< 0.3	< 2.9	< 3.4	< 2.3	1276 ± 104
08-03-15	KMI- 4231	< 0.1	< 2.9	< 3.5	< 2.8	1247 ± 96
08-18-15	KMI- 4532	< 0.2	< 3.7	< 2.9	< 2.3	1369 ± 113
09-01-15	KMI- 4821	< 0.3	< 3.5	< 3.3	< 9.1	1415 ± 103
09-15-15	KMI- 5055	< 0.3	< 3.8	< 4.2	< 2.7	1335 ± 117
10-01-15	KMI- 5384	< 0.4	< 3.5	< 3.9	< 9.0	1310 ± 104
10-13-15	KMI- 5742	< 0.2	< 4.0	< 2.5	< 2.4	1370 ± 112
11-02-15	KMI- 6299	< 0.2	< 1.2	< 1.4	< 3.1	1298 ± 44
12-02-15	KMI- 6712	< 0.2	< 3.1	< 2.8	< 2.8	1476 ± 104

Table 14. Milk, analyses for iodine-131 and gamma-emitting isotopes (continued).

Collection Date	Lab Code	Concentration (pCi/L) I-131	Cs-134	Cs-137	Ba-La-140	K-40
Controls						
K-3						
01-07-15	KMI- 3	< 0.2	< 3.9	< 3.6	< 1.1	1287 ± 103
02-03-15	KMI- 383	< 0.4	< 3.9	< 2.4	< 3.4	1275 ± 96
03-02-15	KMI- 759	< 0.2	< 4.1	< 2.8	< 3.8	1430 ± 121
04-01-15	KMI- 1321	< 0.4	< 2.6	< 1.7	< 3.7	1320 ± 93
05-05-15	KMI- 2134	< 0.4	< 2.9	< 3.4	< 5.5	1314 ± 124
05-19-15	KMI- 2502	< 0.4	< 4.3	< 2.9	< 2.9	1379 ± 97
06-02-15	KMI- 2655	< 0.2	< 3.6	< 3.9	< 4.0	1394 ± 103
06-16-15	KMI- 2996	< 0.2	< 3.8	< 4.3	< 2.0	1472 ± 117
07-02-15	KMI- 3344	< 0.2	< 3.3	< 4.0	< 3.7	1379 ± 114
07-14-15	KMI- 3680	< 0.3	< 4.7	< 4.3	< 1.3	1347 ± 120
08-03-15	KMI- 4226	< 0.1	< 3.9	< 4.3	< 3.0	1461 ± 119
08-18-15	KMI- 4527	< 0.3	< 4.3	< 2.4	< 3.2	1317 ± 119
09-02-15	KMI- 4816	< 0.3	< 4.1	< 3.6	< 6.7	1415 ± 112
09-15-15	KMI- 5050	< 0.3	< 4.3	< 3.6	< 1.5	1402 ± 120
10-02-15	KMI- 5379	< 0.3	< 4.1	< 4.0	< 2.8	1391 ± 116
10-13-15	KMI- 5737	< 0.1	< 4.2	< 3.1	< 3.9	1378 ± 120
11-02-15	KMI- 6294	< 0.2	< 1.5	< 1.6	< 3.4	1392 ± 48
12-01-15	KMI- 6707	< 0.5	< 4.1	< 3.9	< 6.8	1364 ± 114
K-35						
01-07-15	KMI- 6	< 0.4	< 2.8	< 2.8	< 2.3	1391 ± 107
02-04-15	KMI- 386	< 0.4	< 3.0	< 2.7	< 3.5	1347 ± 94
03-03-15	KMI- 762	< 0.2	< 6.9	< 5.9	< 4.2	1279 ± 171
04-01-15	KMI- 1324	< 0.4	< 2.9	< 2.9	< 3.3	1385 ± 81
05-05-15	KMI- 2137	< 0.4	< 4.2	< 3.3	< 3.1	1481 ± 126
05-19-15	KMI- 2505	< 0.3	< 3.2	< 3.6	< 3.3	1360 ± 109
06-02-15	KMI- 2658	< 0.3	< 3.3	< 1.9	< 4.7	1513 ± 107
06-16-15	KMI- 2999	< 0.4	< 4.5	< 3.6	< 1.3	1345 ± 117
07-02-15	KMI- 3347	< 0.2	< 3.3	< 3.7	< 3.6	1400 ± 110
07-14-15	KMI- 3683	< 0.3	< 3.2	< 3.2	< 1.9	1403 ± 115
08-04-15	KMI- 4229	< 0.1	< 4.6	< 4.9	< 3.9	1529 ± 128
08-18-15	KMI- 4530	< 0.3	< 3.7	< 4.3	< 2.7	1447 ± 122
09-02-15	KMI- 4819	< 0.3	< 4.0	< 3.4	< 7.3	1486 ± 104
09-15-15	KMI- 5053	< 0.3	< 3.5	< 3.3	< 2.1	1503 ± 112
10-02-15	KMI- 5382	< 0.2	< 3.2	< 3.4	< 7.1	1486 ± 106
10-13-15	KMI- 5740	< 0.3	< 3.8	< 4.3	< 3.4	1526 ± 124
11-03-15	KMI- 6297	< 0.5	< 3.2	< 3.6	< 5.7	1526 ± 109
12-02-15	KMI- 6710	< 0.5	< 3.1	< 3.9	< 6.4	1470 ± 108

Table 14. Milk, analyses for iodine-131 and gamma-emitting isotopes (continued).

Collection Date	Lab Code	Concentration (pCi/L) I-131	Cs-134	Cs-137	Ba-La-140	K-40
Control						
K-42						
01-06-15	KMI- 9	< 0.2	< 2.5	< 3.0	< 4.8	1189 ± 88
02-03-15	KMI- 389	< 0.2	< 6.6	< 2.9	< 4.8	1225 ± 144
03-02-15	KMI- 765	< 0.2	< 3.8	< 3.1	< 2.8	1334 ± 105
04-01-15	KMI- 1327	< 0.3	< 2.9	< 1.7	< 4.0	1296 ± 81
05-05-15	KMI- 2140	< 0.3	< 3.9	< 4.2	< 5.4	1338 ± 131
05-19-15	KMI- 2507	< 0.3	< 3.8	< 3.7	< 1.4	1376 ± 110
06-01-15	KMI- 2661	< 0.4	< 3.3	< 3.4	< 4.7	1315 ± 111
06-16-15	KMI- 3002	< 0.2	< 3.8	< 3.2	< 1.3	1345 ± 108
07-01-15	KMI- 3350	< 0.2	< 3.5	< 4.3	< 2.6	1433 ± 121
07-14-15	KMI- 3686	< 0.2	< 4.9	< 3.6	< 2.1	1419 ± 129
08-03-15	KMI- 4232	< 0.1	< 4.3	< 3.9	< 5.0	1515 ± 120
08-18-15	KMI- 4533	< 0.2	< 3.7	< 4.3	< 1.7	1334 ± 119
09-01-15	KMI- 4822	< 0.3	< 3.4	< 2.5	< 11.9	1357 ± 103
09-15-15	KMI- 5056	< 0.3	< 3.6	< 2.8	< 4.1	1344 ± 112
10-01-15	KMI- 5385	< 0.2	< 3.8	< 2.9	< 9.5	1421 ± 116
10-13-15	KMI- 5743	< 0.1	< 3.5	< 4.0	< 3.3	1429 ± 114
11-02-15	KMI- 6300	< 0.4	< 3.0	< 3.0	< 2.6	1343 ± 97
12-01-15	KMI- 6713	< 0.2	< 3.1	< 3.4	< 4.7	1412 ± 106

Table 15. Milk, analyses for strontium-89, strontium-90, stable potassium, stable calcium, and ratios of strontium-90 per gram of calcium and cesium-137 per gram of potassium. Collection: Monthly composites.

Collection Period	Lab Code	Concentration				Ratios	
		Sr-89 (pCi/L)	Sr-90 (pCi/L)	K (g/L)	Ca (g/L)	Sr-90 per gram Ca	Cs-137 per gram K
Indicators							
				K-5			
January	KMI - 4	< 0.9	1.0 ± 0.4	1.72 ± 0.14	1.02	0.98	< 5.81
February	- 384	< 1.1	< 0.7	1.75 ± 0.13	0.90	< 0.78	< 5.71
March	- 760	< 1.1	< 0.7	1.72 ± 0.14	1.00	< 0.70	< 5.81
April	- 1322	< 1.0	< 0.5	1.73 ± 0.11	0.93	< 0.54	< 5.78
May	- 2521	< 0.9	< 0.6	1.64 ± 0.15	0.92	< 0.65	< 6.10
June	- 3031	< 1.0	0.9 ± 0.4	1.77 ± 0.13	0.90	1.00	< 5.65
July	- 4059	< 0.6	< 0.6	1.68 ± 0.14	0.95	< 0.63	< 5.95
August	- 4623	< 0.9	< 0.6	1.65 ± 0.14	0.88	< 0.68	< 6.06
September	- 5263	< 0.8	0.9 ± 0.4	1.68 ± 0.14	0.92	0.98	< 5.95
October	- 6273	< 0.9	< 0.6	1.70 ± 0.14	0.82	< 0.73	< 5.88
November	- 6295	< 1.0	0.8 ± 0.3	1.62 ± 0.05	0.94	0.85	< 6.17
December	- 6708	< 1.2	< 0.7	1.76 ± 0.14	0.89	< 0.79	< 5.68
				K-34			
January	KMI - 5	< 1.1	< 0.8	1.60 ± 0.12	0.98	< 0.82	< 6.25
February	- 385	< 0.7	< 0.4	1.66 ± 0.19	1.11	< 0.36	< 6.02
March	- 761	< 0.8	< 0.5	1.78 ± 0.15	1.00	< 0.50	< 5.62
April	- 1323	< 0.8	< 0.6	1.70 ± 0.10	0.94	< 0.64	< 5.88
May	- 2523	< 0.7	0.5 ± 0.3	1.66 ± 0.15	0.90	0.56	< 6.02
June	- 3032	< 0.9	0.8 ± 0.4	1.60 ± 0.13	0.93	0.86	< 6.25
July	- 4060	< 0.6	< 0.5	1.73 ± 0.14	1.05	< 0.48	< 5.78
August	- 4624	< 0.7	0.6 ± 0.3	1.58 ± 0.10	0.93	0.65	< 6.33
September	- 5264	< 0.7	< 0.5	1.56 ± 0.13	0.99	< 0.51	< 6.41
October	- 6274	< 0.7	< 0.5	1.70 ± 0.14	0.98	< 0.51	< 5.88
November	- 6296	< 0.8	0.5 ± 0.3	1.67 ± 0.06	1.14	0.44	< 5.99
December	- 6709	< 0.9	< 0.5	1.64 ± 0.11	0.90	< 0.56	< 6.10

Table 15. Milk, analyses for strontium-89, strontium-90, stable potassium, stable calcium, and ratios of strontium-90 per gram of calcium and cesium-137 per gram of potassium (continued).

Collection Period	Lab Code	Concentration Sr-89 (pCi/L)	Sr-90 (pCi/L)	K (g/L)	Ca (g/L)	Ratios Sr-90 per gram Ca	Cs-137 per gram K
Indicators							
				K-38			
January	KMI - 7	< 0.8	0.7 ± 0.3	1.57 ± 0.11	0.98	0.71	< 6.37
February	- 387	< 0.8	0.9 ± 0.3	1.56 ± 0.11	0.96	0.94	< 6.41
March	- 763	< 0.8	1.1 ± 0.4	1.66 ± 0.14	0.92	1.20	< 6.02
April	- 1325	< 1.0	1.3 ± 0.5	1.62 ± 0.10	0.88	1.48	< 6.17
May	- 2525	< 0.8	1.0 ± 0.4	1.55 ± 0.15	0.86	1.16	< 6.45
June	- 3034	< 0.8	1.2 ± 0.4	1.62 ± 0.13	0.95	1.26	< 6.17
July	- 4062	< 0.7	< 0.6	1.65 ± 0.14	1.00	< 0.60	< 6.06
August	- 4626	< 0.7	0.7 ± 0.3	1.64 ± 0.10	0.92	0.76	< 6.10
September	- 5266	< 0.7	< 0.6	1.66 ± 0.13	1.00	< 0.60	< 6.02
October	- 6276	< 0.9	1.0 ± 0.4	1.61 ± 0.12	0.98	1.02	< 6.21
November	- 6298	< 0.8	0.8 ± 0.3	1.76 ± 0.12	0.94	0.85	< 5.68
December	- 6711	< 1.0	0.7 ± 0.4	1.68 ± 0.12	0.90	0.78	< 5.95
				K-39			
January	KMI - 8	< 0.8	< 0.5	1.66 ± 0.11	0.98	< 0.51	< 6.02
February	- 388	< 0.9	< 0.5	1.61 ± 0.14	0.99	< 0.51	< 6.21
March	- 764	< 0.8	< 0.5	1.59 ± 0.15	0.94	< 0.53	< 6.29
April	- 1326	< 0.9	0.6 ± 0.3	1.59 ± 0.10	1.02	0.59	< 6.29
May	- 2526	< 1.0	< 0.7	1.58 ± 0.14	0.95	< 0.74	< 6.33
June	- 3035	< 0.8	< 0.7	1.57 ± 0.13	0.95	< 0.74	< 6.37
July	- 4063	< 0.8	< 0.7	1.56 ± 0.14	1.00	< 0.70	< 6.41
August	- 4627	< 0.8	< 0.6	1.60 ± 0.13	0.87	< 0.69	< 6.25
September	- 5267	< 0.8	< 0.6	1.68 ± 0.13	0.94	< 0.64	< 5.95
October	- 6277	< 0.9	< 0.6	1.63 ± 0.13	1.00	< 0.60	< 6.13
November	- 6299	< 0.9	< 0.5	1.58 ± 0.05	1.06	< 0.47	< 6.33
December	- 6712	< 1.0	< 0.6	1.80 ± 0.13	0.99	< 0.61	< 5.56

Table 15. Milk, analyses for strontium-89, strontium-90, stable potassium, stable calcium, and ratios of strontium-90 per gram of calcium and cesium-137 per gram of potassium (continued).

Collection Period	Lab Code	Concentration Sr-89 (pCi/L)	Sr-90 (pCi/L)	K (g/L)	Ca (g/L)	Ratios Sr-90 per gram Ca	Cs-137 per gram K
Control				K-3			
January	KMI - 3	< 0.8	0.6 ± 0.3	1.57 ± 0.13	0.98	0.61	< 6.37
February	- 383	< 0.8	0.9 ± 0.3	1.55 ± 0.12	1.03	0.87	< 6.45
March	- 759	< 0.9	0.6 ± 0.3	1.74 ± 0.15	1.06	0.57	< 5.75
April	- 1321	< 1.1	1.0 ± 0.4	1.61 ± 0.11	0.95	1.05	< 6.21
May	- 2520	< 0.8	0.6 ± 0.3	1.64 ± 0.13	0.98	0.61	< 6.10
June	- 3030	< 0.9	< 0.7	1.75 ± 0.13	0.97	< 0.72	< 5.71
July	- 4058	< 0.8	< 0.7	1.66 ± 0.14	0.94	< 0.74	< 6.02
August	- 4622	< 0.7	0.6 ± 0.3	1.69 ± 0.15	0.93	0.65	< 5.92
September	- 5262	< 0.8	< 0.6	1.72 ± 0.14	0.91	< 0.66	< 5.81
October	- 6272	< 0.8	0.6 ± 0.3	1.69 ± 0.14	0.88	0.68	< 5.92
November	- 6294	< 0.9	< 0.5	1.70 ± 0.06	0.95	< 0.53	< 5.88
December	- 6707	< 0.9	< 0.6	1.66 ± 0.14	0.94	< 0.64	< 6.02
				K-35			
January	KMI - 6	< 0.7	0.7 ± 0.3	1.70 ± 0.13	1.01	0.69	< 5.88
February	- 386	< 0.8	1.0 ± 0.4	1.64 ± 0.11	1.10	0.91	< 6.10
March	- 762	< 0.8	0.7 ± 0.3	1.56 ± 0.21	0.96	0.73	< 6.41
April	- 1324	< 0.8	< 0.5	1.69 ± 0.10	0.89	< 0.56	< 5.92
May	- 2524	< 0.7	< 0.5	1.73 ± 0.14	0.86	< 0.58	< 5.78
June	- 3033	< 0.7	< 0.5	1.74 ± 0.14	0.91	< 0.55	< 5.75
July	- 4061	< 0.6	< 0.6	1.71 ± 0.14	0.99	< 0.61	< 5.85
August	- 4625	< 0.7	< 0.5	1.81 ± 0.15	0.85	< 0.59	< 5.52
September	- 5265	< 0.8	< 0.6	1.82 ± 0.13	0.98	< 0.61	< 5.49
October	- 6275	< 0.7	0.6 ± 0.3	1.84 ± 0.14	0.88	0.68	< 5.43
November	- 6297	< 0.9	< 0.5	1.86 ± 0.14	1.03	< 0.49	< 5.38
December	- 6710	< 1.0	< 0.6	1.79 ± 0.13	1.01	< 0.59	< 5.59
				K-42			
January	KMI - 9	< 0.8	0.8 ± 0.4	1.45 ± 0.11	1.04	0.77	< 6.90
February	- 389	< 0.8	< 0.6	1.49 ± 0.18	0.95	< 0.63	< 6.71
March	- 765	< 1.0	< 0.7	1.63 ± 0.13	0.91	< 0.77	< 6.13
April	- 1327	< 1.6	1.0 ± 0.6	1.58 ± 0.10	0.90	1.11	< 6.33
May	- 2527	< 0.8	0.8 ± 0.4	1.65 ± 0.15	0.93	0.86	< 6.06
June	- 3036	< 0.8	< 0.6	1.60 ± 0.14	0.94	< 0.64	< 6.25
July	- 4064	< 0.7	0.7 ± 0.4	1.69 ± 0.14	0.93	0.75	< 5.92
August	- 4628	< 0.9	0.9 ± 0.4	1.79 ± 0.15	0.91	0.99	< 5.59
September	- 5268	< 0.7	0.6 ± 0.3	1.64 ± 0.14	0.92	0.65	< 6.10
October	- 6278	< 0.8	< 0.5	1.74 ± 0.14	1.01	< 0.50	< 5.75
November	- 6300	< 1.0	< 0.6	1.64 ± 0.12	1.14	< 0.53	< 6.10
December	- 6713	< 1.2	< 0.8	1.72 ± 0.13	0.81	< 0.99	< 5.81

Table 16. Well water, analyses for gross alpha, gross beta, tritium, strontium-89[a], strontium-90[a], potassium-40 and gamma-emitting isotopes.
Collection: Quarterly.

Sample Description and Concentration (pCi/L)				
Indicator				
K-1g				
Date Collected	01-06-15	04-01-15	07-01-15	10-01-15
Lab Code	KWW- 33	KWW- 1348	KWW- 3366	KWW- 5469
Gross alpha	< 2.8	< 1.8	< 1.8	2.0 ± 1.5
Gross beta	< 2.6	< 1.6	< 1.6	< 3.1
H-3	< 198	< 149	< 147	< 144
Sr-89	< 1.0	< 0.7	< 0.5	< 0.5
Sr-90	< 0.6	< 0.5	< 0.4	< 0.5
K-40 (ICP)	1.98	1.59	1.80	1.72
Mn-54	< 3.0	< 2.6	< 2.1	< 3.5
Fe-59	< 4.5	< 2.3	< 4.2	< 7.2
Co-58	< 2.3	< 2.3	< 2.5	< 2.8
Co-60	< 2.0	< 1.8	< 3.3	< 2.6
Zn-65	< 6.2	< 3.3	< 5.4	< 6.8
Zr-Nb-95	< 3.4	< 3.1	< 2.5	< 4.2
Cs-134	< 3.0	< 2.8	< 3.6	< 4.0
Cs-137	< 2.7	< 2.7	< 2.9	< 4.9
Ba-La-140	< 5.8	< 3.3	< 1.7	< 5.1
K-1h				
Date Collected	01-06-15	04-01-15	07-01-15	10-01-15
Lab Code	KWW- 34	KWW- 1349	KWW- 3367	KWW- 5470
Gross alpha	< 3.0	< 1.7	1.9 ± 1.5	2.5 ± 1.6
Gross beta	< 2.3	< 1.6	2.4 ± 1.2	5.3 ± 2.1
H-3	< 198	< 149	< 147	< 144
K-40 (ICP)	1.80	2.35	2.55	2.19
Mn-54	< 2.6	< 2.3	< 2.6	< 1.6
Fe-59	< 5.5	< 2.3	< 3.0	< 5.7
Co-58	< 1.5	< 1.9	< 1.6	< 2.9
Co-60	< 1.5	< 1.5	< 2.3	< 0.8
Zn-65	< 2.9	< 2.4	< 3.1	< 4.4
Zr-Nb-95	< 2.4	< 2.8	< 3.3	< 3.4
Cs-134	< 3.2	< 2.2	< 3.0	< 3.1
Cs-137	< 2.7	< 2.0	< 2.9	< 2.3
Ba-La-140	< 1.7	< 2.4	< 2.8	< 4.2

[a] Strontium analyses required on samples from K-1g only.

Table 17. Well water, analyses for gross beta, tritium, potassium-40, and gamma-emitting isotopes.

Collection: Quarterly.

	Sample Description and Concentration (pCi/L)			
Indicator				
K-10				
Date Collected	01-06-15	04-01-15	07-01-15	10-01-15
Lab Code	KWW- 35	KWW- 1350	KWW- 3368	KWW- 5471
Gross beta	< 1.6	< 3.3	5.6 ± 1.6	< 2.1
H-3	< 198	< 149	< 147	< 144
K-40 (ICP)	2.32	0.40	7.15	1.21
Mn-54	< 3.0	< 3.7	< 2.3	< 3.8
Fe-59	< 6.8	< 5.3	< 7.7	< 6.7
Co-58	< 2.5	< 2.8	< 5.1	< 4.0
Co-60	< 3.3	< 2.9	< 3.6	< 2.8
Zn-65	< 4.3	< 4.2	< 6.3	< 4.4
Zr-Nb-95	< 5.2	< 2.7	< 4.2	< 3.1
Cs-134	< 4.1	< 2.7	< 4.2	< 3.9
Cs-137	< 4.8	< 2.2	< 4.5	< 4.5
Ba-La-140	< 4.9	< 1.8	< 3.9	< 9.3
K-11				
Date Collected	01-06-15	04-01-15	07-01-15	10-01-15
Lab Code	KWW- 36	KWW- 1351	KWW- 3369	KWW- 5472
Gross beta	< 0.6	1.4 ± 0.7	< 0.9	1.5 ± 0.6
H-3	< 198	< 149	< 147	< 144
K-40 (ICP)	0.80	0.84	0.93	0.81
Mn-54	< 2.5	< 2.5	< 2.2	< 2.3
Fe-59	< 6.1	< 2.6	< 5.5	< 5.1
Co-58	< 2.3	< 1.5	< 2.1	< 2.0
Co-60	< 2.5	< 1.3	< 2.2	< 1.8
Zn-65	< 5.7	< 3.4	< 4.9	< 3.0
Zr-Nb-95	< 3.0	< 3.1	< 2.2	< 3.9
Cs-134	< 2.9	< 2.9	< 3.4	< 2.7
Cs-137	< 3.1	< 2.9	< 3.9	< 2.4
Ba-La-140	< 4.1	< 3.3	< 3.7	< 8.4

Table 17. Well water, analyses for gross beta, tritium, potassium-40, and gamma-emitting isotopes.

Collection: Quarterly.

Sample Description and Concentration (pCi/L)				
Indicator				
K-38				
Date Collected	01-06-15	04-01-15	07-01-15	10-01-15
Lab Code	KWW- 38	KWW- 1353	KWW- 3371	KWW- 5474
Gross beta	1.0 ± 0.5	1.8 ± 0.8	< 1.7	2.1 ± 0.6
H-3	< 198	< 149	< 147	< 144
K-40 (ICP)	0.89	0.71	4.55	1.85
Mn-54	< 2.1	< 1.9	< 2.6	< 1.9
Fe-59	< 2.5	< 3.7	< 5.0	< 6.1
Co-58	< 1.8	< 3.1	< 2.3	< 1.6
Co-60	< 2.7	< 3.7	< 2.2	< 2.2
Zn-65	< 4.5	< 4.1	< 4.5	< 4.3
Zr-Nb-95	< 3.6	< 0.0	< 2.2	< 3.1
Cs-134	< 2.9	< 0.0	< 3.2	< 2.7
Cs-137	< 1.9	< 0.0	< 2.7	< 2.2
Ba-La-140	< 3.6	< 0.0	< 1.6	< 3.7
Control				
K-13				
Date Collected	01-06-15	04-01-15	07-01-15	10-01-15
Lab Code	KWW- 37	KWW- 1352	KWW- 3370	KWW- 5473
Gross beta	1.3 ± 0.4	< 1.3	< 0.9	1.5 ± 0.5
H-3	< 198	< 149	< 147	< 144
K-40 (ICP)	0.98	0.98	1.06	0.95
Mn-54	< 4.6	< 3.3	< 2.8	< 2.5
Fe-59	< 12.2	< 3.3	< 4.8	< 5.4
Co-58	< 3.3	< 3.5	< 1.8	< 2.5
Co-60	< 2.6	< 2.5	< 1.9	< 2.6
Zn-65	< 8.7	< 5.8	< 2.2	< 2.9
Zr-Nb-95	< 5.4	< 0.0	< 3.4	< 3.3
Cs-134	< 5.7	< 0.0	< 3.1	< 3.7
Cs-137	< 3.2	< 0.0	< 3.2	< 2.1
Ba-La-140	< 5.4	< 0.0	< 1.8	< 4.7

Table 18. Domestic meat samples (chickens), analyses of flesh for gross alpha, gross beta, and gamma-emitting isotopes. Annual collection.

Sample Description and Concentration (pCi/g wet)		
	Indicator	Control
Location	K-24	K-32
Date Collected	09-01-15	09-01-15
Lab Code	KME- 4825	KME- 4826
Gross Alpha	< 0.02	< 0.03
Gross Beta	2.05 ± 0.06	1.87 ± 0.06
Be-7	< 0.22	< 0.15
K-40	2.68 ± 0.41	1.94 ± 0.32
Nb-95	< 0.019	< 0.034
Zr-95	< 0.030	< 0.040
Ru-103	< 0.024	< 0.021
Ru-106	< 0.121	< 0.151
Cs-134	< 0.018	< 0.016
Cs-137	< 0.019	< 0.012
Ce-141	< 0.057	< 0.066
Ce-144	< 0.146	< 0.147

Table 19. Eggs, analyses for gross beta, strontium-89, strontium-90 and gamma emitting isotopes.
Collection: Quarterly

Sample Description and Concentration (pCi/g wet)

Location	K-24 Indicator			
Date Collected	01-06-15	04-01-15	07-01-15	10-01-15
Lab Code	KE- 40	KE- 1328	KE- 3372	KE- 5467
Gross beta	1.60 ± 0.07	1.41 ± 0.04	1.58 ± 0.05	1.54 ± 0.04
Sr-89	< 0.006	< 0.006	< 0.006	< 0.005
Sr-90	< 0.003	< 0.002	0.003 ± 0.001	< 0.002
Be-7	< 0.041	< 0.058	< 0.034	< 0.062
K-40	1.30 ± 0.11	1.20 ± 0.11	1.26 ± 0.13	1.48 ± 0.12
Nb-95	< 0.007	< 0.007	< 0.004	< 0.008
Zr-95	< 0.008	< 0.009	< 0.009	< 0.009
Ru-103	< 0.007	< 0.006	< 0.004	< 0.010
Ru-106	< 0.040	< 0.023	< 0.034	< 0.023
Cs-134	< 0.004	< 0.004	< 0.004	< 0.004
Cs-137	< 0.004	< 0.005	< 0.006	< 0.004
Ce-141	< 0.017	< 0.015	< 0.011	< 0.023
Ce-144	< 0.020	< 0.031	< 0.024	< 0.031

Location	K-32 Control			
Date Collected	01-06-15	04-01-15	07-01-15	10-01-15
Lab Code	KE- 41	KE- 1329	KE- 3373	KE- 5468
Gross beta	1.32 ± 0.05	1.45 ± 0.04	1.46 ± 0.04	1.49 ± 0.04
Sr-89	< 0.007	< 0.007	< 0.004	< 0.006
Sr-90	0.004 ± 0.002	< 0.002	< 0.002	< 0.002
Be-7	< 0.084	< 0.058	< 0.044	< 0.061
K-40	1.45 ± 0.13	1.29 ± 0.13	1.20 ± 0.12	1.35 ± 0.12
Nb-95	< 0.011	< 0.007	< 0.004	< 0.011
Zr-95	< 0.007	< 0.007	< 0.007	< 0.014
Ru-103	< 0.007	< 0.007	< 0.006	< 0.009
Ru-106	< 0.052	< 0.045	< 0.040	< 0.034
Cs-134	< 0.005	< 0.004	< 0.004	< 0.004
Cs-137	< 0.005	< 0.004	< 0.004	< 0.003
Ce-141	< 0.023	< 0.015	< 0.012	< 0.028
Ce-144	< 0.028	< 0.041	< 0.034	< 0.043

Table 20. Vegetable and grain samples, analyses for gross beta, strontium-89, strontium-90, and gamma-emitting isotopes. Annual collection.

Sample Description and Concentration (pCi/g wet)				
	Indicator			
Location	K-23		K-1a	K-23
Date Collected	08-03-15	08-03-15	09-01-15	09-01-15
Lab Code	KVE- 4293	KVE- 4294	KVE- 4839	KVE- 4842
Type	Clover	Wheat	Corn	Corn
Gross beta	4.42 ± 0.10	6.58 ± 0.18	2.43 ± 0.05	2.36 ± 0.05
Sr-89	< 0.006	< 0.028	< 0.004	< 0.004
Sr-90	0.006 ± 0.002	0.021 ± 0.011	< 0.003	< 0.003
Be-7	1.15 ± 0.23	0.61 ± 0.147	< 0.058	< 0.059
K-40	5.04 ± 0.50	4.56 ± 0.32	1.89 ± 0.16	1.76 ± 0.15
Nb-95	< 0.024	< 0.012	< 0.008	< 0.004
Zr-95	< 0.028	< 0.019	< 0.008	< 0.009
Ru-103	< 0.014	< 0.007	< 0.006	< 0.006
Ru-106	< 0.095	< 0.125	< 0.035	< 0.024
Cs-134	< 0.021	< 0.011	< 0.006	< 0.006
Cs-137	< 0.023	< 0.010	< 0.006	< 0.004
Ce-141	< 0.035	< 0.019	< 0.014	< 0.010
Ce-144	< 0.149	< 0.085	< 0.05	< 0.055

	Indicator
Location	K-24
Date Collected	09-01-15
Lab Code	KVE- 4843
Type	Cabbage leaves
Gross beta	4.57 ± 0.14
Sr-89	< 0.012
Sr-90	0.008 ± 0.004
Be-7	0.29 ± 0.092
K-40	4.44 ± 0.28
Nb-95	< 0.006
Zr-95	< 0.014
Ru-103	< 0.011
Ru-106	< 0.070
Cs-134	< 0.008
Cs-137	< 0.009
Ce-141	< 0.018
Ce-144	< 0.071

Table 20. Vegetable and grain samples, analyses for gross beta, strontium-89, strontium-90, and gamma-emitting isotopes (continued).

Sample Description and Concentration (pCi/g wet)				
Location	K-3 (control)		K-26 (control)	
Date Collected	09-02-15	09-02-15	09-02-15	09-08-15
Lab Code	KVE- 4840	KVE- 4841	KVE- 4844	KVE- 4845
Type	Dill	Cabbage leaves	Kohlrabi	Corn
Gross beta	4.64 ± 0.11	4.85 ± 0.11	3.60 ± 0.07	2.07 ± 0.05
Sr-89	< 0.006	< 0.007	< 0.003	< 0.005
Sr-90	< 0.004	< 0.003	< 0.001	< 0.002
Be-7	0.43 ± 0.228	0.21 ± 0.082	< 0.046	< 0.062
K-40	3.84 ± 0.44	4.75 ± 0.32	2.82 ± 0.16	1.89 ± 0.18
Nb-95	< 0.018	< 0.012	< 0.005	< 0.004
Zr-95	< 0.035	< 0.015	< 0.006	< 0.010
Ru-103	< 0.021	< 0.011	< 0.003	< 0.005
Ru-106	< 0.180	< 0.077	< 0.036	< 0.038
Cs-134	< 0.017	< 0.010	< 0.004	< 0.007
Cs-137	< 0.016	< 0.008	< 0.004	< 0.005
Ce-141	< 0.036	< 0.016	< 0.014	< 0.011
Ce-144	< 0.151	< 0.084	< 0.043	< 0.036
	K-26 (control)		K-26 (control)	
Date Collected	09-02-15	09-02-15	09-02-15	10-01-15
Lab Code	KVE- 4846	KVE- 4847	KVE- 4848	KVE- 5416
Type	Carrots	Watermelon	Cauliflower	Pumpkins
Gross beta	3.18 ± 0.06	2.38 ± 0.04	3.62 ± 0.07	1.72 ± 0.03
Sr-89	< 0.004	< 0.004	< 0.003	< 0.003
Sr-90	0.002 ± 0.001	< 0.002	< 0.002	< 0.001
Be-7	< 0.055	< 0.044	< 0.053	< 0.044
K-40	3.47 ± 0.24	2.02 ± 0.13	2.92 ± 0.20	1.47 ± 0.12
Nb-95	< 0.007	< 0.005	< 0.007	< 0.003
Zr-95	< 0.015	< 0.008	< 0.012	< 0.008
Ru-103	< 0.008	< 0.005	< 0.008	< 0.003
Ru-106	< 0.069	< 0.037	< 0.052	< 0.026
Cs-134	< 0.007	< 0.004	< 0.006	< 0.004
Cs-137	< 0.007	< 0.003	< 0.007	< 0.002
Ce-141	< 0.014	< 0.007	< 0.015	< 0.010
Ce-144	< 0.036	< 0.021	< 0.043	< 0.023

Table 21. Cattlefeed, analyses for gross beta, strontium-89, strontium-90, and gamma-emitting isotopes.
Collection: First Quarter.

	Sample Description and Concentration (pCi/g wet)			
	Indicator			
Location	K-5	K-5	K-34	K-34
Date Collected	01-06-15	01-06-15	01-06-15	01-06-15
Lab Code	KCF- 57	KCF- 64	KCF- 58	KCF- 65
Type	Hay	Silage	Hay	Silage
Gross beta	38.34 ± 0.69	10.98 ± 0.25	12.85 ± 0.41	5.75 ± 0.14
Sr-89	< 0.024	< 0.022	< 0.045	< 0.013
Sr-90	< 0.012	0.017 ± 0.006	0.026 ± 0.015	0.007 ± 0.003
Be-7	< 0.13	0.40 ± 0.08	< 0.12	0.76 ± 0.10
K-40	29.64 ± 0.52	8.32 ± 0.26	7.72 ± 0.31	3.97 ± 0.22
Nb-95	< 0.012	< 0.008	< 0.012	< 0.007
Zr-95	< 0.017	< 0.009	< 0.020	< 0.013
Ru-103	< 0.010	< 0.006	< 0.010	< 0.004
Ru-106	< 0.079	< 0.047	< 0.094	< 0.033
Cs-134	< 0.012	< 0.006	< 0.011	< 0.006
Cs-137	< 0.012	< 0.006	< 0.014	< 0.007
Ce-141	< 0.019	< 0.014	< 0.019	< 0.015
Ce-144	< 0.070	< 0.046	< 0.060	< 0.041
	Indicator			
Location	K-38	K-38	K-39	K-39
Date Collected	01-06-15	01-06-15	01-06-15	01-06-15
Lab Code	KCF- 60	KCF- 67	KCF- 61	KCF- 68
Type	Hay	Silage	Hay	Silage
Gross beta	20.24 ± 0.44	4.04 ± 0.14	31.64 ± 0.64	7.55 ± 0.18
Sr-89	< 0.033	< 0.018	< 0.058	< 0.024
Sr-90	0.024 ± 0.009	< 0.008	0.027 ± 0.013	0.015 ± 0.007
Be-7	< 0.07	0.79 ± 0.13	0.13 ± 0.10	0.47 ± 0.10
K-40	14.36 ± 0.31	3.39 ± 0.27	16.10 ± 0.42	6.81 ± 0.31
Nb-95	< 0.008	< 0.011	< 0.012	< 0.006
Zr-95	< 0.010	< 0.016	< 0.022	< 0.015
Ru-103	< 0.007	< 0.008	< 0.014	< 0.008
Ru-106	< 0.077	< 0.073	< 0.106	< 0.077
Cs-134	< 0.008	< 0.010	< 0.011	< 0.007
Cs-137	< 0.009	< 0.009	< 0.012	< 0.008
Ce-141	< 0.012	< 0.012	< 0.021	< 0.017
Ce-144	< 0.053	< 0.073	< 0.051	< 0.058

Table 21. Cattlefeed, analyses for gross beta, strontium-89, strontium-90, and gamma-emitting isotopes (continued).
Collection: First Quarter.

	Sample Description and Concentration (pCi/g wet)			
	Control			
Location	K-3	K-3	K-35	K-35
Date Collected	01-07-15	01-07-15	01-06-15	01-06-15
Lab Code	KCF- 56	KCF- 62	KCF- 59	KCF- 66
Type	Hay	Silage	Hay	Silage
Gross beta	13.82 ± 0.29	5.78 ± 0.12	25.46 ± 0.47	15.07 ± 0.40
Sr-89	< 0.014	< 0.021	< 0.021	< 0.024
Sr-90	< 0.008	0.017 ± 0.006	0.024 ± 0.007	0.011 ± 0.006
Be-7	0.24 ± 0.098	0.92 ± 0.135	< 0.145	< 0.07
K-40	10.45 ± 0.40	3.97 ± 0.28	17.32 ± 0.45	11.77 ± 0.40
Nb-95	< 0.008	< 0.009	< 0.016	< 0.010
Zr-95	< 0.016	< 0.012	< 0.029	< 0.014
Ru-103	< 0.010	< 0.008	< 0.014	< 0.006
Ru-106	< 0.098	< 0.047	< 0.077	< 0.048
Cs-134	< 0.009	< 0.009	< 0.014	< 0.007
Cs-137	< 0.011	< 0.010	< 0.015	< 0.007
Ce-141	< 0.011	< 0.018	< 0.018	< 0.010
Ce-144	< 0.074	< 0.049	< 0.072	< 0.054

Table 22. Grass, analyses for gross beta, strontium-89, strontium-90, and gamma-emitting isotopes.
Collection: Quarterly, April through December
Units: pCi/g wet

Sample Description and Concentration

	Indicator			
Location	K-1b	K-1f	K-5	K-34
Date Collected	06-01-15	06-01-15	06-01-15	06-01-15
Lab Code	KG- 2695	KG- 2696	KG- 2698	KG- 2699
Gross beta	5.41 ± 0.16	7.27 ± 0.21	7.71 ± 0.20	7.20 ± 0.19
Sr-89	< 0.016	< 0.009	< 0.012	< 0.009
Sr-90	< 0.008	0.009 ± 0.003	< 0.006	< 0.004
Be-7	0.51 ± 0.19	0.57 ± 0.23	0.59 ± 0.13	0.39 ± 0.13
K-40	7.00 ± 0.50	5.61 ± 0.47	6.24 ± 0.38	5.99 ± 0.39
Mn-54	< 0.014	< 0.012	< 0.013	< 0.007
Co-58	< 0.016	< 0.008	< 0.011	< 0.008
Co-60	< 0.013	< 0.010	< 0.006	< 0.017
Nb-95	< 0.015	< 0.014	< 0.007	< 0.012
Zr-95	< 0.031	< 0.026	< 0.019	< 0.020
Ru-103	< 0.015	< 0.013	< 0.008	< 0.009
Ru-106	< 0.150	< 0.130	< 0.119	< 0.101
Cs-134	< 0.015	< 0.018	< 0.012	< 0.012
Cs-137	< 0.017	< 0.018	< 0.012	< 0.014
Ce-141	< 0.030	< 0.034	< 0.018	< 0.024
Ce-144	< 0.097	< 0.090	< 0.067	< 0.084

	Indicator		Control	
Location	K-38	K-39	K-3	K-35
Date Collected	06-01-15	06-01-15	06-01-15	06-01-15
Lab Code	KG- 2701	KG- 2702	KG- 2697	KG- 2700
Gross beta	8.51 ± 0.22	5.78 ± 0.17	7.13 ± 0.19	9.37 ± 0.24
Sr-89	< 0.010	< 0.006	< 0.011	< 0.011
Sr-90	< 0.004	< 0.003	< 0.005	< 0.004
Be-7	0.65 ± 0.12	1.70 ± 0.25	0.41 ± 0.11	0.71 ± 0.19
K-40	6.90 ± 0.45	8.98 ± 0.65	5.78 ± 0.33	6.92 ± 0.57
Mn-54	< 0.014	< 0.020	< 0.007	< 0.014
Co-58	< 0.011	< 0.016	< 0.007	< 0.018
Co-60	< 0.011	< 0.019	< 0.007	< 0.015
Nb-95	< 0.008	< 0.016	< 0.009	< 0.021
Zr-95	< 0.013	< 0.032	< 0.018	< 0.029
Ru-103	< 0.008	< 0.022	< 0.009	< 0.019
Ru-106	< 0.124	< 0.200	< 0.063	< 0.194
Cs-134	< 0.011	< 0.018	< 0.009	< 0.018
Cs-137	< 0.010	< 0.017	< 0.010	< 0.014
Ce-141	< 0.018	< 0.040	< 0.014	< 0.024
Ce-144	< 0.049	< 0.111	< 0.060	< 0.124

Table 22. Grass samples, analyses for gross beta, strontium-89, strontium-90, and gamma-emitting isotopes (continued).

Sample Description and Concentration				
	Indicator			
Location	K-1b	K-1f	K-5	K-34
Date Collected	08-03-15	08-03-15	08-03-15	08-03-15
Lab Code	KG- 4257	KG- 4258	KG- 4260	KG- 4261
Gross beta	8.42 ± 0.30	8.59 ± 0.29	12.61 ± 0.39	9.18 ± 0.36
Sr-89	< 0.028	< 0.014	< 0.019	< 0.028
Sr-90	0.029 ± 0.010	0.069 ± 0.009	0.052 ± 0.011	< 0.018
Be-7	1.97 ± 0.20	0.93 ± 0.20	2.85 ± 0.26	2.33 ± 0.22
K-40	6.08 ± 0.42	5.97 ± 0.45	9.81 ± 0.58	5.86 ± 0.41
Mn-54	< 0.009	< 0.007	< 0.013	< 0.012
Co-58	< 0.008	< 0.017	< 0.012	< 0.007
Co-60	< 0.011	< 0.014	< 0.013	< 0.013
Nb-95	< 0.014	< 0.014	< 0.012	< 0.010
Zr-95	< 0.024	< 0.024	< 0.034	< 0.022
Ru-103	< 0.009	< 0.010	< 0.017	< 0.011
Ru-106	< 0.117	< 0.103	< 0.139	< 0.123
Cs-134	< 0.014	< 0.016	< 0.018	< 0.013
Cs-137	< 0.014	< 0.013	< 0.014	< 0.013
Ce-141	< 0.026	< 0.019	< 0.023	< 0.020
Ce-144	< 0.080	< 0.119	< 0.109	< 0.094
	Indicator		Control	
Location	K-38	K-39	K-3	K-35
Date Collected	08-03-15	08-03-15	08-03-15	08-03-15
Lab Code	KG- 4263	KG- 4265	KG- 4259	KG- 4262
Gross beta	7.47 ± 0.28	8.80 ± 0.33	8.65 ± 0.31	6.55 ± 0.22
Sr-89	< 0.017	< 0.023	0.03 ± 0.017	< 0.009
Sr-90	< 0.010	< 0.016	< 0.009	< 0.005
Be-7	2.99 ± 0.31	2.60 ± 0.21	1.96 ± 0.26	0.46 ± 0.10
K-40	6.40 ± 0.52	5.85 ± 0.38	6.68 ± 0.53	4.18 ± 0.25
Mn-54	< 0.018	< 0.013	< 0.018	< 0.006
Co-58	< 0.008	< 0.012	< 0.010	< 0.008
Co-60	< 0.018	< 0.012	< 0.016	< 0.009
Nb-95	< 0.015	< 0.015	< 0.011	< 0.008
Zr-95	< 0.028	< 0.024	< 0.035	< 0.012
Ru-103	< 0.016	< 0.009	< 0.017	< 0.008
Ru-106	< 0.131	< 0.111	< 0.125	< 0.063
Cs-134	< 0.021	< 0.012	< 0.019	< 0.008
Cs-137	< 0.019	< 0.014	< 0.017	< 0.007
Ce-141	< 0.038	< 0.026	< 0.042	< 0.015
Ce-144	< 0.104	< 0.063	< 0.121	< 0.043

Table 22. Grass samples, analyses for gross beta, strontium-89, strontium-90, and gamma-emitting isotopes (continued).

Sample Description and Concentration (pCi/g wet)

	Indicator			
Location	K-1b	K-1f	K-5	K-34
Date Collected	10-01-15	10-01-15	10-01-15	10-01-15
Lab Code	KG- 5458	KG- 5459	KG- 5461	KG- 5463
Gross beta	7.59 ± 0.23	6.64 ± 0.19	10.64 ± 0.22	10.00 ± 0.27
Sr-89	< 0.033	< 0.035	< 0.019	< 0.024
Sr-90	< 0.013	< 0.014	< 0.008	< 0.010
Be-7	4.07 ± 0.42	2.66 ± 0.46	2.02 ± 0.32	1.89 ± 0.26
K-40	5.90 ± 0.67	6.62 ± 0.77	8.77 ± 0.66	8.40 ± 0.63
Mn-54	< 0.028	< 0.027	< 0.022	< 0.018
Co-58	< 0.023	< 0.018	< 0.014	< 0.009
Co-60	< 0.021	< 0.015	< 0.016	< 0.009
Nb-95	< 0.022	< 0.030	< 0.022	< 0.023
Zr-95	< 0.040	< 0.053	< 0.029	< 0.034
Ru-103	< 0.023	< 0.028	< 0.025	< 0.013
Ru-106	< 0.205	< 0.258	< 0.221	< 0.113
Cs-134	< 0.028	< 0.032	< 0.020	< 0.020
Cs-137	< 0.028	< 0.036	< 0.022	< 0.019
Ce-141	< 0.053	< 0.059	< 0.043	< 0.036
Ce-144	< 0.139	< 0.157	< 0.195	< 0.125

	Indicator		Control	
Location	K-38	K-39	K-3	K-35
Date Collected	10-01-15	10-01-15	10-01-15	10-01-15
Lab Code	KG- 5465	KG- 5466	KG- 5460	KG- 5464
Gross beta	9.44 ± 0.27	7.91 ± 0.27	8.79 ± 0.19	3.03 ± 0.09
Sr-89	< 0.023	< 0.029	< 0.023	< 0.007
Sr-90	< 0.010	< 0.012	< 0.010	< 0.003
Be-7	2.68 ± 0.34	2.70 ± 0.26	1.77 ± 0.24	1.44 ± 0.25
K-40	8.82 ± 0.75	6.66 ± 0.46	8.05 ± 0.50	8.59 ± 0.63
Mn-54	< 0.018	< 0.014	< 0.018	< 0.010
Co-58	< 0.020	< 0.011	< 0.014	< 0.011
Co-60	< 0.015	< 0.009	< 0.014	< 0.013
Nb-95	< 0.021	< 0.011	< 0.010	< 0.014
Zr-95	< 0.024	< 0.025	< 0.015	< 0.026
Ru-103	< 0.023	< 0.013	< 0.021	< 0.017
Ru-106	< 0.208	< 0.118	< 0.121	< 0.110
Cs-134	< 0.026	< 0.016	< 0.016	< 0.018
Cs-137	< 0.022	< 0.016	< 0.014	< 0.016
Ce-141	< 0.051	< 0.024	< 0.031	< 0.045
Ce-144	< 0.109	< 0.103	< 0.131	< 0.107

Table 23. Soil samples, analyses for gross alpha, gross beta, strontium-89, strontium-90, and gamma-emitting isotopes.

Collection: Semiannually

Sample Description and Concentration (pCi/g dry)		
	Indicator	
Location	K-1f	K-5
Date Collected	05-05-15	05-05-15
Lab Code	KSO- 2284	KSO- 2286
Gross alpha	8.90 ± 1.34	5.53 ± 1.42
Gross beta	18.43 ± 1.01	27.99 ± 1.60
Sr-89	< 0.038	< 0.066
Sr-90	< 0.018	0.039 ± 0.019
Be-7	< 0.22	< 0.24
K-40	18.89 ± 0.82	17.85 ± 0.84
Nb-95	< 0.025	< 0.023
Zr-95	< 0.021	< 0.062
Ru-103	< 0.030	< 0.028
Ru-106	< 0.163	< 0.169
Cs-134	< 0.015	< 0.022
Cs-137	0.11 ± 0.03	0.16 ± 0.03
Ce-141	< 0.059	< 0.036
Ce-144	< 0.071	< 0.095
Date Collected	10-01-15	10-01-15
Lab Code	KSO- 5477	KSO- 5479
Gross alpha	6.54 ± 2.90	6.22 ± 2.84
Gross beta	23.08 ± 2.87	21.10 ± 2.78
Sr-89	< 0.084	< 0.076
Sr-90	< 0.028	0.036 ± 0.017
Be-7	< 0.28	< 0.29
K-40	19.73 ± 0.78	18.96 ± 0.77
Nb-95	< 0.083	< 0.063
Zr-95	< 0.042	< 0.053
Ru-103	< 0.041	< 0.045
Ru-106	< 0.172	< 0.189
Cs-134	< 0.016	< 0.020
Cs-137	0.11 ± 0.02	0.10 ± 0.02
Ce-141	< 0.096	< 0.102
Ce-144	< 0.126	< 0.107

Table 23. Soil samples, analyses for gross alpha, gross beta, strontium-89, strontium-90, and gamma-emitting isotopes (continued).

Sample Description and Concentration (pCi/g dry)

	Indicator		
Location	K-34	K-38	K-39
Date Collected	05-05-15	05-05-15	05-05-15
Lab Code	KSO- 2287	KSO- 2290	KSO- 2291
Gross alpha	7.26 ± 1.92	7.10 ± 1.74	6.86 ± 1.70
Gross beta	26.35 ± 1.50	27.46 ± 1.65	26.68 ± 1.60
Sr-89	< 0.045	< 0.052	< 0.061
Sr-90	0.022 ± 0.013	< 0.024	< 0.030
Be-7	< 0.22	< 0.33	< 0.23
K-40	17.03 ± 0.72	18.14 ± 0.85	19.03 ± 0.81
Nb-95	< 0.016	< 0.043	< 0.022
Zr-95	< 0.031	< 0.035	< 0.046
Ru-103	< 0.020	< 0.015	< 0.036
Ru-106	< 0.092	< 0.127	< 0.167
Cs-134	< 0.014	< 0.019	< 0.014
Cs-137	0.10 ± 0.03	0.06 ± 0.03	0.11 ± 0.04
Ce-141	< 0.049	< 0.062	< 0.067
Ce-144	< 0.088	< 0.150	< 0.105
Date Collected	10-01-15	10-01-15	10-01-15
Lab Code	KSO- 5480	KSO- 5482	KSO- 5484
Gross alpha	8.86 ± 3.83	7.25 ± 3.25	5.82 ± 3.03
Gross beta	24.40 ± 2.84	27.40 ± 3.18	30.64 ± 3.28
Sr-89	< 0.100	< 0.103	< 0.126
Sr-90	< 0.033	< 0.039	< 0.047
Be-7	< 0.33	< 0.26	< 0.33
K-40	18.39 ± 0.77	20.98 ± 0.72	20.57 ± 0.86
Nb-95	< 0.048	< 0.064	< 0.069
Zr-95	< 0.074	< 0.061	< 0.037
Ru-103	< 0.051	< 0.045	< 0.060
Ru-106	< 0.164	< 0.191	< 0.168
Cs-134	< 0.015	< 0.017	< 0.019
Cs-137	0.09 ± 0.03	0.11 ± 0.033	0.10 ± 0.03
Ce-141	< 0.122	< 0.114	< 0.119
Ce-144	< 0.170	< 0.173	< 0.153

Table 23. Soil samples, analyses for gross alpha, gross beta, strontium-89, strontium-90, and gamma-emitting isotopes (continued).

Sample Description and Concentration (pCi/g dry)		
	Control	
Location	K-3	K-35
Date Collected	05-05-15	05-05-15
Lab Code	KSO- 2285	KSO- 2288
Gross alpha	5.88 ± 1.44	6.03 ± 1.53
Gross beta	26.33 ± 1.45	18.62 ± 1.28
Sr-89	< 0.072	< 0.041
Sr-90	< 0.033	0.033 ± 0.013
Be-7	< 0.22	< 0.28
K-40	18.09 ± 0.84	14.54 ± 0.79
Nb-95	< 0.029	< 0.025
Zr-95	< 0.054	< 0.027
Ru-103	< 0.027	< 0.021
Ru-106	< 0.121	< 0.114
Cs-134	< 0.021	< 0.023
Cs-137	0.13 ± 0.03	0.09 ± 0.03
Ce-141	< 0.069	< 0.068
Ce-144	< 0.147	< 0.099
Date Collected	10-01-15	10-01-15
Lab Code	KSO- 5478	KSO- 5481
Gross alpha	8.72 ± 3.15	< 3.73
Gross beta	29.12 ± 3.19	20.56 ± 2.75
Sr-89	< 0.100	< 0.075
Sr-90	< 0.033	< 0.028
Be-7	< 0.27	< 0.30
K-40	19.87 ± 0.71	16.03 ± 0.71
Nb-95	< 0.062	< 0.061
Zr-95	< 0.070	< 0.043
Ru-103	< 0.026	< 0.062
Ru-106	< 0.120	< 0.142
Cs-134	< 0.017	< 0.021
Cs-137	0.13 ± 0.03	0.08 ± 0.03
Ce-141	< 0.107	< 0.110
Ce-144	< 0.140	< 0.169

Table 24. Surface water samples, analyses for gross beta, potassium-40 and gamma-emitting isotopes.
Collection: Monthly

Sample Description and Concentration (pCi/L)			
Indicator			
K-1a			
Date Collected	01-06-15	02-03-15	03-02-15
Lab Code	KSW- 10	NS[a]	NS[a]
Gross beta			
Suspended Solids	1.7 ± 0.5		
Dissolved Solids	7.5 ± 1.3		
Total Residue	9.2 ± 1.4		
K-40 (ICP)	4.35		
Mn-54	< 2.6		
Fe-59	< 3.5		
Co-58	< 2.5		
Co-60	< 2.8		
Zn-65	< 4.3		
Zr-Nb-95	< 2.6		
Cs-134	< 3.2		
Cs-137	< 1.4		
Ba-La-140	< 3.9		
K-1b			
Date Collected	01-06-15	02-03-15	03-02-15
Lab Code	KSW- 11	KSW- 390	NS[a]
Gross beta			
Suspended Solids	0.8 ± 0.4	< 0.8	
Dissolved Solids	3.3 ± 0.9	4.0 ± 1.2	
Total Residue	4.1 ± 1.0	4.0 ± 1.2	
K-40 (ICP)	2.08	1.75	
Mn-54	< 2.5	< 1.6	
Fe-59	< 3.1	< 2.9	
Co-58	< 2.3	< 1.0	
Co-60	< 2.4	< 2.3	
Zn-65	< 4.8	< 5.6	
Zr-Nb-95	< 1.8	< 3.3	
Cs-134	< 2.8	< 3.2	
Cs-137	< 2.2	< 1.5	
Ba-La-140	< 3.7	< 3.2	

[a] NS= No sample; water frozen.

Table 24. Surface water samples, analyses for gross beta, potassium-40, and gamma-emitting isotopes (continued).

Sample Description and Concentration (pCi/L)			
Indicator			
K-1a			
Date Collected	04-01-15	05-05-15	06-01-15
Lab Code	KSW- 1339	KSW- 2144	KSW- 2680
Gross beta			
Suspended Solids	< 0.7	< 0.7	< 0.7
Dissolved Solids	7.4 ± 1.1	7.0 ± 1.1	4.8 ± 1.0
Total Residue	7.4 ± 1.1	7.0 ± 1.1	4.8 ± 1.0
K-40 (ICP)	7.62	4.88	4.96
Mn-54	< 4.4	< 3.9	< 6.1
Fe-59	< 9.9	< 4.3	< 14.5
Co-58	< 4.0	< 2.9	< 5.0
Co-60	< 2.5	< 2.1	< 3.2
Zn-65	< 4.4	< 2.6	< 17.5
Zr-Nb-95	< 4.0	< 3.1	< 9.4
Cs-134	< 3.5	< 4.5	< 7.2
Cs-137	< 3.7	< 4.1	< 4.4
Ba-La-140	< 3.7	< 3.7	< 7.2
K-1b			
Date Collected	04-01-15	05-05-15	06-01-15
Lab Code	KSW- 1340	KSW- 2145	KSW- 2681
Gross beta			
Suspended Solids	< 0.7	1.1 ± 0.4	0.9 ± 0.4
Dissolved Solids	2.5 ± 0.7	2.3 ± 0.7	3.9 ± 0.8
Total Residue	2.5 ± 0.7	3.4 ± 0.8	4.8 ± 0.9
K-40 (ICP)	2.79	2.34	3.17
Mn-54	< 2.1	< 3.3	< 2.3
Fe-59	< 4.1	< 7.4	< 2.5
Co-58	< 2.1	< 3.2	< 1.4
Co-60	< 1.6	< 2.6	< 2.1
Zn-65	< 3.6	< 2.8	< 5.2
Zr-Nb-95	< 2.7	< 4.3	< 3.3
Cs-134	< 2.6	< 3.7	< 3.1
Cs-137	< 1.7	< 2.3	< 2.9
Ba-La-140	< 3.7	< 1.9	< 4.0

Table 24. Surface water samples, analyses for gross beta, potassium-40, and gamma-emitting isotopes (continued).

Sample Description and Concentration (pCi/L)			
Indicator			
K-1a			
Date Collected	07-01-15	08-03-15	09-01-15
Lab Code	KSW- 3351	KSW- 4248	KSW- 4799
Gross beta			
Suspended Solids	< 0.7	< 1.1	< 0.8
Dissolved Solids	5.2 ± 1.0	12.9 ± 1.4	12.2 ± 1.4
Total Residue	5.2 ± 1.0	12.9 ± 1.4	12.2 ± 1.4
K-40 (ICP)	4.86	12.30	11.64
Mn-54	< 3.3	< 2.1	< 3.3
Fe-59	< 7.2	< 3.3	< 7.1
Co-58	< 4.5	< 3.0	< 2.3
Co-60	< 2.4	< 1.5	< 2.1
Zn-65	< 4.8	< 2.8	< 4.9
Zr-Nb-95	< 2.8	< 2.2	< 4.3
Cs-134	< 3.6	< 3.0	< 4.9
Cs-137	< 3.0	< 3.5	< 3.8
Ba-La-140	< 3.0	< 3.5	< 2.0
K-1b			
Date Collected	07-01-15	08-03-15	09-01-15
Lab Code	KSW- 3352	KSW- 4249	KSW- 4800
Gross beta			
Suspended Solids	< 2.3	< 1.1	< 0.7
Dissolved Solids	1.8 ± 0.7	5.0 ± 0.8	2.7 ± 0.7
Total Residue	1.8 ± 0.7	5.0 ± 0.8	2.7 ± 0.7
K-40 (ICP)	2.36	4.31	2.53
Mn-54	< 3.2	< 1.3	< 2.7
Fe-59	< 5.7	< 6.0	< 2.8
Co-58	< 2.0	< 3.3	< 4.3
Co-60	< 2.2	< 2.4	< 4.4
Zn-65	< 4.8	< 3.4	< 7.0
Zr-Nb-95	< 4.2	< 4.1	< 4.2
Cs-134	< 3.9	< 3.6	< 4.6
Cs-137	< 4.5	< 2.4	< 3.4
Ba-La-140	< 2.6	< 4.9	< 2.1

Table 24. Surface water samples, analyses for gross beta, potassium-40, and gamma-emitting isotopes (continued).

Sample Description and Concentration (pCi/L)			
Indicator			
K-1a			
Date Collected	10-01-15	11-02-15	12-01-15
Lab Code	KSW- 5386	KSW- 6285	KSW- 6721
Gross beta			
Suspended Solids	< 0.3	< 0.7	< 0.7
Dissolved Solids	4.6 ± 1.1	3.5 ± 1.0	9.3 ± 1.2
Total Residue	4.6 ± 1.1	3.5 ± 1.0	9.3 ± 1.2
K-40 (ICP)	3.99	3.35	9.51
Mn-54	< 3.5	< 1.3	< 2.4
Fe-59	< 7.3	< 2.8	< 4.3
Co-58	< 3.2	< 1.2	< 1.9
Co-60	< 2.6	< 0.9	< 1.7
Zn-65	< 6.6	< 2.4	< 5.6
Zr-Nb-95	< 2.2	< 1.7	< 2.3
Cs-134	< 3.9	< 1.3	< 3.0
Cs-137	< 4.7	< 1.3	< 2.1
Ba-La-140	< 3.0	< 3.4	< 4.8
K-1b			
Date Collected	10-01-15	11-02-15	12-01-15
Lab Code	KSW- 5387	KSW- 6286	KSW- 6722
Gross beta			
Suspended Solids	0.4 ± 0.2	< 0.8	< 0.8
Dissolved Solids	2.3 ± 0.7	4.6 ± 0.8	4.9 ± 0.8
Total Residue	2.7 ± 0.7	4.6 ± 0.8	4.9 ± 0.8
K-40 (ICP)	2.66	3.70	4.56
Mn-54	< 4.3	< 1.3	< 2.7
Fe-59	< 8.1	< 2.6	< 4.6
Co-58	< 3.0	< 1.0	< 3.8
Co-60	< 2.1	< 1.2	< 2.0
Zn-65	< 5.5	< 2.0	< 4.9
Zr-Nb-95	< 4.4	< 1.5	< 5.3
Cs-134	< 4.3	< 1.3	< 3.8
Cs-137	< 3.9	< 1.3	< 4.2
Ba-La-140	< 10.4	< 4.7	< 3.5

Table 24. Surface water samples, analyses for gross beta, potassium-40 and gamma-emitting isotopes (continued).

Sample Description and Concentration (pCi/L)			
Indicator			
K-1d			
Date Collected	01-06-15	02-03-15	03-02-15
Lab Code	KSW- 12	KSW- 391	KSW- 766
Gross beta			
Suspended Solids	1.1 ± 0.4	< 0.7	< 0.7
Dissolved Solids	2.3 ± 0.6	1.7 ± 0.7	2.3 ± 0.5
Total Residue	3.4 ± 0.7	1.7 ± 0.7	2.3 ± 0.5
K-40 (ICP)	1.21	1.27	1.25
Mn-54	< 4.3	< 1.8	< 2.5
Fe-59	< 6.4	< 5.6	< 4.7
Co-58	< 3.6	< 2.0	< 1.5
Co-60	< 4.0	< 2.3	< 2.4
Zn-65	< 8.7	< 4.8	< 3.4
Zr-Nb-95	< 4.9	< 2.1	< 2.1
Cs-134	< 5.1	< 2.8	< 3.3
Cs-137	< 3.3	< 2.2	< 3.0
Ba-La-140	< 5.8	< 3.1	< 3.3
K-1e			
Date Collected	01-06-15	02-03-15	03-02-15
Lab Code	KSW- 13	NS[a]	KSW- 767
Gross beta			
Suspended Solids	< 0.7		< 0.7
Dissolved Solids	3.8 ± 1.1		16.2 ± 3.4
Total Residue	3.8 ± 1.1		16.2 ± 3.4
K-40 (ICP)	2.24		12.38
Mn-54	< 1.5		< 2.3
Fe-59	< 2.7		< 3.3
Co-58	< 2.7		< 3.0
Co-60	< 2.1		< 2.2
Zn-65	< 2.6		< 5.1
Zr-Nb-95	< 2.6		< 2.6
Cs-134	< 2.5		< 3.1
Cs-137	< 3.0		< 2.1
Ba-La-140	< 3.2		< 2.3

[a] NS= No sample; water frozen.

Table 24. Surface water samples, analyses for gross beta, potassium-40, and gamma-emitting isotopes (continued).

Sample Description and Concentration (pCi/L)			
Indicator			
K-1d			
Date Collected	04-01-15	05-05-15	06-01-15
Lab Code	KSW- 1341	KSW- 2146	KSW- 2682
Gross beta			
Suspended Solids	< 0.8	< 0.7	< 0.7
Dissolved Solids	1.7 ± 0.4	2.1 ± 0.5	0.8 ± 0.4
Total Residue	1.7 ± 0.4	2.1 ± 0.5	0.8 ± 0.4
K-40 (ICP)	1.17	1.19	1.19
Mn-54	< 2.0	< 3.5	< 2.0
Fe-59	< 3.9	< 3.4	< 5.8
Co-58	< 2.9	< 3.0	< 2.3
Co-60	< 2.9	< 3.3	< 2.1
Zn-65	< 2.3	< 4.9	< 4.2
Zr-Nb-95	< 2.3	< 4.5	< 3.9
Cs-134	< 2.3	< 4.1	< 3.4
Cs-137	< 2.6	< 2.7	< 2.8
Ba-La-140	< 3.6	< 3.8	< 2.3
K-1e			
Date Collected	04-01-15	05-05-15	06-01-15
Lab Code	KSW- 1342	KSW- 2147	KSW- 2683
Gross beta			
Suspended Solids	< 0.7	< 0.7	< 0.7
Dissolved Solids	3.2 ± 0.9	3.6 ± 1.0	3.1 ± 0.9
Total Residue	3.2 ± 0.9	3.6 ± 1.0	3.1 ± 0.9
K-40 (ICP)	2.80	2.50	2.18
Mn-54	< 2.9	< 2.6	< 2.7
Fe-59	< 7.2	< 1.9	< 3.2
Co-58	< 2.4	< 2.3	< 3.0
Co-60	< 1.8	< 3.5	< 1.6
Zn-65	< 4.4	< 5.8	< 4.1
Zr-Nb-95	< 4.1	< 1.9	< 2.6
Cs-134	< 3.4	< 2.9	< 3.1
Cs-137	< 3.6	< 3.4	< 2.5
Ba-La-140	< 3.6	< 5.5	< 2.3

Table 24. Surface water samples, analyses for gross beta, potassium-40, and gamma-emitting isotopes (continued).

Sample Description and Concentration (pCi/L)			
Indicator			
K-1d			
Date Collected	07-01-15	08-03-15	09-01-15
Lab Code	KSW- 3353	KSW- 4250	KSW- 4801
Gross beta			
Suspended Solids	< 0.7	< 1.1	< 0.8
Dissolved Solids	0.7 ± 0.4	1.5 ± 0.4	1.3 ± 0.4
Total Residue	0.7 ± 0.4	1.5 ± 0.4	1.3 ± 0.4
K-40 (ICP)	1.27	1.13	1.16
Mn-54	< 2.3	< 1.8	< 3.2
Fe-59	< 3.5	< 6.0	< 3.2
Co-58	< 3.0	< 2.1	< 1.5
Co-60	< 2.1	< 1.5	< 2.8
Zn-65	< 3.6	< 3.8	< 6.2
Zr-Nb-95	< 2.8	< 3.0	< 2.9
Cs-134	< 3.3	< 3.7	< 3.4
Cs-137	< 3.4	< 2.3	< 3.1
Ba-La-140	< 3.0	< 6.0	< 3.3
K-1e			
Date Collected	07-01-15	08-03-15	09-01-15
Lab Code	KSW- 3354	KSW- 4251	KSW- 4802
Gross beta			
Suspended Solids	< 0.7	< 1.1	< 0.8
Dissolved Solids	2.5 ± 0.9	3.8 ± 0.9	2.9 ± 0.9
Total Residue	2.5 ± 0.9	3.8 ± 0.9	2.9 ± 0.9
K-40 (ICP)	2.89	3.06	3.75
Mn-54	< 4.2	< 3.0	< 3.2
Fe-59	< 3.2	< 3.4	< 6.8
Co-58	< 3.4	< 1.4	< 2.8
Co-60	< 3.9	< 2.5	< 2.1
Zn-65	< 3.2	< 4.7	< 5.5
Zr-Nb-95	< 2.8	< 2.4	< 3.3
Cs-134	< 3.6	< 3.3	< 4.5
Cs-137	< 4.5	< 2.5	< 4.5
Ba-La-140	< 1.7	< 4.2	< 5.3

Table 24. Surface water samples, analyses for gross beta, potassium-40, and gamma-emitting isotopes (continued).

Sample Description and Concentration (pCi/L)			
Indicator			
K-1d			
Date Collected	10-01-15	11-02-15	12-01-15
Lab Code	KSW- 5388	KSW- 6287	KSW- 6723
Gross beta			
Suspended Solids	< 0.3	< 0.7	< 0.7
Dissolved Solids	1.2 ± 0.4	0.7 ± 0.4	1.4 ± 0.4
Total Residue	1.2 ± 0.4	0.7 ± 0.4	1.4 ± 0.4
K-40 (ICP)	1.16	1.16	2.03
Mn-54	< 1.7	< 1.7	< 2.3
Fe-59	< 7.0	< 2.4	< 4.9
Co-58	< 1.7	< 1.2	< 2.8
Co-60	< 3.2	< 1.6	< 2.0
Zn-65	< 4.5	< 2.8	< 6.5
Zr-Nb-95	< 2.5	< 1.4	< 3.9
Cs-134	< 3.5	< 1.5	< 3.3
Cs-137	< 2.7	< 1.4	< 3.3
Ba-La-140	< 11.3	< 3.2	< 4.1
K-1e			
Date Collected	10-01-15	11-02-15	12-01-15
Lab Code	KSW- 5389	KSW- 6288	KSW- 6724
Gross beta			
Suspended Solids	< 0.3	< 0.7	< 0.7
Dissolved Solids	2.6 ± 0.8	2.5 ± 0.9	3.8 ± 0.9
Total Residue	2.6 ± 0.8	2.5 ± 0.9	3.8 ± 0.9
K-40 (ICP)	2.88	2.57	3.99
Mn-54	< 2.5	< 0.9	< 2.7
Fe-59	< 4.4	< 2.7	< 5.9
Co-58	< 4.1	< 1.4	< 1.9
Co-60	< 2.3	< 1.1	< 2.2
Zn-65	< 5.0	< 2.5	< 3.6
Zr-Nb-95	< 3.3	< 1.9	< 2.1
Cs-134	< 3.6	< 1.3	< 3.2
Cs-137	< 3.6	< 1.2	< 2.1
Ba-La-140	< 4.1	< 4.6	< 4.5

Table 24. Surface water samples, analyses for gross beta, potassium-40 and gamma-emitting isotopes (continued).

Sample Description and Concentration (pCi/L)			
Indicator			
K-1k			
Date Collected	01-06-15	02-03-15	03-02-15
Lab Code	NS[a]	NS[a]	NS[a]
Gross beta			
Suspended Solids			
Dissolved Solids			
Total Residue			
K-40 (ICP)			
Mn-54			
Fe-59			
Co-58			
Co-60			
Zn-65			
Zr-Nb-95			
Cs-134			
Cs-137			
Ba-La-140			
Date Collected	04-01-15	05-05-15	06-01-15
Lab Code	KSW- 1343	KSW- 2148	KSW- 2684
Gross beta			
Suspended Solids	< 0.8	< 0.8	< 1.0
Dissolved Solids	1.6 ± 0.4	7.3 ± 0.8	7.1 ± 1.0
Total Residue	1.6 ± 0.4	7.3 ± 0.8	7.1 ± 1.0
K-40 (ICP)	3.94	5.46	5.68
Mn-54	< 3.3	< 3.3	< 2.5
Fe-59	< 5.5	< 2.7	< 9.5
Co-58	< 1.6	< 3.0	< 2.8
Co-60	< 1.4	< 2.6	< 4.0
Zn-65	< 5.3	< 4.3	< 8.0
Zr-Nb-95	< 3.1	< 3.2	< 4.9
Cs-134	< 2.9	< 2.8	< 4.8
Cs-137	< 2.9	< 3.1	< 3.6
Ba-La-140	< 3.3	< 4.0	< 6.5

[a] NS= No sample; water frozen.

Table 24. Surface water samples, analyses for gross beta, potassium-40, and gamma-emitting isotopes (continued).

Sample Description and Concentration (pCi/L)			
Indicator			
K-1k			
Date Collected	07-01-15	08-03-15	09-01-15
Lab Code	KSW- 3355	KSW- 4252	KSW- 4803
Gross beta			
Suspended Solids	< 0.7	< 1.1	< 1.0
Dissolved Solids	4.9 ± 0.7	13.1 ± 1.0	24.9 ± 1.8
Total Residue	4.9 ± 0.7	13.1 ± 1.0	24.9 ± 1.8
K-40 (ICP)	5.87	13.28	12.87
Mn-54	< 2.6	< 1.9	< 3.0
Fe-59	< 4.1	< 3.2	< 6.0
Co-58	< 2.0	< 2.2	< 2.8
Co-60	< 2.4	< 1.6	< 2.2
Zn-65	< 3.2	< 3.7	< 4.6
Zr-Nb-95	< 2.6	< 3.3	< 3.3
Cs-134	< 2.5	< 3.0	< 3.7
Cs-137	< 2.2	< 2.8	< 4.3
Ba-La-140	< 2.4	< 3.2	< 2.6
Date Collected	10-01-15	11-02-15	12-01-15
Lab Code	KSW- 5390	KSW- 6289	KSW- 6725
Gross beta			
Suspended Solids	< 0.8	< 0.7	< 0.8
Dissolved Solids	5.7 ± 0.7	7.1 ± 0.8	4.3 ± 0.6
Total Residue	5.7 ± 0.7	7.1 ± 0.8	4.3 ± 0.6
K-40 (ICP)	5.32	7.66	3.71
Mn-54	< 2.7	< 1.5	< 2.9
Fe-59	< 5.1	< 3.2	< 4.8
Co-58	< 2.8	< 1.7	< 1.8
Co-60	< 1.5	< 1.3	< 2.2
Zn-65	< 3.9	< 2.5	< 5.7
Zr-Nb-95	< 1.8	< 2.7	< 2.5
Cs-134	< 3.1	< 1.6	< 2.8
Cs-137	< 2.6	< 1.8	< 3.6
Ba-La-140	< 7.4	< 5.2	< 2.9

[a] NS= No sample; inaccessible.

Table 24. Surface water samples, analyses for gross beta, potassium-40 and gamma-emitting isotopes.
Collection: Monthly

Sample Description and Concentration (pCi/L)			
Indicator			
K-9 (Raw)			
Date Collected	01-06-15	02-03-15	03-02-15
Lab Code	KSW- 14	KSW- 392	KSW- 768
Gross beta			
Suspended Solids	< 0.8	< 0.8	< 0.7
Dissolved Solids	2.0 ± 0.6	1.8 ± 0.7	2.2 ± 0.5
Total Residue	2.0 ± 0.6	1.8 ± 0.7	2.2 ± 0.5
K-40 (ICP)	1.12	1.16	1.16
Mn-54	< 2.6	< 2.2	< 3.6
Fe-59	< 4.5	< 4.2	< 10.6
Co-58	< 2.1	< 2.1	< 3.1
Co-60	< 1.4	< 2.4	< 4.4
Zn-65	< 3.2	< 5.1	< 9.3
Zr-Nb-95	< 2.0	< 2.5	< 4.7
Cs-134	< 2.5	< 2.5	< 5.5
Cs-137	< 2.5	< 1.5	< 5.0
Ba-La-140	< 3.1	< 2.5	< 4.7
K-9 (Tap)			
Date Collected	01-06-15	02-03-15	03-02-15
Lab Code	KSW- 15	KSW- 393	KSW- 769
Gross beta			
Suspended Solids	< 0.7	< 0.7	< 0.7
Dissolved Solids	0.6 ± 0.4	2.0 ± 0.6	1.9 ± 0.5
Total Residue	0.6 ± 0.4	2.0 ± 0.6	1.9 ± 0.5
K-40 (ICP)	1.14	1.15	1.21
Mn-54	< 3.1	< 2.0	< 2.0
Fe-59	< 7.1	< 3.1	< 2.1
Co-58	< 3.0	< 2.3	< 1.3
Co-60	< 2.5	< 1.9	< 2.0
Zn-65	< 3.2	< 2.2	< 2.5
Zr-Nb-95	< 4.1	< 1.6	< 1.6
Cs-134	< 3.5	< 2.5	< 2.7
Cs-137	< 2.9	< 1.7	< 3.1
Ba-La-140	< 4.2	< 1.6	< 1.8

Table 24. Surface water samples, analyses for gross beta, potassium-40, and gamma-emitting isotopes (continued).

Sample Description and Concentration (pCi/L)			
Indicator			
K-9 (Raw)			
Date Collected	04-01-15	05-05-15	06-01-15
Lab Code	KSW- 1344	KSW- 2149	KSW- 2685
Gross beta			
Suspended Solids	< 0.8	< 0.7	< 0.7
Dissolved Solids	0.8 ± 0.4	2.7 ± 0.5	1.8 ± 0.7
Total Residue	0.8 ± 0.4	2.7 ± 0.5	1.8 ± 0.7
K-40 (ICP)	1.14	1.10	1.19
Mn-54	< 2.4	< 4.3	< 2.3
Fe-59	< 5.6	< 3.2	< 5.4
Co-58	< 1.4	< 3.8	< 1.4
Co-60	< 2.0	< 1.7	< 2.1
Zn-65	< 4.8	< 4.7	< 2.8
Zr-Nb-95	< 2.8	< 2.4	< 3.0
Cs-134	< 3.6	< 3.8	< 3.6
Cs-137	< 1.8	< 4.1	< 3.6
Ba-La-140	< 4.7	< 2.1	< 2.7
K-9 (Tap)			
Date Collected	04-01-15	05-05-15	06-01-15
Lab Code	KSW- 1345	KSW- 2150	KSW- 2686
Gross beta			
Suspended Solids	< 0.7	< 0.7	< 0.7
Dissolved Solids	0.8 ± 0.4	1.0 ± 0.4	1.7 ± 0.7
Total Residue	0.8 ± 0.4	1.0 ± 0.4	1.7 ± 0.7
K-40 (ICP)	1.13	1.11	1.19
Mn-54	< 2.1	< 2.9	< 2.9
Fe-59	< 3.9	< 7.0	< 5.4
Co-58	< 2.5	< 3.4	< 2.1
Co-60	< 2.2	< 2.3	< 3.6
Zn-65	< 2.3	< 6.0	< 3.6
Zr-Nb-95	< 2.9	< 4.4	< 2.3
Cs-134	< 3.2	< 4.2	< 3.5
Cs-137	< 1.7	< 3.3	< 3.8
Ba-La-140	< 2.4	< 3.1	< 1.9

Table 24. Surface water samples, analyses for gross beta, potassium-40, and gamma-emitting isotopes (continued).

Sample Description and Concentration (pCi/L)			
Indicator			
K-9 (Raw)			
Date Collected	07-01-15	08-03-15	09-01-15
Lab Code	KSW- 3356	KSW- 4253	KSW- 4804
Gross beta			
Suspended Solids	< 0.8	< 1.1	< 0.7
Dissolved Solids	1.6 ± 0.5	1.5 ± 0.4	1.3 ± 0.4
Total Residue	1.6 ± 0.5	1.5 ± 0.4	1.3 ± 0.4
K-40 (ICP)	1.24	1.12	1.16
Mn-54	< 3.5	< 2.9	< 3.3
Fe-59	< 3.8	< 3.0	< 3.5
Co-58	< 2.5	< 3.7	< 4.0
Co-60	< 2.6	< 3.8	< 1.6
Zn-65	< 4.2	< 6.1	< 3.0
Zr-Nb-95	< 3.2	< 2.3	< 3.6
Cs-134	< 3.3	< 3.6	< 4.1
Cs-137	< 3.3	< 4.5	< 4.5
Ba-La-140	< 2.2	< 3.0	< 3.3
K-9 (Tap)			
Date Collected	07-01-15	08-03-15	09-01-15
Lab Code	KSW- 3357	KSW- 4254	KSW- 4805
Gross beta			
Suspended Solids	< 0.7	< 1.1	< 0.8
Dissolved Solids	1.4 ± 0.4	0.7 ± 0.4	0.7 ± 0.4
Total Residue	1.4 ± 0.4	0.7 ± 0.4	0.7 ± 0.4
K-40 (ICP)	1.25	1.12	1.16
Mn-54	< 1.9	< 2.8	< 3.4
Fe-59	< 3.7	< 5.4	< 3.6
Co-58	< 2.0	< 1.5	< 3.8
Co-60	< 2.1	< 2.0	< 2.6
Zn-65	< 3.1	< 2.1	< 3.0
Zr-Nb-95	< 2.8	< 3.9	< 4.7
Cs-134	< 3.7	< 2.7	< 3.7
Cs-137	< 2.2	< 2.0	< 2.7
Ba-La-140	< 1.7	< 5.4	< 3.2

Table 24. Surface water samples, analyses for gross beta, potassium-40, and gamma-emitting isotopes (continued).

Sample Description and Concentration (pCi/L)			
Indicator			
K-9 (Raw)			
Date Collected	10-01-15	11-02-15	12-01-15
Lab Code	KSW- 5391	KSW- 6290	KSW- 6726
Gross beta			
Suspended Solids	< 0.7	< 0.8	< 0.7
Dissolved Solids	1.5 ± 0.4	0.7 ± 0.4	1.6 ± 0.4
Total Residue	1.5 ± 0.4	0.7 ± 0.4	1.6 ± 0.4
K-40 (ICP)	1.12	1.11	1.12
Mn-54	< 1.8	< 1.0	< 2.3
Fe-59	< 8.6	< 2.5	< 7.1
Co-58	< 4.1	< 0.8	< 2.3
Co-60	< 2.2	< 1.3	< 2.6
Zn-65	< 3.7	< 1.9	< 5.6
Zr-Nb-95	< 2.9	< 2.1	< 4.1
Cs-134	< 3.7	< 1.1	< 3.2
Cs-137	< 3.4	< 1.0	< 3.0
Ba-La-140	< 6.4	< 2.3	< 4.0
K-9 (Tap)			
Date Collected	10-01-15	11-02-15	12-01-15
Lab Code	KSW- 5392	KSW- 6291	KSW- 6727
Gross beta			
Suspended Solids	< 0.5	< 0.7	< 0.8
Dissolved Solids	0.9 ± 0.4	1.0 ± 0.4	1.2 ± 0.4
Total Residue	0.9 ± 0.4	1.0 ± 0.4	1.2 ± 0.4
K-40 (ICP)	1.12	1.13	1.16
Mn-54	< 2.0	< 1.1	< 2.7
Fe-59	< 4.1	< 2.3	< 3.6
Co-58	< 1.9	< 1.0	< 2.6
Co-60	< 2.0	< 1.2	< 2.1
Zn-65	< 4.1	< 1.4	< 4.2
Zr-Nb-95	< 5.0	< 1.6	< 2.5
Cs-134	< 3.6	< 1.0	< 2.9
Cs-137	< 3.3	< 1.1	< 3.0
Ba-La-140	< 9.9	< 3.3	< 2.3

Table 24. Surface water, analyses for gross beta, potassium-40 and gamma-emitting isotopes (continued).

Indicator	Sample Description and Concentration (pCi/L)		
K-14a			
Date Collected	01-06-15	02-03-15	03-02-15
Lab Code	KSW- 16	NS[a]	KSW- 770
Gross beta			
Suspended Solids	< 0.7		< 0.7
Dissolved Solids	1.4 ± 0.4		2.6 ± 0.6
Total Residue	1.4 ± 0.4		2.6 ± 0.6
K-40 (ICP)	1.24		1.25
Mn-54	< 2.6		< 3.3
Fe-59	< 3.3		< 6.1
Co-58	< 2.6		< 3.5
Co-60	< 2.8		< 2.9
Zn-65	< 3.3		< 4.6
Zr-Nb-95	< 3.1		< 3.0
Cs-134	< 2.4		< 4.0
Cs-137	< 2.0		< 3.1
Ba-La-140	< 3.3		< 3.5
K-14b			
Date Collected	01-06-15	02-03-15	03-02-15
Lab Code	KSW- 17	NS[a]	KSW- 771
Gross beta			
Suspended Solids	< 0.7		< 0.7
Dissolved Solids	1.2 ± 0.4		2.8 ± 0.6
Total Residue	1.2 ± 0.4		2.8 ± 0.6
K-40 (ICP)	1.24		1.29
Mn-54	< 2.0		< 1.7
Fe-59	< 2.9		< 2.2
Co-58	< 1.8		< 1.7
Co-60	< 1.9		< 1.6
Zn-65	< 4.4		< 6.7
Zr-Nb-95	< 2.6		< 2.8
Cs-134	< 2.7		< 3.3
Cs-137	< 2.9		< 2.7
Ba-La-140	< 1.9		< 3.7

[a] NS= No sample; water frozen.

Table 24. Surface water, analyses for gross beta, potassium-40 and gamma-emitting isotopes (continued).

Description and Concentration (pCi/L)			
Indicator			
K-14a			
Date Collected	04-01-15	05-05-15	06-01-15
Lab Code	KSW- 1346	KSW- 2151	KSW- 2687
Gross beta			
Suspended Solids	< 0.8	< 0.7	< 0.7
Dissolved Solids	1.9 ± 0.5	1.6 ± 0.4	2.8 ± 0.8
Total Residue	1.9 ± 0.5	1.6 ± 0.4	2.8 ± 0.8
K-40 (ICP)	2.29	1.16	1.71
Mn-54	< 3.4	< 3.6	< 3.6
Fe-59	< 8.3	< 7.3	< 7.4
Co-58	< 3.2	< 3.4	< 1.6
Co-60	< 1.4	< 1.7	< 3.7
Zn-65	< 6.2	< 3.8	< 8.5
Zr-Nb-95	< 4.5	< 4.8	< 3.9
Cs-134	< 3.5	< 4.4	< 4.9
Cs-137	< 3.9	< 3.4	< 4.6
Ba-La-140	< 4.7	< 4.0	< 7.9
K-14b			
Date Collected	04-01-15	05-05-15	06-01-15
Lab Code	KSW- 1347	KSW- 2152	KSW- 2688
Gross beta			
Suspended Solids	< 0.7	< 0.7	< 0.8
Dissolved Solids	2.1 ± 0.5	1.5 ± 0.5	3.2 ± 0.8
Total Residue	2.1 ± 0.5	1.5 ± 0.5	3.2 ± 0.8
K-40 (ICP)	2.26	1.16	1.77
Mn-54	< 3.7	< 3.5	< 2.9
Fe-59	< 6.9	< 5.2	< 6.1
Co-58	< 2.5	< 3.6	< 1.5
Co-60	< 3.1	< 3.7	< 2.1
Zn-65	< 2.4	< 3.5	< 4.7
Zr-Nb-95	< 4.1	< 3.5	< 2.1
Cs-134	< 3.3	< 3.9	< 3.5
Cs-137	< 2.5	< 4.2	< 2.7
Ba-La-140	< 5.1	< 5.4	< 4.7

Table 24. Surface water, analyses for gross beta, potassium-40 and gamma-emitting isotopes (continued).

Sample Description and Concentration (pCi/L)			
Indicator			
K-14a			
Date Collected	07-01-15	08-03-15	09-01-15
Lab Code	KSW- 3358	KSW- 4255	KSW- 4806
Gross beta			
Suspended Solids	< 0.7	< 1.1	< 0.8
Dissolved Solids	1.4 ± 0.4	1.0 ± 0.4	1.8 ± 0.4
Total Residue	1.4 ± 0.4	1.0 ± 0.4	1.8 ± 0.4
K-40 (ICP)	1.37	1.16	1.20
Mn-54	< 2.7	< 1.7	< 2.1
Fe-59	< 4.7	< 4.8	< 3.9
Co-58	< 2.3	< 1.5	< 1.9
Co-60	< 2.8	< 1.9	< 1.6
Zn-65	< 5.3	< 4.4	< 3.5
Zr-Nb-95	< 3.0	< 2.0	< 3.0
Cs-134	< 4.0	< 2.6	< 3.5
Cs-137	< 3.2	< 2.0	< 3.7
Ba-La-140	< 1.6	< 4.6	< 3.7
K-14b			
Date Collected	07-01-15	08-03-15	09-01-15
Lab Code	KSW- 3359	KSW- 4256	KSW- 4807
Gross beta			
Suspended Solids	1.0 ± 0.4	< 1.1	< 0.7
Dissolved Solids	1.2 ± 0.4	1.6 ± 0.4	1.6 ± 0.4
Total Residue	2.2 ± 0.6	1.6 ± 0.4	1.6 ± 0.4
K-40 (ICP)	1.35	1.14	1.21
Mn-54	< 2.2	< 2.0	< 1.9
Fe-59	< 4.2	< 4.2	< 7.4
Co-58	< 2.2	< 2.9	< 3.5
Co-60	< 3.1	< 2.0	< 3.1
Zn-65	< 4.3	< 2.2	< 2.8
Zr-Nb-95	< 3.5	< 3.0	< 3.5
Cs-134	< 2.7	< 2.9	< 4.3
Cs-137	< 2.7	< 2.7	< 4.3
Ba-La-140	< 3.9	< 1.5	< 6.0

Table 24. Surface water, analyses for gross beta, potassium-40 and gamma-emitting isotopes (continued).

Sample Description and Concentration (pCi/L)			
Indicator			
K-14a			
Date Collected	10-01-15	11-02-15	12-01-15
Lab Code	KSW- 5393	KSW- 6292	KSW- 6728
Gross beta			
Suspended Solids	< 0.7	< 0.8	< 0.7
Dissolved Solids	2.5 ± 0.5	3.2 ± 0.6	1.5 ± 0.4
Total Residue	2.5 ± 0.5	3.2 ± 0.6	1.5 ± 0.4
K-40 (ICP)	1.28	1.80	1.66
Mn-54	< 2.6	< 2.5	< 2.8
Fe-59	< 5.7	< 5.6	< 7.3
Co-58	< 3.8	< 2.8	< 2.7
Co-60	< 2.6	< 2.7	< 2.7
Zn-65	< 7.3	< 2.8	< 6.3
Zr-Nb-95	< 4.6	< 3.3	< 3.3
Cs-134	< 4.5	< 2.2	< 4.0
Cs-137	< 3.9	< 1.6	< 3.4
Ba-La-140	< 4.3	< 11.3	< 4.6
K-14b			
Date Collected	10-01-15	11-02-15	12-01-15
Lab Code	KSW- 5394	KSW- 6293	KSW- 6729
Gross beta			
Suspended Solids	< 0.8	< 0.7	< 0.8
Dissolved Solids	3.1 ± 0.6	2.4 ± 0.5	1.9 ± 0.5
Total Residue	3.1 ± 0.6	2.4 ± 0.5	1.9 ± 0.5
K-40 (ICP)	1.25	1.67	1.68
Mn-54	< 2.1	< 1.3	< 1.6
Fe-59	< 4.2	< 2.2	< 2.9
Co-58	< 2.6	< 1.1	< 2.2
Co-60	< 0.9	< 1.1	< 1.2
Zn-65	< 3.6	< 1.8	< 5.6
Zr-Nb-95	< 2.4	< 2.5	< 3.7
Cs-134	< 3.5	< 1.6	< 3.6
Cs-137	< 2.2	< 1.5	< 1.9
Ba-La-140	< 7.0	< 4.5	< 6.2

Table 25. Surface water, analyses for tritium, strontium-89 and strontium-90.
Collection: Quarterly composites of monthly samples.

Location and Collection Period	Lab Code	Concentration pCi/L H-3	Sr-89	Sr-90
Indicator				
K-1a				
1st Quarter	KSW -919	< 149	< 1.8	< 0.5
2nd Quarter	KSW -3044	< 153	< 1.0	< 0.5
3rd Quarter	KSW -5212	< 142	< 0.9	< 0.5
4th Quarter	KSW -6949	< 145	< 1.3	< 0.7
K-1b				
1st Quarter	KSW -920	< 148	< 1.9	< 0.7
2nd Quarter	KSW -3045	< 153	< 1.2	0.5 ± 0.3
3rd Quarter	KSW -5213	< 142	< 1.0	< 0.6
4th Quarter	KSW -6950	< 145	< 1.4	< 0.8
K-1d				
1st Quarter	KSW -921	< 147	< 0.8	< 0.5
2nd Quarter	KSW -3046	< 153	< 1.1	< 0.4
3rd Quarter	KSW -5214	< 142	< 0.8	< 0.5
4th Quarter	KSW -6951	< 145	< 0.9	< 0.5
K-1e				
1st Quarter	KSW -922	< 147	< 0.9	< 0.5
2nd Quarter	KSW -3047	< 153	< 1.0	< 0.6
3rd Quarter	KSW -5215	< 142	< 0.8	< 0.5
4th Quarter	KSW -6952	< 145	< 0.8	< 0.5

Table 25. Surface water, analyses for tritium, strontium-89 and strontium-90 (continued).

Location and Collection Period		Concentration pCi/L H-3	Sr-89	Sr-90
Indicator				
K-14a				
1st Quarter	KSW -925	< 147	< 1.5	< 0.6
2nd Quarter	KSW -3052	< 153	< 1.0	< 0.4
3rd Quarter	KSW -5219	< 142	< 0.9	< 0.6
4th Quarter	KSW -6956	< 145	< 1.2	< 0.7
K-14b				
1st Quarter	KSW -926	< 147	< 0.8	< 0.5
2nd Quarter	KSW -3053	< 153	< 1.2	< 0.5
3rd Quarter	KSW -5220	< 142	< 0.9	< 0.5
4th Quarter	KSW -6957	< 145	< 1.3	< 0.7
K-1k				
1st Quarter	NS [a]	-	-	-
2nd Quarter	KSW -3049	< 153	< 1.0	< 0.5
3rd Quarter	KSW -5216	< 142	< 0.9	< 0.5
4th Quarter	KSW -6953	< 145	< 0.9	< 0.5
Control				
K-9				
1st Quarter	KSW -923 (Raw)	< 147	< 1.1	< 0.7
	KSW -924 (Tap)	< 147	< 1.0	< 0.6
2nd Quarter	KSW -3050 (Raw)	< 153	< 1.1	< 0.5
	KSW -3051 (Tap)	< 153	< 1.0	< 0.4
3rd Quarter	KSW -5217 (Raw)	< 142	< 1.3	< 0.8
	KSW -5218 (Tap)	< 142	< 1.0	< 0.6
4th Quarter	KSW -6954 (Raw)	< 145	< 0.9	< 0.5
	KSW -6955 (Tap)	< 145	< 1.0	< 0.6

[a] No samples; water frozen.

Table 26. Fish, collected at K-1d, analyses for gross beta, strontium-89, strontium-90 and gamma-emitting isotopes.
Collection: Three times a year

Sample Description and Concentration (pCi/g wet)				
Collected	04-17-15		08-06-15	
Lab Code	KF- 2143		KF- 4823	
Type	Lake Trout		Brown Trout	
Portion	Flesh	Bones	Flesh	Bones
Gross beta	3.57 ± 0.07	2.75 ± 0.61	3.00 ± 0.08	4.91 ± 0.95
Sr-89	NA[a]	< 0.24	NA[a]	< 0.54
Sr-90	NA	0.18 ± 0.07	NA	0.15 ± 0.07
K-40	< 0.65	NA[a]	3.21 ± 0.41	NA[a]
Mn-54	< 0.015	NA	< 0.014	NA
Fe-59	< 0.062	NA	< 0.070	NA
Co-58	< 0.028	NA	< 0.018	NA
Co-60	< 0.012	NA	< 0.009	NA
Cs-134	< 0.018	NA	< 0.016	NA
Cs-137	< 0.015	NA	0.036 ± 0.020	NA

Collected	12-07-15	
Lab Code	KF- 7232	
Type	Brown Trout	
Portion	Flesh	Bones
Gross beta	4.32 ± 0.10	2.95 ± 0.61
Sr-89	NA[a]	< 0.19
Sr-90	NA	0.17 ± 0.07
K-40	3.35 ± 0.39	NA[a]
Mn-54	< 0.009	NA
Fe-59	< 0.045	NA
Co-58	< 0.012	NA
Co-60	< 0.017	NA
Cs-134	< 0.014	NA
Cs-137	< 0.016	NA

[a] NA = Not analyzed; analyses not required.

Table 27. Slime or aquatic vegetation, analyses for gross beta, strontium-89, strontium-90, and gamma-emitting isotopes.
Collection: Semiannually

Sample Description and Concentration (pCi/g wet)

	Indicators			Control
Location	K-1a	K-1b	K-1d	K-9
Date Collected	06-01-15	06-01-15	05-05-15	06-01-15
Lab Code	KSL- 2649	KSL- 2650	KSL- 2292	KSL- 2653
Gross beta	4.07 ± 0.05	7.65 ± 0.19	1.43 ± 0.05	2.59 ± 0.2
Sr-89	< 0.008	< 0.007	< 0.027	< 0.036
Sr-90	0.003 ± 0.001	0.005 ± 0.002	0.017 ± 0.006	< 0.011
Be-7	0.39 ± 0.07	< 0.079	0.38 ± 0.03	0.44 ± 0.05
K-40	3.62 ± 0.13	5.10 ± 0.20	1.12 ± 0.04	1.49 ± 0.06
Mn-54	< 0.005	< 0.007	< 0.002	< 0.002
Co-58	< 0.004	< 0.006	< 0.002	< 0.002
Co-60	< 0.005	< 0.006	0.01 ± 0.00	< 0.002
Nb-95	< 0.008	< 0.008	< 0.003	< 0.006
Zr-95	< 0.010	< 0.012	< 0.004	< 0.006
Ru-103	< 0.006	< 0.007	< 0.002	< 0.005
Ru-106	< 0.048	< 0.052	< 0.017	< 0.024
Cs-134	< 0.005	< 0.007	< 0.002	< 0.002
Cs-137	< 0.004	< 0.008	0.009 ± 0.002	0.004 ± 0.002
Ce-141	< 0.016	< 0.019	< 0.007	< 0.011
Ce-144	< 0.025	< 0.043	< 0.018	< 0.021

Location	K-1e	K-1k	K-14
Date Collected	06-01-15	06-01-15	06-01-15
Lab Code	KSL- 2651	KSL- 2652	KSL- 2654
Gross beta	5.40 ± 0.4	4.78 ± 0.09	6.70 ± 0.6
Sr-89	< 0.083	< 0.007	< 0.147
Sr-90	< 0.027	< 0.003	0.074 ± 0.033
Be-7	0.35 ± 0.04	< 0.04	0.63 ± 0.06
K-40	2.47 ± 0.06	3.65 ± 0.13	2.94 ± 0.09
Mn-54	< 0.003	< 0.003	< 0.003
Co-58	< 0.002	< 0.004	< 0.004
Co-60	< 0.002	< 0.004	< 0.003
Nb-95	< 0.004	< 0.005	< 0.006
Zr-95	< 0.005	< 0.006	< 0.007
Ru-103	< 0.003	< 0.004	< 0.006
Ru-106	< 0.018	< 0.043	< 0.029
Cs-134	< 0.002	< 0.003	< 0.003
Cs-137	0.009 ± 0.002	< 0.003	0.012 ± 0.003
Ce-141	< 0.009	< 0.009	< 0.012
Ce-144	< 0.017	< 0.021	< 0.027

Table 27. Slime or aquatic vegetation, analyses for gross beta, strontium-89, strontium-90, and gamma-emitting isotopes.
Collection: Semiannually

Sample Description and Concentration (pCi/g wet)

	Indicators			Control
Location	K-1a	K-1b	K-1d	K-9
Date Collected	09-01-15	07-30-15	07-01-15	08-03-15
Lab Code	KSL- 4838	KSL- 4292	KSL- 3341	KSL- 4269
Gross beta	6.26 ± 0.13	1.67 ± 0.14	3.22 ± 0.26	5.89 ± 0.14
Sr-89	< 0.012	< 0.048	< 0.06	< 0.015
Sr-90	< 0.004	< 0.015	0.030 ± 0.016	< 0.007
Be-7	0.97 ± 0.09	0.27 ± 0.04	0.50 ± 0.04	0.73 ± 0.09
K-40	6.22 ± 0.19	2.62 ± 0.07	2.80 ± 0.07	4.98 ± 0.16
Mn-54	< 0.008	< 0.003	< 0.002	< 0.004
Co-58	< 0.007	< 0.002	< 0.003	< 0.006
Co-60	< 0.007	< 0.002	< 0.003	< 0.004
Nb-95	< 0.009	< 0.006	< 0.004	< 0.006
Zr-95	< 0.012	< 0.006	< 0.006	< 0.013
Ru-103	< 0.009	< 0.004	< 0.002	< 0.006
Ru-106	< 0.059	< 0.013	< 0.015	< 0.031
Cs-134	< 0.006	< 0.002	< 0.002	< 0.005
Cs-137	< 0.007	0.017 ± 0.002	0.010 ± 0.003	< 0.006
Ce-141	< 0.020	< 0.010	< 0.008	< 0.014
Ce-144	< 0.040	< 0.019	< 0.019	< 0.036

Location	K-1e	K-1k	K-14
Date Collected	08-03-15	08-03-15	08-03-15
Lab Code	KSL- 4267	KSL- 4268	KSL- 4270
Gross beta	4.90 ± 0.10	4.82 ± 0.10	6.14 ± 0.43
Sr-89	< 0.009	< 0.008	< 0.161
Sr-90	< 0.004	0.005 ± 0.002	< 0.035
Be-7	0.24 ± 0.06	0.21 ± 0.07	2.15 ± 0.09
K-40	4.54 ± 0.14	3.86 ± 0.14	4.39 ± 0.11
Mn-54	< 0.005	< 0.006	< 0.004
Co-58	< 0.006	< 0.006	< 0.004
Co-60	< 0.004	< 0.005	< 0.003
Nb-95	< 0.007	< 0.008	< 0.009
Zr-95	< 0.011	< 0.012	< 0.008
Ru-103	< 0.004	< 0.007	< 0.006
Ru-106	< 0.044	< 0.047	< 0.039
Cs-134	< 0.005	< 0.005	< 0.004
Cs-137	< 0.005	< 0.004	0.031 ± 0.005
Ce-141	< 0.010	< 0.014	< 0.017
Ce-144	< 0.032	< 0.028	< 0.034

Table 28. Bottom sediment samples, analyses for gross beta, strontium-89, strontium-90, and gamma-emitting isotopes.
Collection: May and November

	Sample Description and Concentration (pCi/g dry)				
	Indicator				Control
Location	K-1c	K-1d	K-1j	K-14	K-9
Collection Date	05-05-15	05-05-15	05-05-15	05-05-15	05-05-15
Lab Code	KBS- 2279	KBS- 2280	KBS- 2281	KBS- 2283	KBS- 2282
Gross beta	8.82 ± 1.58	7.32 ± 1.42	5.65 ± 1.44	9.88 ± 1.66	20.46 ± 1.95
Sr-89	< 0.046	< 0.045	< 0.053	< 0.047	< 0.049
Sr-90	< 0.024	< 0.025	< 0.028	< 0.026	< 0.027
K-40	4.98 ± 0.37	5.47 ± 0.39	4.71 ± 0.36	7.02 ± 0.45	12.08 ± 0.81
Co-58	< 0.012	< 0.016	< 0.010	< 0.013	< 0.024
Co-60	< 0.011	< 0.009	< 0.009	< 0.009	< 0.017
Cs-134	< 0.009	< 0.011	< 0.009	< 0.008	< 0.017
Cs-137	< 0.012	< 0.013	< 0.013	< 0.014	0.050 ± 0.027
Location	K-1c	K-1d	K-1j	K-14	K-9
Collection Date	11-02-15	11-02-15	11-02-15	11-02-15	11-02-15
Lab Code	KBS- 6301	KBS- 6303	KBS- 6304	KBS- 6306	KBS- 6305
Gross beta	8.78 ± 1.52	6.36 ± 1.44	11.69 ± 1.65	10.90 ± 1.73	16.09 ± 1.88
Sr-89	< 0.061	< 0.058	< 0.059	< 0.055	< 0.076
Sr-90	< 0.023	< 0.021	< 0.021	0.023 ± 0.012	0.054 ± 0.020
K-40	6.32 ± 0.38	6.00 ± 0.38	7.23 ± 0.43	7.87 ± 0.46	9.32 ± 0.62
Co-58	< 0.009	< 0.014	< 0.016	< 0.017	< 0.031
Co-60	< 0.011	< 0.006	< 0.011	< 0.007	< 0.011
Cs-134	< 0.009	< 0.009	< 0.011	< 0.014	< 0.015
Cs-137	< 0.012	< 0.014	0.019 ± 0.011	< 0.016	0.054 ± 0.028

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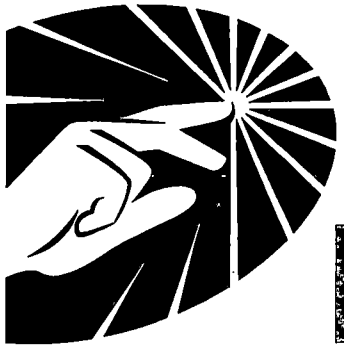

Dominion®

2015 Annual Radiological Environmental Operating Report

Kewaunee Power Station
Part III, Corrective Actions written during reporting period

Dominion Energy Kewaunee, Inc.

Records Management (CR) - For automated process

9/22/2015 23:22:34

Now showing CAPTable 1 - 2 of 2

Dominion > Corrective Action Program > Condition Report > Not Associated with Boric Acid

Section 1

Applicable to site:	KEWA
Record #:	CR580855
Equipment Location Display:	**Equipment Location - Critical Component - PRA Flag - Quality Classification - Component Description**
Equipment Location Links:	
One-Line Description:	Surface Water Samples Not Collected in 2015 Due to Winter Ice Conditions
Description:	This Condition Report is written to summarize the surface water samples that were not collected by the Contracted Vendor for the 2015 Radiological Environmental Program to date. These samples were not collected due to winter freeze up and ice conditions at sample locations of creeks, ponds and Lake Michigan shoreline. Samples were either unavailable or inaccessible. In the case of Lake Michigan shoreline there were ice shelves and ice formations on the shoreline that presented a safety concern and rendered the water inaccessible. The Radiological Environmental Monitoring Manual (REMM section 3.6 Sample Descriptions) describes the samples as taken monthly when available. Summary of Surface Water samples not collected in 2015 -Surface water location K-1a (North Creek) could not be sampled for the February and March 2015 collection. The creek was frozen. -Surface water location K-1b (Middle Creek) could not be sampled for the March 2015 collection. The creek was frozen. -Surface water location K-1e (South Creek) could not be sampled for the February 2015 collection the creek was frozen. -Surface water location K-1k (Drainage Pond South of Plant) could not be sampled from January through March 2015. The pond was frozen or inaccessible for collection. -Surface water locations K-14a and K-14b (Two Creeks Park) could not be sampled for the February 2015 collection due to large shoreline ice formations making the sampling sites inaccessible. All Surface Water samples were available and collected for the month of April.

	This issue will be reported in the 2015 Annual Radiological Environmental Operating Report to address the missing samples.
Associated with Boric Acid?:	No
Initial Actions:	Initiated Condition Report.
C/As Initiated (REA, WR, ETC):	
Work Order Number(s):	
Tag Hung:	No
Tag Number:	
Text Question 1:	**Provide details for any Additional C/A processes needed:**
Text Answer 1:	Request a CA to report this issue in the 2015 Annual Radiological Environmental Operating Report
Discovery Date:	5/27/2015
Discovery Time:	16:11:00
Submitter:	HOLSCHBACH, DARRYL M
Method of Discovery:	SELR (Self-revealing issue)
OP-AA-102 Review Req'd?:	No
Is a TS SSC Affected?:	No
TS SSC Operability Assessment:	N/A
Is an IOD Assignment Required?:	No
Text Question 2:	**Basis for operability:**
Text Answer 2:	
Question L:	**Is an Operability Assessment req'd for an SSC, which is Functional for its TRM function, to demonstrate operability for its TS function?**
Yes / No L:	No **LCO entered:** No
Applicable LCO:	
Reportable condition?:	No
Non-TS SSC Functionality Assessment.:	N/A
Does it impact a TS SSC?:	N/A
Is a RAS Assignment Needed?:	No
SSC Qualification Status:	N/A
O/R Comments:	

Leak Classification:	(None)
Leakage Severity:	(None)
Significance:	3
Deficiency Type:	Non-Equipment
Potential Repeat:	No
Previous Issues (PIs, CRs):	CR Search by "Surface Water Sample" identified the following: CR487798 - Vender fails to notify KPS on high level of gross beta in a surface water sample (09/12/2012) CR482138 - Elevated Tritium in Stormwater outfall 008 During Dry Inspection (07/16/2012)
CR FLAGS:	zz - reviewed / none selected
Affected Department:	(None)
CRT Comments:	CA(303780) to CY (Holschbach/Hale) to report Surface Water Samples Not Collected in 2015 Due to Winter Ice Conditions in the 2015 Annual Radiological Environmental Operating Report. Due Date: 05/20/2016.
Screening Date:	

Section 2

Revision Number:	0	**Submitter Dept.:**	KEWA - Chemistry
Submitter Phone Number:	8146/7341		
Submitter Pager Number:	NA		
Literal 1:	**If this CR is associated with the BACC Program, please ensure that the CR Description contains sufficient information to ensure the ability to quickly locate the component, which will ensure ALARA.**		
Applicable to unit:	Unit 1		
Associated w/ Equipment Location?:	No		
System(s):	N/A	**Additional C/A processes req'd?:**	Other
Additional Contacts:			
Supervisor - CR Review:	SHANNON, DANIEL J.		
Question G:	**Is this CR an Operability/Reportability Issue Requiring O/R Review?**		
Yes/No G:	No		
Question H:	**Does this CR affect personnel safety?**		
Yes/No H:	No		

Question I:	**Does this CR affect plant safety?**
Yes/No I:	No
Question J:	**Does this CR involve plant equipment?**
Yes/No J:	No
Question K:	**Is this CR an environmental concern?**
Yes/No K:	Yes
Literal 2:	**Unit Conditions:**
Unit 1% Pwr:	0 %
Unit 2% Pwr:	NA
Unit 3% Pwr:	NA
Unit 1 Mode:	7
Unit 2 Mode:	NA
Unit 3 Mode:	NA
Text Question 3:	**Reportability Comments:**
Text Answer 3:	
Can IOD be established?:	(None)
Literal 3:	**If this CR is associated with any system leakage, provide answers to the following:**
License Renewal Flags:	(None)
CRT Report Section(s):	2
Comments:	
Trend Review Complete?:	No

Process Code:	UNK (Unknown)	**Activity Codes:**	SAA(Sampling)
Human Error Types:	(None)	**Process Related Failure:**	(None)
Org. & Mgmt Failure mode:	(None)	**HU Failure modes:**	(None)
Equipment Failure Modes:	(None)	**Primary INPO criteria:**	(None)
Secondary INPO criteria:	(None)	**Operations Hot Buttons:**	(None)
Engineering Hot Buttons:	(None)	**Maintenance Hot Buttons:**	(None)
RP Hot Buttons:	(None)	**Chemistry Hot Buttons:**	(None)

EP Hot Buttons:	(None)	**Training Hot Buttons:**	(None)
Security Hot Buttons:	(None)	**OR Hot Buttons:**	(None)
O&P Hot Buttons:	(None)	**NSS Hot Buttons:**	(None)
Supply Chain Hot Buttons:	(None)	**Procedures Hot Buttons:**	(None)
Reactivity Mgmt Hot Buttons:	(None)	**Other Hot Buttons:**	(None)
Old Record #:			

Section 3

Status Description:
Status Date:
Actual Finish Date:
Work Performed Description:

Section 5

CR Completed Date:	9/16/2015 15:42:37	**CR Printed Date:**	
CR Validated Date:		**CR Who Validated:**	(None)
RM Attachment Links:			

Change History

5/27/2015 17:31:08 by HOLSCHBACH, DARRYL M

Description Changed From '[...]for the 2015 Radiological Environmental Program to date. These samples were not collected due to winter freeze up and ice conditions at sample locations of creeks, ponds and Lake Michigan shoreline. Samples were either unavailable or inaccessibl[more diffs...]' To '[...]by the Contracted Vendor for the 2015 Radiological Environmental Program to date. These samples were not collected due to winter freeze up and ice conditions at sample locations of creeks, ponds and Lake Michigan shoreline. Samples were either u[more diffs...]'
Last Modified Date Changed From 5/27/2015 17:13:45 To 5/27/2015 17:31:08

5/27/2015 17:32:10 by HOLSCHBACH, DARRYL M

Initial Actions Changed From '' To 'Initiated Condition Report.'
Owner Changed From HOLSCHBACH, DARRYL M To SHANNON, DANIEL J.
Secondary Owner Changed From SHANNON, DANIEL J. To AITKEN, PAUL C, ANDERSON, PAMELA J, BERTSCHE, BRYAN JOHN, BRUNELLI, THOMAS GEORGE, CHRISTENSEN, ALAN R, CURFMAN, LAWRENCE J, DOERING JR, BARRY J, EVANS, WENDY L, FARINHOLT III, LUTHER, GAUGER, BRAD R, GRAU, JOHN R, GUINAN, PATRICIA B, GUM, CLARENCE L, GUTNER, SOPHIE, GWYNN, GLENN ROXY, HARRIS, BRIAN LLOYD, HAYNES III, ROBERT LEE, HENRY, ERNEST R, HOLDSWORTH, EDNA K, HUEBNER, BRANDON ALBERT, JORDAN JR, ARNOLD J, KASTNER, ROBERT J, KOEHLER, BRIAN L, KUNCA JR, WILLIAM B, LANGAN, JEFFRY A, LAROE, CARY BRIAN, MATHEWS, BRIAN M, MATTHEWS, WILLIAM ALAN, MCMAHON, BRADLY J, MORRIS JR, KENNETH BRUCE, MURPHY, ADAM WILLIAM, NELSON, THOMAS M, NICHOLS, MICHAEL A, PIETRYK, CAROL L, PORTER, ROBERT J, PRESL, BRIAN G, PRIBEK, BARBARA A, ROTH, JAMES R, SAKSVIG, PAUL, SIMMONS JR, ROY L, SOMMERS, DAVID ARTHUR, STAFFORD, JEFFREY T, STANTON, STEPHEN T, STECKLER, BART R, TERRY, MICHAEL E, VIEITEZ, CARL R, VOMASTEK, ANDREW J, WEBSTER, WILLIAM WASH, YEARGIN, BARRY K, ZEPNICK, BRIAN THOMAS, ZUERCHER, RICHARD R
Last Modified Date Changed From 5/27/2015 17:31:08 To 5/27/2015 17:32:10
Last State Change Date Changed From 5/27/2015 17:13:45 To 5/27/2015 17:32:10
State Changed From Draft To Supervisor Review Via Transition: Submit
Parent CR Changed From (None) To CR580855: KEWA - Surface Water Samples Not Collected In 2015 Due to Winter Ice Conditions (Inactive)

5/27/2015 19:11:14 by IRLBECK, DAVID E

Applicable to unit Changed From None To Unit 1
Tag Hung Changed From (None) To No
Yes/No G Changed From Yes To No
Yes/No H Changed From Yes To No
Yes/No I Changed From Yes To No
Yes/No J Changed From Yes To No
Owner Changed From SHANNON, DANIEL J. To HILLS, SHAWN D
Secondary Owner Changed From AITKEN, PAUL C, ANDERSON, PAMELA J, BERTSCHE, BRYAN JOHN, BRUNELLI, THOMAS GEORGE, CHRISTENSEN, ALAN R, CURFMAN, LAWRENCE J, DOERING JR, BARRY J, EVANS, WENDY L, FARINHOLT III, LUTHER, GAUGER, BRAD R, GRAU, JOHN R, GUINAN, PATRICIA B, GUM, CLARENCE L, GUTNER, SOPHIE, GWYNN, GLENN ROXY, HARRIS, BRIAN LLOYD, HAYNES III, ROBERT LEE, HENRY, ERNEST R, HOLDSWORTH, EDNA K, HUEBNER, BRANDON ALBERT, JORDAN JR, ARNOLD J, KASTNER, ROBERT J, KOEHLER, BRIAN L, KUNCA JR, WILLIAM B, LANGAN, JEFFRY A, LAROE, CARY BRIAN, MATHEWS, BRIAN M, MATTHEWS, WILLIAM ALAN, MCMAHON, BRADLY J, MORRIS JR, KENNETH BRUCE, MURPHY, ADAM WILLIAM, NELSON, THOMAS M, NICHOLS, MICHAEL A, PIETRYK, CAROL L, PORTER, ROBERT J, PRESL, BRIAN G, PRIBEK, BARBARA A, ROTH, JAMES R, SAKSVIG, PAUL, SIMMONS JR, ROY L, SOMMERS, DAVID ARTHUR, STAFFORD, JEFFREY T, STANTON, STEPHEN T, STECKLER, BART R, TERRY, MICHAEL E, VIEITEZ, CARL R, VOMASTEK, ANDREW J, WEBSTER, WILLIAM WASH, YEARGIN, BARRY K, ZEPNICK, BRIAN THOMAS, ZUERCHER, RICHARD R To AHRENS, GARY M, BAILEY, JEFFREY NOEL, BOUCHE, DANNY L, BRADLEY, DEBRA A, BRINKMAN, CHARLES A, BROWN, DAN, CHRISTENSEN, ALAN R, CURFMAN, LAWRENCE J, DILANDRO, ERIC WARREN, DYKSTRA, DALE E, EDWARDS, CHARLES K, EVANS, WENDY L, EVERITT, CHAD A, FALK, DAVID W., FICTUM, HOLLY C, FITZWATER, DAVID I, GAUGER, BRAD R, GRAU, JOHN R, GUINAN, PATRICIA B, GWYNN, GLENN ROXY, HALE, JAMES M., HELING, DEBRA A., IRLBECK, DAVID E, JEANQUART, DARIN A, JORDAN JR, ARNOLD J, KARST JR, DAVID A, KASPER, JAMES MICHAEL, KASTNER, ROBERT J, KILMER, JOHN DAVID, KOEHLER, BRIAN L, LANGAN, JEFFRY A, LANGER JR, JAMES E, LLEWELLYN, DAVID T, MATHEWS, BRIAN M, MCMAHON, BRADLY J, MCMAHON, DARRYL D, NISSEL, THOMAS E, POWELL, HEATHER S, PRESL, BRIAN G, PRIBEK, BARBARA A, SIMMONS JR, ROY L, SMITH, JACQUELINE K, STAFFORD, JEFFREY T, STREICH, ERIC E, TERRY, MICHAEL E, TREPTOW, ETHAN A, VIEITEZ, CARL R, VOMASTEK, ANDREW J, VORPAHL, DWIGHT J., WALESH, DEBRA J, YEARGIN, BARRY K
Last Modified Date Changed From 5/27/2015 17:32:10 To 5/27/2015 19:11:14
Last Modifier Changed From HOLSCHBACH, DARRYL M To IRLBECK, DAVID E
Last State Change Date Changed From 5/27/2015 17:32:10 To 5/27/2015 19:11:15
Last State Changer Changed From HOLSCHBACH, DARRYL M To IRLBECK, DAVID E
State Changed From Supervisor Review To O/R Review Via Transition: Complete
NewCR Changed From Yes To No

5/27/2015 19:12:37 by IRLBECK, DAVID E

Unit 1% Pwr Changed From " To '0 %'
Unit 1 Mode Changed From (None) To 7
OP-AA-102 Review Req'd? Changed From (None) To No
Is a TS SSC Affected? Changed From (None) To No
TS SSC Operability Assessment Changed From (None) To N/A
Yes / No L Changed From (None) To No
Is an IOD Assignment Required? Changed From (None) To No
LCO entered Changed From (None) To No
Non-TS SSC Functionality Assessment. Changed From (None) To N/A
Does it impact a TS SSC? Changed From (None) To N/A
Is a RAS Assignment Needed? Changed From (None) To No
SSC Qualification Status Changed From (None) To N/A
Reportable condition? Changed From (None) To No
Last Modified Date Changed From 5/27/2015 19:11:14 To 5/27/2015 19:12:37
Last State Change Date Changed From 5/27/2015 19:11:15 To 5/27/2015 19:12:37
State Changed From O/R Review To CRT Review Via Transition: Complete

5/28/2015 15:07:51 by HILLS, SHAWN D

Significance Changed From (None) To 3
Deficiency Type Changed From (None) To Non-Equipment
Potential Repeat Changed From (None) To No
Previous Issues (PIs, CRs) Changed From " To '[Appended:]CR Search by "Surface Water Sample" identified the following: CR487798 - Vender fails to notify KPS on high level of gross beta in a surface water sample (09/12/2012) CR482138 - Elevated Tritium in Stormwater outfall 008 During Dry Inspection [...]'
CR FLAGS Changed From (None) To zz - reviewed / none selected
CRT Report Section(s) Changed From (None) To 1
CRT Comments Changed From " To 'CA to CY (Holschbach/Hale) to report Surface Water Samples Not Collected in 2015 Due to Winter Ice Conditions in the 2015 Annual Radiological Environmental Operating Report. Due Date: 05/20/2016.'
Last Modified Date Changed From 5/27/2015 19:12:37 To 5/28/2015 15:07:51
Last Modifier Changed From IRLBECK, DAVID E To HILLS, SHAWN D

5/28/2015 15:07:56 by HILLS, SHAWN D

Last Modified Date Changed From 5/28/2015 15:07:51 To 5/28/2015 15:07:56
Last State Change Date Changed From 5/27/2015 19:12:37 To 5/28/2015 15:07:56
Last State Changer Changed From IRLBECK, DAVID E To HILLS, SHAWN D
State Changed From CRT Review To CRT Assignment Creation Via Transition: CA

5/28/2015 15:10:02 by HILLS, SHAWN D

Last Modified Date Changed From 5/28/2015 15:07:56 To 5/28/2015 15:10:02
Attachment Added: CA303780: (None) - Report Surface Water Samples Not Collected in the 2015 Annual Rad Env Op Report

5/28/2015 15:11:51 by HILLS, SHAWN D

CRT Comments Changed From 'CA to CY (Holschbach/Hale) to report Surface Water Samples Not Collected in 2015 Due to Winter Ice Conditions in the 2015 Annual Radiological Environmental Operating Report. Due Date: 05/20/2016.' To 'CA(303780) to CY (Holschbach/Hale) to report Surface Water Samples Not Collected in 2015 Due to Winter Ice Conditions in the 2015 Annual Radiological Environmental Operating Report. Due Date: 05/20/2016.'
State Changed From CRT Assignment Creation To CRT Review Via Transition: Update CR
Last Modified Date Changed From 5/28/2015 15:10:02 To 5/28/2015 15:11:51
Last State Change Date Changed From 5/28/2015 15:07:56 To 5/28/2015 15:11:51

6/3/2015 11:47:43 by HILLS, SHAWN D

CRT Report Section(s) Changed From 1 To 2
Process Code Changed From (None) To UNK (Unknown)
Activity Codes Changed From (None) To SAA(Sampling)
Last Modified Date Changed From 5/28/2015 15:11:51 To 6/3/2015 11:47:43

6/3/2015 11:47:49 by HILLS, SHAWN D

Secondary Owner Changed From AHRENS, GARY M, BAILEY, JEFFREY NOEL, BOUCHE, DANNY L, BRADLEY, DEBRA A, BRINKMAN, CHARLES A, BROWN, DAN, CHRISTENSEN, ALAN R, CURFMAN, LAWRENCE J, DILANDRO, ERIC WARREN, DYKSTRA, DALE E, EDWARDS, CHARLES K, EVANS, WENDY L, EVERITT, CHAD A, FALK, DAVID W., FICTUM, HOLLY C, FITZWATER, DAVID I, GAUGER, BRAD R, GRAU, JOHN R, GUINAN, PATRICIA B, GWYNN, GLENN ROXY, HALE, JAMES M., HELING, DEBRA A., IRLBECK, DAVID E, JEANQUART, DARIN A, JORDAN JR, ARNOLD J, KARST JR, DAVID A, KASPER, JAMES MICHAEL, KASTNER, ROBERT J, KILMER, JOHN DAVID, KOEHLER, BRIAN L, LANGAN, JEFFRY A, LANGER JR, JAMES E, LLEWELLYN, DAVID T, MATHEWS, BRIAN M, MCMAHON, BRADLY J, MCMAHON, DARRYL D, NISSEL, THOMAS E, POWELL, HEATHER S, PRESL, BRIAN G, PRIBEK, BARBARA A, SIMMONS JR, ROY L, SMITH, JACQUELINE K, STAFFORD, JEFFREY T, STREICH, ERIC E, TERRY, MICHAEL E, TREPTOW, ETHAN A, VIEITEZ, CARL R, VOMASTEK, ANDREW J, VORPAHL, DWIGHT J., WALESH, DEBRA J, YEARGIN, BARRY K To AHRENS, GARY M, ARCAND, JESSE C, BAILEY, JEFFREY NOEL, BOUCHE, DANNY L, BRADLEY, DEBRA A, CHRISTENSEN, ALAN R, CURFMAN, LAWRENCE J, DILANDRO, ERIC WARREN, EDWARDS, CHARLES K, EGDORF, JOHN R, ERICSON, JANICE L, EVANS, WENDY L, FALK, DAVID W., FICTUM, HOLLY C, FITZWATER, DAVID I, GAUGER, BRAD R, GRAU, JOHN R, GUINAN, PATRICIA B, GWYNN, GLENN ROXY, HALE, JAMES M., HELING, DEBRA A., JEANQUART, DARIN A, JORDAN JR, ARNOLD J, KARST JR, DAVID A, KASPER, JAMES MICHAEL, KASTNER, ROBERT J, KILMER, JOHN DAVID, KOEHLER, BRIAN L, LANGAN, JEFFRY A, LANGER JR, JAMES E, LEMIN, JON C, LLEWELLYN, DAVID T, MATHEWS, BRIAN M, MCMAHON, BRADLY J, MCMAHON, DARRYL D, MILLER, JEANNINE R, MUELLER, JENNIFER L, NISSEL, THOMAS E, PALMER, JOHN A, POWELL, HEATHER S, PRESL, BRIAN G, PRIBEK, BARBARA A, SIMMONS JR, ROY L, SMITH, JACQUELINE K, STAFFORD, JEFFREY T, STREICH, ERIC E, VIEITEZ, CARL R, VOMASTEK, ANDREW J, VORPAHL, DWIGHT J., WALESH, DEBRA J, YEARGIN, BARRY K
Last Modified Date Changed From 6/3/2015 11:47:43 To 6/3/2015 11:47:49
Last State Change Date Changed From 5/28/2015 15:11:51 To 6/3/2015 11:47:49
State Changed From CRT Review To Assignments Pending Via Transition: Complete

9/15/2015 17:52:30 by HILLS, SHAWN D

Last Modified Date Changed From 6/3/2015 11:47:49 To 9/15/2015 17:52:30
Last State Change Date Changed From 6/3/2015 11:47:49 To 9/15/2015 17:52:30
State Changed From Assignments Pending To Trend Review Via Transition: Assignments Complete

9/16/2015 14:42:37 by HILLS, SHAWN D

CR Completed Date Changed From Unassigned To 9/16/2015 15:42:37
RM Attachment Links Changed From '' To '<table width=100% border=1 cellspacing=2 cellpadding=2></table>'
Owner Changed From HILLS, SHAWN D To (None)
Secondary Owner Changed From AHRENS, GARY M, ARCAND, JESSE C, BAILEY, JEFFREY NOEL, BOUCHE, DANNY L, BRADLEY, DEBRA A, CHRISTENSEN, ALAN R, CURFMAN, LAWRENCE J, DILANDRO, ERIC WARREN, EDWARDS, CHARLES K, EGDORF, JOHN R, ERICSON, JANICE L, EVANS, WENDY L, FALK, DAVID W., FICTUM, HOLLY C, FITZWATER, DAVID I, GAUGER, BRAD R, GRAU, JOHN R, GUINAN, PATRICIA B, GWYNN, GLENN ROXY, HALE, JAMES M., HELING, DEBRA A., JEANQUART, DARIN A, JORDAN JR, ARNOLD J, KARST JR, DAVID A, KASPER, JAMES MICHAEL, KASTNER, ROBERT J, KILMER, JOHN DAVID, KOEHLER, BRIAN L, LANGAN, JEFFRY A, LANGER JR, JAMES E, LEMIN, JON C, LLEWELLYN, DAVID T, MATHEWS, BRIAN M, MCMAHON, BRADLY J, MCMAHON, DARRYL D, MILLER, JEANNINE R, MUELLER, JENNIFER L, NISSEL, THOMAS E, PALMER, JOHN A, POWELL, HEATHER S, PRESL, BRIAN G, PRIBEK, BARBARA A, SIMMONS JR, ROY L, SMITH, JACQUELINE K, STAFFORD, JEFFREY T, STREICH, ERIC E, VIEITEZ, CARL R, VOMASTEK, ANDREW J, VORPAHL, DWIGHT J., WALESH, DEBRA J, YEARGIN, BARRY K To FENCL, DIANE L, HILLS, SHAWN D, KASSNER, KIM M, KRCMA, MELISSA MARIE, LACROSSE, TARA LYNN, LEANNA, LORI L, OLSOWY, TIMOTHY F, OTTO, KATHLEEN A., PRIBEK, BARBARA A, RECORDS MGMT, RECORDS MGMT, SCHULTZ, SANDRA J, SMIDEL, SARAH A., STAFFORD, JEFFREY T, Teamtrackuser, WALESH, DEBRA J, ZICH, CHRISTY L
Last Modified Date Changed From 9/15/2015 17:52:30 To 9/16/2015 14:42:37
Close Date Changed From Unassigned To 9/16/2015 14:42:37
Last State Change Date Changed From 9/15/2015 17:52:30 To 9/16/2015 14:42:37
Active/Inactive Changed From Active To Inactive
State Changed From Trend Review To All Assignments Complete Via Transition: Trend Review Complete

9/22/2015 18:35:39 by RECORDS MGMT

Last Modified Date Changed From 9/16/2015 14:42:37 To 9/22/2015 18:35:39
Last Modifier Changed From HILLS, SHAWN D To RECORDS MGMT
Last State Change Date Changed From 9/16/2015 14:42:37 To 9/22/2015 18:35:39
Last State Changer Changed From HILLS, SHAWN D To RECORDS MGMT
State Changed From All Assignments Complete To Transferred Via Transition: Transfer

Dominion > Corrective Action Program > Corrective Action Section 1

Record #:	CA303780
Revision Number:	0
One-Line Description:	Report Surface Water Samples Not Collected in the 2015 Annual Rad Env Op Report
Parent CR:	CR580855: KEWA - Surface Water Samples Not Collected in 2015 Due to Winter Ice Conditions (Inactive)
CR One-Line Description:	Surface Water Samples Not Collected in 2015 Due to Winter Ice Conditions
CR Description:	This Condition Report is written to summarize the surface water samples that were not collected by the Contracted Vendor for the 2015 Radiological Environmental Program to date. These samples were not collected due to winter freeze up and ice conditions at sample locations of creeks, ponds and Lake Michigan shoreline. Samples were either unavailable or inaccessible. In the case of Lake Michigan shoreline there were ice shelves and ice formations on the shoreline that presented a safety concern and rendered the water inaccessible. The Radiological Environmental Monitoring Manual (REMM section 3.6 Sample Descriptions) describes the samples as taken monthly when available. Summary of Surface Water samples not collected in 2015 -Surface water location K-1a (North Creek) could not be sampled for the February and March 2015 collection. The creek was frozen. -Surface water location K-1b (Middle Creek) could not be sampled for the March 2015 collection. The creek was frozen. -Surface water location K-1e (South Creek) could not be sampled for the February 2015 collection the creek was frozen. -Surface water location K-1k (Drainage Pond South of Plant) could not be sampled from January through March 2015. The pond was frozen or inaccessible for collection. -Surface water locations K-14a and K-14b (Two Creeks Park) could not be sampled for the February 2015 collection due to large shoreline ice formations making the sampling sites inaccessible. All Surface Water samples were available and collected for the month of April. This issue will be reported in the 2015 Annual Radiological Environmental Operating Report to address the missing

	samples.
CR Deficiency Type:	Non-Equipment
CR Discovery Date:	5/27/2015
CR Discovery Time:	16:11:00
CR Submitted Date:	5/27/2015 17:13:45
CR Applicable to site:	KEWA
CR Applicable to unit:	Unit 1
CR Initial Actions:	Initiated Condition Report.
CR Significance:	3
CR Potential Repeat:	No
CR Previous Issues:	CR Search by "Surface Water Sample" identified the following: CR487798 - Vender fails to notify KPS on high level of gross beta in a surface water sample (09/12/2012) CR482138 - Elevated Tritium in Stormwater outfall 008 During Dry Inspection (07/16/2012)
CR System(s):	N/A
CR Equipment Location:	(None)
CR CRT Comments:	CA(303780) to CY (Holschbach/Hale) to report Surface Water Samples Not Collected in 2015 Due to Winter Ice Conditions in the 2015 Annual Radiological Environmental Operating Report. Due Date: 05/20/2016.
Is this CA req'd to Restore Full Qualification or Functionality?:	No
Detailed Assignment:	CA to CY (Holschbach/Hale) to report Surface Water Samples Not Collected in 2015 Due to Winter Ice Conditions in the 2015 Annual Radiological Environmental Operating Report. Due Date: 05/20/2016.
CA Type:	Other
Additional Review Required:	No
Additional Reviewer 1:	(None)
Additional Reviewer 2:	(None)
Additional Reviewer 3:	(None)
Additional Reviewer 4:	(None)
Additional Reviewer 5:	(None)
Assigned Department:	KEWA - Rad Protection
Assigned DCAC:	HILLS, SHAWN D

(a)(1) Corrective Action?:	No
Due By Event:	No
Event Description:	(None)
Event Mode:	(None)
Event Date:	(None)
Action Priority:	Per Schedule
LTCA:	No
Assigned Due Date:	5/19/2016
Assigned Evaluator:	HOLSCHBACH, DARRYL M
Assigned Supervisor:	HALE, JAMES M.
Text Question 1:	**Response:**
Text Answer 1:	Close to CR206/CA77 issued in new KPS Corrective Action Program.
Requested extension date:	
# of Extensions Approved:	0
Extension Comments:	
Follow on Assignments Req'd?:	No
Literal 1:	**NOTE: If Follow-on Assignments are required, you must gain concurrence from all Responsible Departments prior to proposing any actions that will be assigned to them.**
Literal 2:	**If Yes, describe any follow-on action(s) below, including Department to receive the action. Otherwise, enter N/A:**
Follow-on assignments:	None.
Manager Review Requested?:	No
Manager to Review:	(None)
Additional Review Comments:	
Plant Manager Comments:	
Management comments:	
Comments:	9/15/2015 17:52:15 - HILLS, SHAWN D: Close to CR206/CA77 issued in new KPS Corrective Action Program.- Entered by [HILLS, SHAWN D] from [CA] [Supervisor Review]

9/15/2015 17:52:28 - HILLS, SHAWN D:
Close to CR206/CA77 issued in new KPS Corrective Action Program.- Entered by [HILLS, SHAWN D] from [CA]
[DCAC Review]

Old Record #:

Section 5

RM Attachment Links:

Change History

5/28/2015 15:10:02 by HILLS, SHAWN D
Last Modified Date Changed From 5/28/2015 15:09:59 To 5/28/2015 15:10:02
Attachment Added: CR580855: (None) - Surface Water Samples Not Collected in 2015 Due to Winter Ice Conditions

5/28/2015 15:10:06 by HILLS, SHAWN D
System(s) Changed From (None) To N/A
State Changed From Draft To Assigned Via Transition: Assign Department
Last Modified Date Changed From 5/28/2015 15:10:02 To 5/28/2015 15:10:06
Secondary Owner Changed From ADAMS, RICHARD W, AHRENS, GARY M, BACKUS, DANIEL C., BOUCHE, DANNY L, BRADLEY, DEBRA A, BUNKELMAN, TIMOTHY J, CHRISTENSEN, ALAN R, CHRISTMAN, SANDRA C, CIESLEWICZ, SCOTT M, EGDORF, JOHN R, ERICSON, JANICE L, ERTMAN, SALLY L, FICTUM, HOLLY C, FITZWATER, DAVID I, GAUGER, BRAD R, GAUTHIER, SANDRA LEE, GOOLSBEY, MARK W, HELBING, JEFFREY DAVID, HILLS, SHAWN D, IRION, ROBERT W, KARST JR, DAVID A, LANGER JR, JAMES E, LINDAHL, MARK A, LONGSTON, WILLIAM H., LUSTILA, MARQUES R, MADDEN, JAMES JOHN, MATHEWS, BRIAN M, MCMAHON, BRADLY J, MCMAHON, DARRYL D, MILLER, JEANNINE R, MORGAN, PATRICK M, MUELLER, JENNIFER L, MUELLER, MICHAEL D, NICOLAI, ROGER J, OLSOWY, TIMOTHY F, OWENS, CYRENA JEAN, PAWLITZKY, TINA L., PRESL, BRIAN G, PRESL, THERESA J, PRIBEK, BARBARA A, RAISLEGER, VIRGINIA M, RAND, TAMERA L, SMIDEL, SARAH A., SMITH, JACQUELINE K, STEINER, JORDAN A, STODOLA, JOSEPH O, TERRY, MICHAEL E, TREPTOW, ETHAN A, WALESH, DEBRA J, WALKNER, MARGARET M To ADAMS, RICHARD W, BERNSDORF, MIKE A, CHRISTENSEN, ALAN R, EGDORF, JOHN R, HALE, JAMES M., HILLS, SHAWN D, LANGER JR, JAMES E, LEANNA, LORI L, OLSON, CHERYL L, OLSOWY, TIMOTHY F, PRESL, THERESA J, PRIBEK, BARBARA A, ZASTROW, KRISTIN K
Last State Change Date Changed From 5/28/2015 15:09:59 To 5/28/2015 15:10:06

5/28/2015 15:10:33 by HILLS, SHAWN D
Action Priority Changed From (None) To Per Schedule
Assigned Evaluator Changed From (None) To HOLSCHBACH, DARRYL M
Assigned Supervisor Changed From (None) To HALE, JAMES M.
State Changed From Assigned To In Progress Via Transition: Assign Evaluator
Last Modified Date Changed From 5/28/2015 15:10:06 To 5/28/2015 15:10:33
Owner Changed From HILLS, SHAWN D To HOLSCHBACH, DARRYL M
Secondary Owner Changed From ADAMS, RICHARD W, BERNSDORF, MIKE A, CHRISTENSEN, ALAN R, EGDORF, JOHN R, HALE, JAMES M., HILLS, SHAWN D, LANGER JR, JAMES E, LEANNA, LORI L, OLSON, CHERYL L, OLSOWY, TIMOTHY F, PRESL, THERESA J, PRIBEK, BARBARA A, ZASTROW, KRISTIN K To ADAMS, RICHARD W, ALLISON, DON NOEL, BERNSDORF, MIKE A, CHRISTENSEN, ALAN R, EGDORF, JOHN R, HALE, JAMES M., HILLS, SHAWN D, HOVIS, MICHAEL A., LANGER JR, JAMES E, LEANNA, LORI L, LEHMBECK, WILLIAM LEWIS, MORGAN, DEAN R., OLSON, CHERYL L, OLSOWY, TIMOTHY F, PEROUTKA, MARK, PRESL, THERESA J, PRIBEK, BARBARA A, SHANNON, DANIEL J., STAFFORD, JEFFREY T, STECKLER, BART R, ZASTROW, KRISTIN K
Last State Change Date Changed From 5/28/2015 15:10:06 To 5/28/2015 15:10:33

9/15/2015 17:51:58 by HILLS, SHAWN D
Text Answer 1 Changed From '' To 'Close to CR206/CA77 issued in new KPS Corrective Action Program.'
Follow on Assignments Req'd? Changed From (None) To No
Follow-on assignments Changed From '' To 'None.'
Last Modified Date Changed From 5/28/2015 15:10:33 To 9/15/2015 17:51:58

9/15/2015 17:52:03 by HILLS, SHAWN D
State Changed From In Progress To Supervisor Review Via Transition: Complete
Last Modified Date Changed From 9/15/2015 17:51:58 To 9/15/2015 17:52:03

Owner Changed From HOLSCHBACH, DARRYL M To HALE, JAMES M.
Secondary Owner Changed From ADAMS, RICHARD W, ALLISON, DON NOEL, BERNSDORF, MIKE A, CHRISTENSEN, ALAN R, EGDORF, JOHN R, HALE, JAMES M., HILLS, SHAWN D, HOVIS, MICHAEL A., LANGER JR, JAMES E, LEANNA, LORI L, LEHMBECK, WILLIAM LEWIS, MORGAN, DEAN R., OLSON, CHERYL L, OLSOWY, TIMOTHY F, PEROUTKA, MARK, PRESL, THERESA J, PRIBEK, BARBARA A, SHANNON, DANIEL J., STAFFORD, JEFFREY T, STECKLER, BART R, ZASTROW, KRISTIN K To ADAMS, RICHARD W, ALLISON, DON NOEL, BERNSDORF, MIKE A, CHRISTENSEN, ALAN R, EGDORF, JOHN R, HALE, JAMES M., HILLS, SHAWN D, HOVIS, MICHAEL A., LANGER JR, JAMES E, LEANNA, LORI L, LEHMBECK, WILLIAM LEWIS, MORGAN, DEAN R., OLSON, CHERYL L, OLSOWY, TIMOTHY F, PEROUTKA, MARK, PRIBEK, BARBARA A, SHANNON, DANIEL J., STAFFORD, JEFFREY T, STECKLER, BART R, ZASTROW, KRISTIN K
Last State Change Date Changed From 5/28/2015 15:10:33 To 9/15/2015 17:52:03

9/15/2015 17:52:15 by HILLS, SHAWN D

Comments Changed From '' To '[Appended:] Close to CR206/CA77 issued in new KPS Corrective Action Program.- Entered by [HILLS, SHAWN D] from [CA] [Supervisor Review]'
State Changed From Supervisor Review To DCAC Review Via Transition: Complete
Last Modified Date Changed From 9/15/2015 17:52:03 To 9/15/2015 17:52:15
Owner Changed From HALE, JAMES M. To HILLS, SHAWN D
Secondary Owner Changed From ADAMS, RICHARD W, ALLISON, DON NOEL, BERNSDORF, MIKE A, CHRISTENSEN, ALAN R, EGDORF, JOHN R, HALE, JAMES M., HILLS, SHAWN D, HOVIS, MICHAEL A., LANGER JR, JAMES E, LEANNA, LORI L, LEHMBECK, WILLIAM LEWIS, MORGAN, DEAN R., OLSON, CHERYL L, OLSOWY, TIMOTHY F, PEROUTKA, MARK, PRIBEK, BARBARA A, SHANNON, DANIEL J., STAFFORD, JEFFREY T, STECKLER, BART R, ZASTROW, KRISTIN K To ADAMS, RICHARD W, BERNSDORF, MIKE A, CHRISTENSEN, ALAN R, EGDORF, JOHN R, HALE, JAMES M., HILLS, SHAWN D, LANGER JR, JAMES E, LEANNA, LORI L, OLSON, CHERYL L, OLSOWY, TIMOTHY F, PRESL, THERESA J, PRIBEK, BARBARA A, ZASTROW, KRISTIN K
Last State Change Date Changed From 9/15/2015 17:52:03 To 9/15/2015 17:52:15

9/15/2015 17:52:28 by HILLS, SHAWN D

Comments Changed From '[Original Text]' To '[Appended:] Close to CR206/CA77 issued in new KPS Corrective Action Program.- Entered by [HILLS, SHAWN D] from [CA] [DCAC Review]'
RM Attachment Links Changed From '' To '<table width=100% border=1 cellspacing=2 cellpadding=2></table>'
State Changed From DCAC Review To All Assignments Complete Via Transition: Complete
Additional Review Number Changed From 0 To 1
Last Modified Date Changed From 9/15/2015 17:52:15 To 9/15/2015 17:52:28
Active/Inactive Changed From Active To Inactive
Owner Changed From HILLS, SHAWN D To (None)
Secondary Owner Changed From ADAMS, RICHARD W, BERNSDORF, MIKE A, CHRISTENSEN, ALAN R, EGDORF, JOHN R, HALE, JAMES M., HILLS, SHAWN D, LANGER JR, JAMES E, LEANNA, LORI L, OLSON, CHERYL L, OLSOWY, TIMOTHY F, PRESL, THERESA J, PRIBEK, BARBARA A, ZASTROW, KRISTIN K To (None)
Close Date Changed From Unassigned To 9/15/2015 17:52:28
Last State Change Date Changed From 9/15/2015 17:52:15 To 9/15/2015 17:52:28

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Records Management (CR) - For automated process

9/22/2015 23:21:53

Now showing CAPTable 1 - 2 of 2

Dominion > Corrective Action Program > Condition Report > Not Associated with Boric Acid

Section 1

Applicable to site:	KEWA
Record #:	CR580839
Equipment Location Display:	**Equipment Location - Critical Component - PRA Flag - Quality Classification - Component Description**
Equipment Location Links:	
One-Line Description:	Milk sample (K-38) collected 5/19/15 leaked and was lost in shipment
Description:	The milk sample collected on 5/19/15 at K-38 (Sinkula Farm) leaked and was disposed of by the shipper. Shipper reported it leaked at the seam of the collapsible container. The 1 gallon container was not leaking when placed into the shipping box. The other samples in that shipment were confirmed to be delivered to the Environmental lab. A replacement milk sample from location K-38 was collected and shipped on 5/21/15. The Environmental lab confirmed receipt of this sample. The replacement sample was collected within 2 days of the original. There is no adverse condition regarding the Radiological Environmental Monitoring Program. The issue will be reported in the 2015 Annual Radiological Environmental Operating Report to address the inconsistent sample dates.
Associated with Boric Acid?:	No
Initial Actions:	A replacement milk sample from location K-38 was collected and shipped on 5/21/15. The Environmental lab confirmed receipt of this sample.
C/As Initiated (REA, WR, ETC):	
Work Order Number(s):	
Tag Hung:	No
Tag Number:	
Text Question 1:	**Provide details for any Additional C/A processes needed:**
Text Answer 1:	Request a CA to report this issue in the 2015 Annual Radiological Environmental Operating Report
Discovery Date:	5/20/2015

Discovery Time:	12:30:00
Submitter:	HOLSCHBACH, DARRYL M
Method of Discovery:	SELR (Self-revealing issue)
OP-AA-102 Review Req'd?:	(None)
Is a TS SSC Affected?:	(None)
TS SSC Operability Assessment:	(None)
Is an IOD Assignment Required?:	(None)
Text Question 2:	**Basis for operability:**
Text Answer 2:	
Question L:	**Is an Operability Assessment req'd for an SSC, which is Functional for its TRM function, to demonstrate operability for its TS function?**
Yes / No L:	(None) **LCO entered:** (None)
Applicable LCO:	
Reportable condition?:	(None)
Non-TS SSC Functionality Assessment.:	(None)
Does it impact a TS SSC?:	(None)
Is a RAS Assignment Needed?:	(None)
SSC Qualification Status:	(None)
O/R Comments:	
Leak Classification:	(None)
Leakage Severity:	(None)
Significance:	3
Deficiency Type:	Non-Equipment
Potential Repeat:	Yes
Previous Issues (PIs, CRs):	CR Search by "Milk Sample" identified the following: CR504725 - Contract Vendor not able to collect milk sample for site K-44 (02/06/2013) CR488741 - Milk sample unavailable at location K-44 for environmental sample collection (09/20/2012) CR485226 - Part of Environmental Milk sample shipment was damaged by Delivery Service. (08/16/2012)
CR FLAGS:	zz - reviewed / none selected

Affected Department:	(None)
CRT Comments:	CA(303778) to CY (Holschbach/Hale) to report Milk sample (K-38) collected 5/19/15 leaked and was lost in shipment in the 2015 Annual Radiological Environmental Operating Report. Due Date: 05/20/2016
Screening Date:	

Section 2

Revision Number:	0	**Submitter Dept.:**	KEWA - Chemistry
Submitter Phone Number:	8146/7341		
Submitter Pager Number:	NA		
Literal 1:	**If this CR is associated with the BACC Program, please ensure that the CR Description contains sufficient information to ensure the ability to quickly locate the component, which will ensure ALARA.**		
Applicable to unit:	None		
Associated w/ Equipment Location?:	No		
System(s):	N/A	**Additional C/A processes req'd?:**	Other
Additional Contacts:			
Supervisor - CR Review:	SHANNON, DANIEL J.		
Question G:	**Is this CR an Operability/Reportability Issue Requiring O/R Review?**		
Yes/No G:	No		
Question H:	**Does this CR affect personnel safety?**		
Yes/No H:	No		
Question I:	**Does this CR affect plant safety?**		
Yes/No I:	No		
Question J:	**Does this CR involve plant equipment?**		
Yes/No J:	No		
Question K:	**Is this CR an environmental concern?**		
Yes/No K:	No		
Literal 2:	**Unit Conditions:**		
Unit 1% Pwr:			
Unit 2% Pwr:	NA		

Unit 3% Pwr:	NA
Unit 1 Mode:	(None)
Unit 2 Mode:	NA
Unit 3 Mode:	NA
Text Question 3:	**Reportability Comments:**
Text Answer 3:	
Can IOD be established?:	(None)
Literal 3:	**If this CR is associated with any system leakage, provide answers to the following:**
License Renewal Flags:	(None)
CRT Report Section(s):	2
Comments:	
Trend Review Complete?:	No

Process Code:	UNK (Unknown)	Activity Codes:	SAA(Sampling)
Human Error Types:	(None)	Process Related Failure:	(None)
Org. & Mgmt Failure mode:	(None)	HU Failure modes:	(None)
Equipment Failure Modes:	(None)	Primary INPO criteria:	(None)
Secondary INPO criteria:	(None)	Operations Hot Buttons:	(None)
Engineering Hot Buttons:	(None)	Maintenance Hot Buttons:	(None)
RP Hot Buttons:	(None)	Chemistry Hot Buttons:	(None)
EP Hot Buttons:	(None)	Training Hot Buttons:	(None)
Security Hot Buttons:	(None)	OR Hot Buttons:	(None)
O&P Hot Buttons:	(None)	NSS Hot Buttons:	(None)
Supply Chain Hot Buttons:	(None)	Procedures Hot Buttons:	(None)
Reactivity Mgmt Hot Buttons:	(None)	Other Hot Buttons:	(None)
Old Record #:			

Section 3

Status Description:

Status Date:
Actual Finish Date:
Work Performed Description:

Section 5

CR Completed Date: 9/16/2015 15:42:22
CR Printed Date:
CR Validated Date:
CR Who Validated: (None)
RM Attachment Links:

Change History

5/27/2015 15:23:34 by HOLSCHBACH, DARRYL M

System(s) Changed From (None) To N/A
Owner Changed From HOLSCHBACH, DARRYL M To SHANNON, DANIEL J.
Secondary Owner Changed From SHANNON, DANIEL J. To AITKEN, PAUL C, ANDERSON, PAMELA J, BERTSCHE, BRYAN JOHN, BRUNELLI, THOMAS GEORGE, CHRISTENSEN, ALAN R, CURFMAN, LAWRENCE J, DOERING JR, BARRY J, EVANS, WENDY L, FARINHOLT III, LUTHER, GAUGER, BRAD R, GRAU, JOHN R, GUINAN, PATRICIA B, GUM, CLARENCE L, GUTNER, SOPHIE, GWYNN, GLENN ROXY, HARRIS, BRIAN LLOYD, HAYNES III, ROBERT LEE, HENRY, ERNEST R, HOLDSWORTH, EDNA K, HUEBNER, BRANDON ALBERT, JORDAN JR, ARNOLD J, KASTNER, ROBERT J, KOEHLER, BRIAN L, KUNCA JR, WILLIAM B, LANGAN, JEFFRY A, LAROE, CARY BRIAN, MATHEWS, BRIAN M, MATTHEWS, WILLIAM ALAN, MCMAHON, BRADLY J, MORRIS JR, KENNETH BRUCE, MURPHY, ADAM WILLIAM, NELSON, THOMAS M, NICHOLS, MICHAEL A, PIETRYK, CAROL L, PORTER, ROBERT J, PRESL, BRIAN G, PRIBEK, BARBARA A, ROTH, JAMES R, SAKSVIG, PAUL, SIMMONS JR, ROY L, SOMMERS, DAVID ARTHUR, STAFFORD, JEFFREY T, STANTON, STEPHEN T, STECKLER, BART R, TERRY, MICHAEL E, VIEITEZ; CARL R, VOMASTEK, ANDREW J, WEBSTER, WILLIAM WASH, YEARGIN, BARRY K, ZEPNICK, BRIAN THOMAS, ZUERCHER, RICHARD R
Last Modified Date Changed From 5/27/2015 15:22:07 To 5/27/2015 15:23:34
Last State Change Date Changed From 5/27/2015 15:22:07 To 5/27/2015 15:23:34
State Changed From Draft To Supervisor Review Via Transition: Submit
Parent CR Changed From (None) To CR580839: KEWA - Milk sample (K-38) collected 5/19/15 leaked and was lost in shipment (Inactive)

5/27/2015 15:50:23 by SHANNON, DANIEL J.

Yes/No G Changed From Yes To No
Yes/No H Changed From Yes To No
Yes/No I Changed From Yes To No
Yes/No J Changed From Yes To No
Yes/No K Changed From Yes To No
Owner Changed From SHANNON, DANIEL J. To HILLS, SHAWN D
Secondary Owner Changed From AITKEN, PAUL C, ANDERSON, PAMELA J, BERTSCHE, BRYAN JOHN, BRUNELLI, THOMAS GEORGE, CHRISTENSEN, ALAN R, CURFMAN, LAWRENCE J, DOERING JR, BARRY J, EVANS, WENDY L, FARINHOLT III, LUTHER, GAUGER, BRAD R, GRAU, JOHN R, GUINAN, PATRICIA B, GUM, CLARENCE L, GUTNER, SOPHIE, GWYNN, GLENN ROXY, HARRIS, BRIAN LLOYD, HAYNES III, ROBERT LEE, HENRY, ERNEST R, HOLDSWORTH, EDNA K, HUEBNER, BRANDON ALBERT, JORDAN JR, ARNOLD J, KASTNER, ROBERT J, KOEHLER, BRIAN L, KUNCA JR, WILLIAM B, LANGAN, JEFFRY A, LAROE, CARY BRIAN, MATHEWS, BRIAN M, MATTHEWS, WILLIAM ALAN, MCMAHON, BRADLY J, MORRIS JR, KENNETH BRUCE, MURPHY, ADAM WILLIAM, NELSON, THOMAS M, NICHOLS, MICHAEL A, PIETRYK, CAROL L, PORTER, ROBERT J, PRESL, BRIAN G, PRIBEK, BARBARA A, ROTH, JAMES R, SAKSVIG, PAUL, SIMMONS JR, ROY L, SOMMERS, DAVID ARTHUR, STAFFORD, JEFFREY T, STANTON, STEPHEN T, STECKLER, BART R, TERRY, MICHAEL E, VIEITEZ, CARL R, VOMASTEK, ANDREW J, WEBSTER, WILLIAM WASH, YEARGIN, BARRY K, ZEPNICK, BRIAN THOMAS, ZUERCHER, RICHARD R To AHRENS, GARY M, BAILEY, JEFFREY NOEL, BOUCHE, DANNY L, BRADLEY, DEBRA A, BRINKMAN, CHARLES A, BROWN, DAN, CHRISTENSEN, ALAN R, CURFMAN, LAWRENCE J, DILANDRO, ERIC WARREN, DYKSTRA, DALE E, EDWARDS, CHARLES K, EVANS, WENDY L, EVERITT, CHAD A, FALK, DAVID W., FICTUM, HOLLY C, FITZWATER, DAVID I, GAUGER, BRAD R, GRAU, JOHN R, GUINAN, PATRICIA B, GWYNN, GLENN ROXY, HALE, JAMES M., HELING, DEBRA A., IRLBECK, DAVID E, JEANQUART, DARIN A, JORDAN JR, ARNOLD J, KARST JR, DAVID A, KASPER, JAMES MICHAEL, KASTNER, ROBERT J, KILMER, JOHN DAVID, KOEHLER, BRIAN L, LANGAN, JEFFRY A, LANGER JR, JAMES E, LLEWELLYN, DAVID T, MATHEWS, BRIAN M, MCMAHON, BRADLY J, MCMAHON, DARRYL D, NISSEL, THOMAS E, POWELL, HEATHER S, PRESL, BRIAN G, PRIBEK, BARBARA A, SIMMONS JR, ROY L, SMITH, JACQUELINE K, STAFFORD, JEFFREY T, STREICH, ERIC E, TERRY, MICHAEL E, TREPTOW, ETHAN A, VIEITEZ, CARL R, VOMASTEK, ANDREW J, VORPAHL, DWIGHT J., WALESH, DEBRA J, YEARGIN, BARRY K
Last Modified Date Changed From 5/27/2015 15:23:34 To 5/27/2015 15:50:23
Last Modifier Changed From HOLSCHBACH, DARRYL M To SHANNON, DANIEL J.
Last State Change Date Changed From 5/27/2015 15:23:34 To 5/27/2015 15:50:24
Last State Changer Changed From HOLSCHBACH, DARRYL M To SHANNON, DANIEL J.
State Changed From Supervisor Review To CRT Review Via Transition: Complete

NewCR Changed From Yes To No

5/28/2015 14:54:44 by HILLS, SHAWN D

Significance Changed From (None) To 3
Deficiency Type Changed From (None) To Non-Equipment
Potential Repeat Changed From (None) To Yes
Previous Issues (PIs, CRs) Changed From '' To '[Appended:]CR Search by "Milk Sample" identified the following: CR504725 - Contract Vendor not able to collect milk sample for site K-44 (02/06/2013) CR488741 - Milk sample unavailable at location K-44 for environmental sample collection (09/20/2012) CR[...]'
CR FLAGS Changed From (None) To zz - reviewed / none selected
CRT Comments Changed From '' To 'CA to CY (Holschbach/Hale) to report Milk sample (K-38) collected 5/19/15 leaked and was lost in shipment in the 2015 Annual Radiological Environmental Operating Report. Due Date: 05/20/2016'
Last Modified Date Changed From 5/27/2015 15:50:23 To 5/28/2015 14:54:44
Last Modifier Changed From SHANNON, DANIEL J. To HILLS, SHAWN D

5/28/2015 14:54:48 by HILLS, SHAWN D

Last Modified Date Changed From 5/28/2015 14:54:44 To 5/28/2015 14:54:48
Last State Change Date Changed From 5/27/2015 15:50:24 To 5/28/2015 14:54:48
Last State Changer Changed From SHANNON, DANIEL J. To HILLS, SHAWN D
State Changed From CRT Review To CRT Assignment Creation Via Transition: CA

5/28/2015 14:57:18 by HILLS, SHAWN D

Last Modified Date Changed From 5/28/2015 14:54:48 To 5/28/2015 14:57:18
Attachment Added: CA303778: (None) - Report Milk Sample (K-38) Lost in Shipment in 2015 Rad Env Operating Report

5/28/2015 14:58:58 by HILLS, SHAWN D

CRT Report Section(s) Changed From (None) To 1
CRT Comments Changed From 'CA to CY (Holschbach/Hale) to report Milk sample (K-38) collected 5/19/15 leaked and was lost in shipment in the 2015 Annual Radiological Environmental Operating Report. Due Date: 05/20/2016' To 'CA(303778) to CY (Holschbach/Hale) to report Milk sample (K-38) collected 5/19/15 leaked and was lost in shipment in the 2015 Annual Radiological Environmental Operating Report. Due Date: 05/20/2016'
State Changed From CRT Assignment Creation To CRT Review Via Transition: Update CR
Last Modified Date Changed From 5/28/2015 14:57:18 To 5/28/2015 14:58:58
Last State Change Date Changed From 5/28/2015 14:54:48 To 5/28/2015 14:58:58

6/3/2015 11:46:41 by HILLS, SHAWN D

CRT Report Section(s) Changed From 1 To 2
Process Code Changed From (None) To UNK (Unknown)
Activity Codes Changed From (None) To SAA(Sampling)
Last Modified Date Changed From 5/28/2015 14:58:58 To 6/3/2015 11:46:41

6/3/2015 11:46:46 by HILLS, SHAWN D

Secondary Owner Changed From AHRENS, GARY M, BAILEY, JEFFREY NOEL, BOUCHE, DANNY L, BRADLEY, DEBRA A, BRINKMAN, CHARLES A, BROWN, DAN, CHRISTENSEN, ALAN R, CURFMAN, LAWRENCE J, DILANDRO, ERIC WARREN, DYKSTRA, DALE E, EDWARDS, CHARLES K, EVANS, WENDY L, EVERITT, CHAD A, FALK, DAVID W., FICTUM, HOLLY C, FITZWATER, DAVID I, GAUGER, BRAD R, GRAU, JOHN R, GUINAN, PATRICIA B, GWYNN, GLENN ROXY, HALE, JAMES M., HELING, DEBRA A., IRLBECK, DAVID E, JEANQUART, DARIN A, JORDAN JR, ARNOLD J, KARST JR, DAVID A, KASPER, JAMES MICHAEL, KASTNER, ROBERT J, KILMER, JOHN DAVID, KOEHLER, BRIAN L, LANGAN, JEFFRY A, LANGER JR, JAMES E, LLEWELLYN, DAVID T, MATHEWS, BRIAN M, MCMAHON, BRADLY J, MCMAHON, DARRYL D, NISSEL, THOMAS E, POWELL, HEATHER S, PRESL, BRIAN G, PRIBEK, BARBARA A, SIMMONS JR, ROY L, SMITH, JACQUELINE K, STAFFORD, JEFFREY T, STREICH, ERIC E, TERRY, MICHAEL E, TREPTOW, ETHAN A, VIEITEZ, CARL R, VOMASTEK, ANDREW J, VORPAHL, DWIGHT J., WALESH, DEBRA J, YEARGIN, BARRY K To AHRENS, GARY M, ARCAND, JESSE C, BAILEY, JEFFREY NOEL, BOUCHE, DANNY L, BRADLEY, DEBRA A, CHRISTENSEN, ALAN R, CURFMAN, LAWRENCE J, DILANDRO, ERIC WARREN, EDWARDS, CHARLES K, EGDORF, JOHN R, ERICSON, JANICE L, EVANS, WENDY L, FALK, DAVID W., FICTUM, HOLLY C, FITZWATER, DAVID I, GAUGER, BRAD R, GRAU, JOHN R, GUINAN, PATRICIA B, GWYNN, GLENN ROXY, HALE, JAMES M., HELING, DEBRA A., JEANQUART, DARIN A, JORDAN JR, ARNOLD J, KARST JR, DAVID A, KASPER, JAMES MICHAEL, KASTNER, ROBERT J, KILMER, JOHN DAVID, KOEHLER, BRIAN L, LANGAN, JEFFRY A, LANGER JR, JAMES E, LEMIN, JON C, LLEWELLYN, DAVID T, MATHEWS, BRIAN M, MCMAHON, BRADLY J, MCMAHON, DARRYL D, MILLER, JEANNINE R, MUELLER, JENNIFER L, NISSEL, THOMAS E, PALMER, JOHN A, POWELL, HEATHER S, PRESL, BRIAN G, PRIBEK, BARBARA A, SIMMONS JR, ROY L, SMITH, JACQUELINE K, STAFFORD, JEFFREY T, STREICH, ERIC E, VIEITEZ, CARL R, VOMASTEK, ANDREW J, VORPAHL, DWIGHT J., WALESH, DEBRA J, YEARGIN, BARRY K
Last Modified Date Changed From 6/3/2015 11:46:41 To 6/3/2015 11:46:46
Last State Change Date Changed From 5/28/2015 14:58:58 To 6/3/2015 11:46:47
State Changed From CRT Review To Assignments Pending Via Transition: Complete

9/15/2015 17:50:47 by HILLS, SHAWN D

Last Modified Date Changed From 6/3/2015 11:46:46 To 9/15/2015 17:50:47
Last State Change Date Changed From 6/3/2015 11:46:47 To 9/15/2015 17:50:47
State Changed From Assignments Pending To Trend Review Via Transition: Assignments Complete

9/16/2015 14:42:22 by HILLS, SHAWN D

CR Completed Date Changed From Unassigned To 9/16/2015 15:42:22
RM Attachment Links Changed From '' To '<table width=100% border=1 cellspacing=2 cellpadding=2></table>'

Owner Changed From HILLS, SHAWN D To (None)
Secondary Owner Changed From AHRENS, GARY M, ARCAND, JESSE C, BAILEY, JEFFREY NOEL, BOUCHE, DANNY L, BRADLEY, DEBRA A, CHRISTENSEN, ALAN R, CURFMAN, LAWRENCE J, DILANDRO, ERIC WARREN, EDWARDS, CHARLES K, EGDORF, JOHN R, ERICSON, JANICE L, EVANS, WENDY L, FALK, DAVID W., FICTUM, HOLLY C, FITZWATER, DAVID I, GAUGER, BRAD R, GRAU, JOHN R, GUINAN, PATRICIA B, GWYNN, GLENN ROXY, HALE, JAMES M., HELING, DEBRA A., JEANQUART, DARIN A, JORDAN JR, ARNOLD J, KARST JR, DAVID A, KASPER, JAMES MICHAEL, KASTNER, ROBERT J, KILMER, JOHN DAVID, KOEHLER, BRIAN L, LANGAN, JEFFRY A, LANGER JR, JAMES E, LEMIN, JON C, LLEWELLYN, DAVID T, MATHEWS, BRIAN M, MCMAHON, BRADLY J, MCMAHON, DARRYL D, MILLER, JEANNINE R, MUELLER, JENNIFER L, NISSEL, THOMAS E, PALMER, JOHN A, POWELL, HEATHER S, PRESL, BRIAN G, PRIBEK, BARBARA A, SIMMONS JR, ROY L, SMITH, JACQUELINE K, STAFFORD, JEFFREY T, STREICH, ERIC E, VIEITEZ, CARL R, VOMASTEK, ANDREW J, VORPAHL, DWIGHT J., WALESH, DEBRA J, YEARGIN, BARRY K To FENCL, DIANE L, HILLS, SHAWN D, KASSNER, KIM M, KRCMA, MELISSA MARIE, LACROSSE, TARA LYNN, LEANNA, LORI L, OLSOWY, TIMOTHY F, OTTO, KATHLEEN A., PRIBEK, BARBARA A, RECORDS MGMT, RECORDS MGMT, SCHULTZ, SANDRA J, SMIDEL, SARAH A., STAFFORD, JEFFREY T, Teamtrackuser, WALESH, DEBRA J, ZICH, CHRISTY L
Last Modified Date Changed From 9/15/2015 17:50:47 To 9/16/2015 14:42:22
Close Date Changed From Unassigned To 9/16/2015 14:42:22
Last State Change Date Changed From 9/15/2015 17:50:47 To 9/16/2015 14:42:22
Active/Inactive Changed From Active To Inactive
State Changed From Trend Review To All Assignments Complete Via Transition: Trend Review Complete

9/22/2015 18:35:22 by RECORDS MGMT

Last Modified Date Changed From 9/16/2015 14:42:22 To 9/22/2015 18:35:22
Last Modifier Changed From HILLS, SHAWN D To RECORDS MGMT
Last State Change Date Changed From 9/16/2015 14:42:22 To 9/22/2015 18:35:22
Last State Changer Changed From HILLS, SHAWN D To RECORDS MGMT
State Changed From All Assignments Complete To Transferred Via Transition: Transfer

Dominion > Corrective Action Program > Corrective Action Section 1

Record #:	CA303778
Revision Number:	0
One-Line Description:	Report Milk Sample (K-38) Lost in Shipment in 2015 Rad Env Operating Report
Parent CR:	CR580839: KEWA - Milk sample (K-38) collected 5/19/15 leaked and was lost in shipment (Inactive)
CR One-Line Description:	Milk sample (K-38) collected 5/19/15 leaked and was lost in shipment
CR Description:	The milk sample collected on 5/19/15 at K-38 (Sinkula Farm) leaked and was disposed of by the shipper. Shipper reported it leaked at the seam of the collapsible container. The 1 gallon container was not leaking when placed into the shipping box. The other samples in that shipment were confirmed to be delivered to the Environmental lab. A replacement milk sample from location K-38 was collected and shipped on 5/21/15. The Environmental lab confirmed receipt of this sample. The replacement sample was collected within 2 days of the original. There is no adverse condition regarding the Radiological Environmental Monitoring Program. The issue will be reported in the 2015 Annual Radiological Environmental Operating Report to address the inconsistent sample dates.
CR Deficiency Type:	Non-Equipment
CR Discovery Date:	5/20/2015
CR Discovery Time:	12:30:00
CR Submitted Date:	5/27/2015 15:22:07
CR Applicable to site:	KEWA
CR Applicable to unit:	None
CR Initial Actions:	A replacement milk sample from location K-38 was collected and shipped on 5/21/15. The Environmental lab confirmed receipt of this sample.
CR Significance:	3
CR Potential Repeat:	Yes
CR Previous Issues:	CR Search by "Milk Sample" identified the following: CR504725 - Contract Vendor not able to collect milk sample for site K-44 (02/06/2013) CR488741 - Milk sample unavailable at location K-44 for environmental sample collection (09/20/2012) CR485226 - Part of Environmental Milk sample shipment was damaged by Delivery Service. (08/16/2012)
CR System(s):	N/A

CR Equipment Location:	(None)
CR CRT Comments:	CA(303778) to CY (Holschbach/Hale) to report Milk sample (K-38) collected 5/19/15 leaked and was lost in shipment in the 2015 Annual Radiological Environmental Operating Report. Due Date: 05/20/2016
Is this CA req'd to Restore Full Qualification or Functionality?:	No
Detailed Assignment:	CA to CY (Holschbach/Hale) to report Milk sample (K-38) collected 5/19/15 leaked and was lost in shipment in the 2015 Annual Radiological Environmental Operating Report. Due Date: 05/20/2016
CA Type:	Other
Additional Review Required:	No
Additional Reviewer 1:	(None)
Additional Reviewer 2:	(None)
Additional Reviewer 3:	(None)
Additional Reviewer 4:	(None)
Additional Reviewer 5:	(None)
Assigned Department:	KEWA - Rad Protection
Assigned DCAC:	HILLS, SHAWN D
(a)(1) Corrective Action?:	No
Due By Event:	No
Event Description:	(None)
Event Mode:	(None)
Event Date:	(None)
Action Priority:	Per Schedule
LTCA:	No
Assigned Due Date:	5/19/2016
Assigned Evaluator:	HOLSCHBACH, DARRYL M
Assigned Supervisor:	HALE, JAMES M.
Text Question 1:	**Response:**
Text Answer 1:	Close to CR205/CA76 issued in new KPS Corrective Action Program.
Requested extension date:	
# of Extensions Approved:	0

Extension Comments:	
Follow on Assignments Req'd?:	No
Literal 1:	**NOTE: If Follow-on Assignments are required, you must gain concurrence from all Responsible Departments prior to proposing any actions that will be assigned to them.**
Literal 2:	**If Yes, describe any follow-on action(s) below, including Department to receive the action. Otherwise, enter N/A:**
Follow-on assignments:	None.
Manager Review Requested?:	No
Manager to Review:	(None)
Additional Review Comments:	
Plant Manager Comments:	
Management comments:	
Comments:	9/15/2015 17:50:34 - HILLS, SHAWN D: Close to CR205/CA76 issued in new KPS Corrective Action Program.- Entered by [HILLS, SHAWN D] from [CA] [Supervisor Review] 9/15/2015 17:50:46 - HILLS, SHAWN D: Close to CR205/CA76 issued in new KPS Corrective Action Program.- Entered by [HILLS, SHAWN D] from [CA] [DCAC Review]
Old Record #:	

Section 5

RM Attachment Links:

Change History

5/28/2015 14:57:18 by HILLS, SHAWN D
Last Modified Date Changed From 5/28/2015 14:57:15 To 5/28/2015 14:57:18
Attachment Added: CR580839: (None) - Milk sample (K-38) collected 5/19/15 leaked and was lost in shipment

5/28/2015 14:57:23 by HILLS, SHAWN D
System(s) Changed From (None) To N/A
State Changed From Draft To Assigned Via Transition: Assign Department
Last Modified Date Changed From 5/28/2015 14:57:18 To 5/28/2015 14:57:23
Secondary Owner Changed From ADAMS, RICHARD W, AHRENS, GARY M, BACKUS, DANIEL C., BOUCHE, DANNY L, BRADLEY, DEBRA A, BUNKELMAN, TIMOTHY J, CHRISTENSEN, ALAN R, CHRISTMAN, SANDRA C, CIESLEWICZ, SCOTT M, EGDORF, JOHN R, ERICSON, JANICE L, ERTMAN, SALLY L, FICTUM, HOLLY C, FITZWATER, DAVID I, GAUGER, BRAD R, GAUTHIER, SANDRA LEE, GOOLSBEY, MARK W, HELBING, JEFFREY DAVID, HILLS, SHAWN D, IRION, ROBERT W, KARST JR, DAVID A,

LANGER JR, JAMES E, LINDAHL, MARK A, LONGSTON, WILLIAM H., LUSTILA, MARQUES R, MADDEN, JAMES JOHN, MATHEWS, BRIAN M, MCMAHON, BRADLY J, MCMAHON, DARRYL D, MILLER, JEANNINE R, MORGAN, PATRICK M, MUELLER, JENNIFER L, MUELLER, MICHAEL D, NICOLAI, ROGER J, OLSOWY, TIMOTHY F, OWENS, CYRENA JEAN, PAWLITZKY, TINA L., PRESL, BRIAN G, PRESL, THERESA J, PRIBEK, BARBARA A, RAISLEGER, VIRGINIA M, RAND, TAMERA L, SMIDEL, SARAH A., SMITH, JACQUELINE K, STEINER, JORDAN A, STODOLA, JOSEPH O, TERRY, MICHAEL E, TREPTOW, ETHAN A, WALESH, DEBRA J, WALKNER, MARGARET M To ADAMS, RICHARD W, BERNSDORF, MIKE A, CHRISTENSEN, ALAN R, EGDORF, JOHN R, HALE, JAMES M., HILLS, SHAWN D, LANGER JR, JAMES E, LEANNA, LORI L, OLSON, CHERYL L, OLSOWY, TIMOTHY F, PRESL, THERESA J, PRIBEK, BARBARA A, ZASTROW, KRISTIN K
Last State Change Date Changed From 5/28/2015 14:57:15 To 5/28/2015 14:57:23

5/28/2015 14:57:51 by HILLS, SHAWN D

Action Priority Changed From (None) To Per Schedule
Assigned Evaluator Changed From (None) To HOLSCHBACH, DARRYL M
Assigned Supervisor Changed From (None) To HALE, JAMES M.
State Changed From Assigned To In Progress Via Transition: Assign Evaluator
Last Modified Date Changed From 5/28/2015 14:57:23 To 5/28/2015 14:57:51
Owner Changed From HILLS, SHAWN D To HOLSCHBACH, DARRYL M
Secondary Owner Changed From ADAMS, RICHARD W, BERNSDORF, MIKE A, CHRISTENSEN, ALAN R, EGDORF, JOHN R, HALE, JAMES M., HILLS, SHAWN D, LANGER JR, JAMES E, LEANNA, LORI L, OLSON, CHERYL L, OLSOWY, TIMOTHY F, PRESL, THERESA J, PRIBEK, BARBARA A, ZASTROW, KRISTIN K To ADAMS, RICHARD W, ALLISON, DON NOEL, BERNSDORF, MIKE A, CHRISTENSEN, ALAN R, EGDORF, JOHN R, HALE, JAMES M., HILLS, SHAWN D, HOVIS, MICHAEL A., LANGER JR, JAMES E, LEANNA, LORI L, LEHMBECK, WILLIAM LEWIS, MORGAN, DEAN R., OLSON, CHERYL L, OLSOWY, TIMOTHY F, PEROUTKA, MARK, PRESL, THERESA J, PRIBEK, BARBARA A, SHANNON, DANIEL J., STAFFORD, JEFFREY T, STECKLER, BART R, ZASTROW, KRISTIN K
Last State Change Date Changed From 5/28/2015 14:57:23 To 5/28/2015 14:57:51

9/15/2015 17:49:53 by HILLS, SHAWN D

Text Answer 1 Changed From '' To 'Close to CR205/CA76 issued in new KPS Corrective Action Program.'
Last Modified Date Changed From 5/28/2015 14:57:51 To 9/15/2015 17:49:53

9/15/2015 17:50:20 by HILLS, SHAWN D

Follow on Assignments Req'd? Changed From (None) To No
Follow-on assignments Changed From '' To 'None.'
State Changed From In Progress To Supervisor Review Via Transition: Complete
Last Modified Date Changed From 9/15/2015 17:49:53 To 9/15/2015 17:50:20
Owner Changed From HOLSCHBACH, DARRYL M To HALE, JAMES M.
Secondary Owner Changed From ADAMS, RICHARD W, ALLISON, DON NOEL, BERNSDORF, MIKE A, CHRISTENSEN, ALAN R, EGDORF, JOHN R, HALE, JAMES M., HILLS, SHAWN D, HOVIS, MICHAEL A., LANGER JR, JAMES E, LEANNA, LORI L, LEHMBECK, WILLIAM LEWIS, MORGAN, DEAN R., OLSON, CHERYL L, OLSOWY, TIMOTHY F, PEROUTKA, MARK, PRESL, THERESA J, PRIBEK, BARBARA A, SHANNON, DANIEL J., STAFFORD, JEFFREY T, STECKLER, BART R, ZASTROW, KRISTIN K To ADAMS, RICHARD W, ALLISON, DON NOEL, BERNSDORF, MIKE A, CHRISTENSEN, ALAN R, EGDORF, JOHN R, HALE, JAMES M., HILLS, SHAWN D, HOVIS, MICHAEL A., LANGER JR, JAMES E, LEANNA, LORI L, LEHMBECK, WILLIAM LEWIS, MORGAN, DEAN R., OLSON, CHERYL L, OLSOWY, TIMOTHY F, PEROUTKA, MARK, PRIBEK, BARBARA A, SHANNON, DANIEL J., STAFFORD, JEFFREY T, STECKLER, BART R, ZASTROW, KRISTIN K
Last State Change Date Changed From 5/28/2015 14:57:51 To 9/15/2015 17:50:20

9/15/2015 17:50:34 by HILLS, SHAWN D

Comments Changed From '' To '[Appended:] Close to CR205/CA76 issued in new KPS Corrective Action Program.- Entered by [HILLS, SHAWN D] from [CA] [Supervisor Review]'
State Changed From Supervisor Review To DCAC Review Via Transition: Complete
Last Modified Date Changed From 9/15/2015 17:50:20 To 9/15/2015 17:50:34
Owner Changed From HALE, JAMES M. To HILLS, SHAWN D
Secondary Owner Changed From ADAMS, RICHARD W, ALLISON, DON NOEL, BERNSDORF, MIKE A, CHRISTENSEN, ALAN R, EGDORF, JOHN R, HALE, JAMES M., HILLS, SHAWN D, HOVIS, MICHAEL A., LANGER JR, JAMES E, LEANNA, LORI L, LEHMBECK, WILLIAM LEWIS, MORGAN, DEAN R., OLSON, CHERYL L, OLSOWY, TIMOTHY F, PEROUTKA, MARK, PRIBEK, BARBARA A, SHANNON, DANIEL J., STAFFORD, JEFFREY T, STECKLER, BART R, ZASTROW, KRISTIN K To ADAMS, RICHARD W, BERNSDORF, MIKE A, CHRISTENSEN, ALAN R, EGDORF, JOHN R, HALE, JAMES M., HILLS, SHAWN D, LANGER JR, JAMES E, LEANNA, LORI L, OLSON, CHERYL L, OLSOWY, TIMOTHY F, PRESL, THERESA J, PRIBEK, BARBARA A, ZASTROW, KRISTIN K
Last State Change Date Changed From 9/15/2015 17:50:20 To 9/15/2015 17:50:34

9/15/2015 17:50:46 by HILLS, SHAWN D

Comments Changed From '[Original Text]' To '[Appended:] Close to CR205/CA76 issued in new KPS Corrective Action Program.- Entered by [HILLS, SHAWN D] from [CA] [DCAC Review]'
RM Attachment Links Changed From '' To '<table width=100% border=1 cellspacing=2 cellpadding=2></table>'
State Changed From DCAC Review To All Assignments Complete Via Transition: Complete
Additional Review Number Changed From 0 To 1
Last Modified Date Changed From 9/15/2015 17:50:34 To 9/15/2015 17:50:46
Active/Inactive Changed From Active To Inactive
Owner Changed From HILLS, SHAWN D To (None)
Secondary Owner Changed From ADAMS, RICHARD W, BERNSDORF, MIKE A, CHRISTENSEN, ALAN R, EGDORF, JOHN R, HALE, JAMES M., HILLS, SHAWN D, LANGER JR, JAMES E, LEANNA, LORI L, OLSON, CHERYL L, OLSOWY, TIMOTHY F, PRESL, THERESA J, PRIBEK, BARBARA A, ZASTROW, KRISTIN K To (None)
Close Date Changed From Unassigned To 9/15/2015 17:50:46
Last State Change Date Changed From 9/15/2015 17:50:34 To 9/15/2015 17:50:46

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Kewaunee CRS › CR: K-2 Enviromental Air sampler found not working

Print

CR_ID	88
Short description	K-2 Enviromental Air sampler found not working
Site	Kewaunee
Discovery Date/Time	7/28/2015 10:00 AM
Submitter	Paul A Simon (Generation - 4)
Submitters Dept	2. Radiation Protection
Supervisor	Mark A Peroutka (Generation - 4)
Unit 1 Mode	DEF
Unit ISFSI?	No
Revision #	
Long Description	K-2 Environmental Air sampler found not working . this is located at the Kewaunee Public Service office on Highway 42 just north of Kewaunee. Air sampler had 43.47 hours on the meter since last filter change . Power to the outlet was verified by turning on installed light . GFI and switch fuse seem to be working properly . motor for air pump will not work .
Initial Actions	notified RP supervision and Maintenance supervision for assistance . will remove from K-2 location , bring to plant for repair .
Recom Actions:	swap out with spare air sampler
MR Function Exists:	
additional Contacts	Darryl Holschbach
Tag #:	
Is this CR associated with Boric Acid Corrosion Control Program Y/N	No
Is the Boric Acid wet, glistening moist or dripping? (ER-AP-BAC-101)	No
Is the boric acid deposit excessive? (ER-AP-BAC-01)	No
Is the boric acid discolored (e.g, non-white) or is there any visible degredation? (ER-AP-BAC-01)	No
Does the boric acid appear to originate froma crack pinhole leek or through a welded connection? (ER-AP-BAC-101)	No
Does the boric acid appear to come from under insulation or has it run under insulation or is the source of the leak unknown? (ER-AP-BAC-101)	No
Equipment Location	Kewaunee Public Service office on Highway 42 just north of Kewaunee
Equipment Description	K-2 Environmental Air sampler
Plant System	
OP-AA-102 Review Reqd?	No
Operability Assesment	N/A
Operability Comments	none
Functionality Assessment	N/A
Reportable Condition	No
Reportability Comments	
Is Equipment Important to Emergency Response WM-KW-100 values	No
O/R Comments	
Significance (screening)	3
Potential Repeat (screening)	No
Previous Issue	No History related to Sampler "K-2" identifed from CR Search by "Environmental Air Sampler".
CRT Comments	Air Sampler Pump was replaced and K-2 Environmental Air sampler returned to service on 07/28/2015. CA(39) to RP (Steckler/Hale) to include K-2 Environmental Air Sampler failure in the 2015 Annual Radiological Environmental Operating Report. Due Date: 04/28/2016
Work Order #	
Comments	
Status	Pending

Content Type: Item
Version: 19.0
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Last modified at 8/26/2015 2:31 AM by System Account

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