

9.0 Soil Monitoring

JW Wilde, KR Turner

Radiological monitoring of soil is conducted at a variety of locations: on site near Hanford Site facilities and operations, on site away from facilities and operations, and off site at perimeter and distant locations and in nearby communities. Contaminant concentration data are used for the following:

- Determine the effectiveness of effluent monitoring and controls within facilities
- Assess the adequacy of containment at waste disposal sites
- Detect and monitor unusual conditions
- Provide information on long-term radionuclide contamination trends in soil at undisturbed locations.

Data obtained from on-site soil samples is used as a qualitative indicator and verification of ambient air sampling results per WDOH Radioactive Emissions License for the Hanford Site (FF-01).

Soil samples have been collected on and around the Hanford Site for more than 50 years; consequently, a large amount of data exist that document on- and off-site levels of manmade radionuclides in Hanford Site soils. These data provide a baseline to which unplanned releases are compared. The *Hanford Site Environmental Surveillance Master Sampling Schedule* is available for both CY 2015 ([DOE/RL-2013-53, Rev. 1](#)) and CY 2016 ([DOE/RL-2013-53, Rev. 2](#)).

9.1 Monitoring Results

Soil monitoring provides information about long-term contamination trends and baseline environmental radionuclide activities at undisturbed locations both on and off the Hanford Site according to the latest version of the *Hanford Site Environmental Monitoring Plan* ([DOE/RL-91-50](#)).

9.2 Sampling Results

Soil samples are collected near facilities and operations on the Hanford Site to detect potential migration and deposition of facility emissions and evaluate long-term trends in the environmental accumulation of radioactive materials. Soil contamination can occur as the result of direct deposition from facility emissions, resuspension and movement of contaminants from radiologically contaminated surface areas, uptake of contaminants into plants whose roots contact groundwater or below ground waste, or translocation of buried waste by intruding animals.

Soil samples were collected on or adjacent to waste disposal sites and from locations downwind and near or within the boundaries of operating facilities and remedial action sites. The number and locations of soil samples collected in 2015 are summarized in Table 9.1. Only radionuclides with concentrations consistently above analytical detection limits are discussed in this section. Soil samples from off-site locations were collected in 2015.

Table 9.1. Soil Sample Locations

Number of Samples Analyzed	Operational Area (discrete samples analyzed)								
	ETF	100D	100H	200-West*	200-East*	300*	400	600*	ERDF
79	3	4	4	25	15	8	1	18	1

*Number of samples includes one or more duplicate samples.

Individual soil samples are 2.2 lbs (1.0 kg), which consist of five plugs of soil; each sample is approximately 1.0 in. (2.5 cm) deep and 4 in. (10 cm) in diameter. Soil samples were sieved in the field to remove potential sample intrusions such as rocks and plant debris, and then dried in the laboratory prior to analysis to remove residual moisture. Some soil samples were analyzed as a single sample (discrete code).

Soil samples were analyzed for radionuclides expected to occur in the areas sampled (i.e., gamma-emitting radionuclides, strontium-90, uranium isotopes, and/or plutonium isotopes). The analytical results from Hanford Site soil samples were compared with concentrations of radionuclides measured in samples collected off site at various locations in Grant, Yakima, Walla Walla, Adams, Benton, and Franklin counties in 2015 (Section 9.3). These comparisons were used to differentiate concentrations of Hanford Site-produced contaminants from levels resulting from natural sources and worldwide fallout.

On-site soil sampling results can be compared to the accessible soil concentrations ([WHC-SD-EN-TI-070, Soil Concentration Limits for Accessible and Inaccessible Areas](#)) developed specifically for use at the Hanford Site. These concentration values for radionuclides were established to ensure that effective dose equivalents to the public do not exceed the established limits for any reasonable scenario, such as direct exposure, inadvertent ingestion, inhalation, and consumption of foods, including animal products. The accessible soil concentration values are based on a radiation-dose estimate scenario ([WHC-SD-EN-TI-070](#)) in which an individual would have to spend 100 hrs/yr in direct contact with the contaminated soil. The conservatism inherent in pathway modeling ensures the required degrees of protection are in place. These concentrations apply specifically to the Hanford Site with respect to onsite waste disposal operations, cleanup, and decontamination and decommissioning activities. A partial list of these values is provided in Table 9.2.

Table 9.2. Accessible Soil Concentration Limits for Selected Radionuclides*

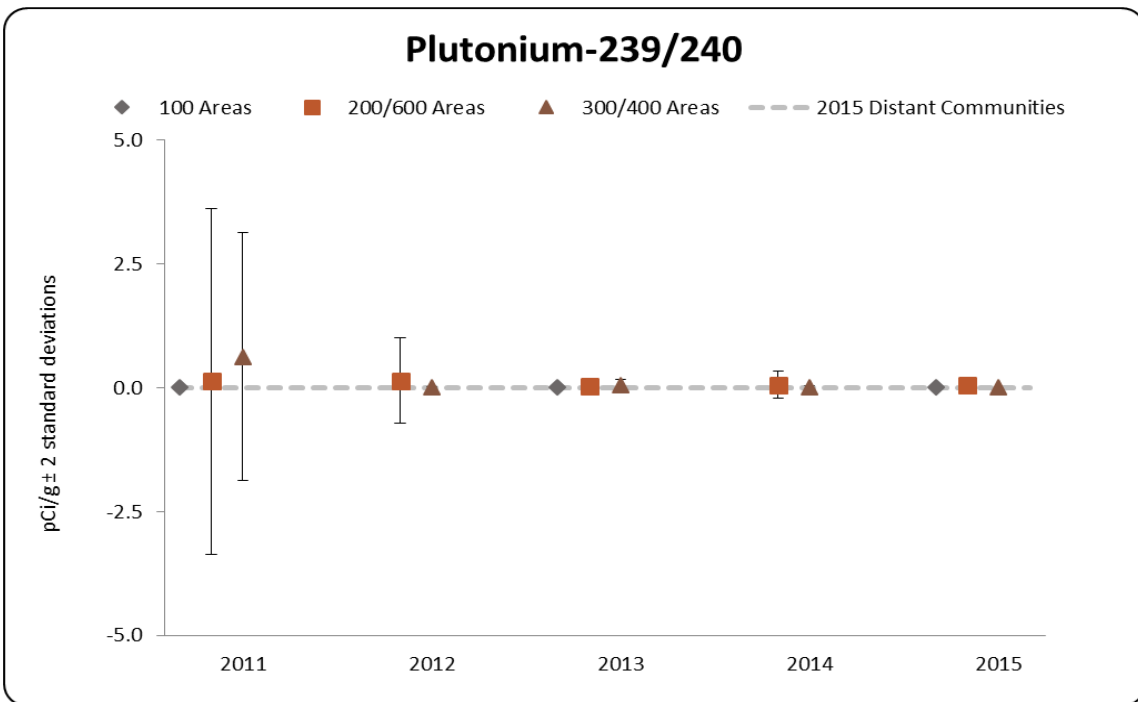
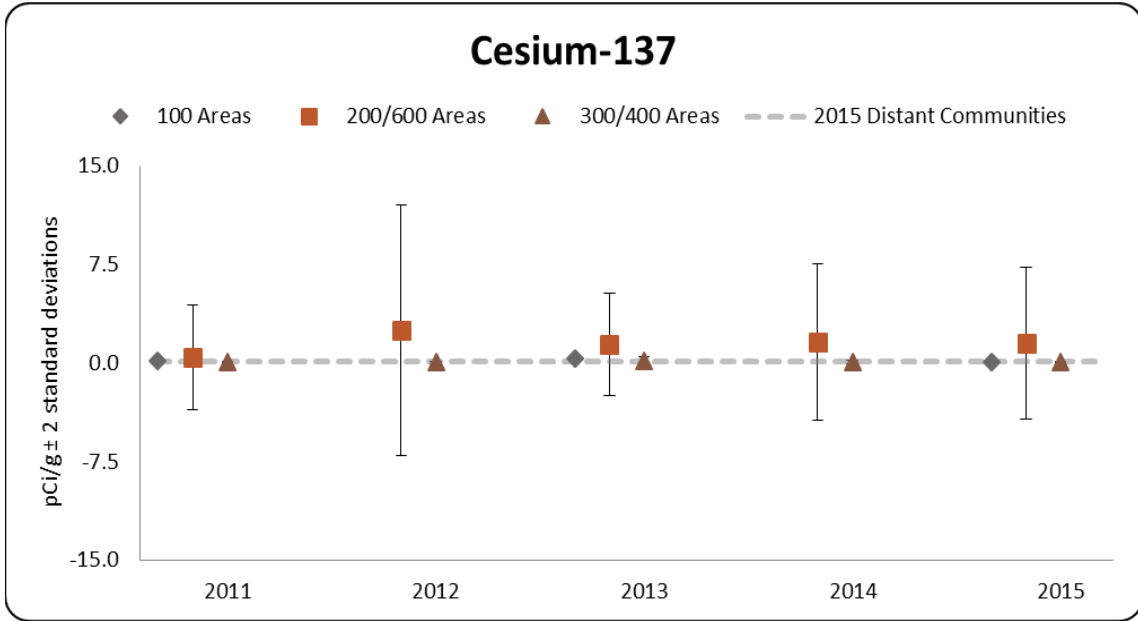
Category	Cobalt-60	Strontium-90	Cesium-137	Uranium-234	Uranium-235	Uranium-238	Plutonium-239/-240
Accessible soil concentration limits [†]	7.1	2,800	30	630	170	370	190

*pCi/g dry weight. To convert to international metric system units, multiply pCi/g by 0.037 to obtain Bq/g.

[†]Hanford Site soil that is not behind security fences; refer to [WHC-SD-EN-TI-070](#).

Some degree of variability is always associated with collecting and analyzing environmental samples; therefore, variations in sample concentrations from year to year are expected. In general, radionuclide concentrations in soil samples collected from or adjacent to waste disposal facilities in 2015 were higher than the concentrations in samples collected farther away. As expected, data also showed that concentrations of certain radionuclides in 2015 were higher in different operational areas when compared to concentrations measured in distant communities in previous years. Historically, the predominant radionuclides detected were activation and fission products in the 100 Areas, fission products in the 200 and 600 areas, and uranium in the 300 and 400 areas.

Cesium-137, strontium-90, plutonium-239/-240, and uranium were detected consistently in 2015 soil samples. Concentrations of these radionuclides were similar or slightly elevated near and within facility boundaries when compared to concentrations measured offsite at distant communities. Figure 9.1 shows the average concentrations of selected radionuclides in soil samples collected during 2015 and the preceding 4 years. Some individual levels demonstrate a high degree of variability, although overall trends are stable.



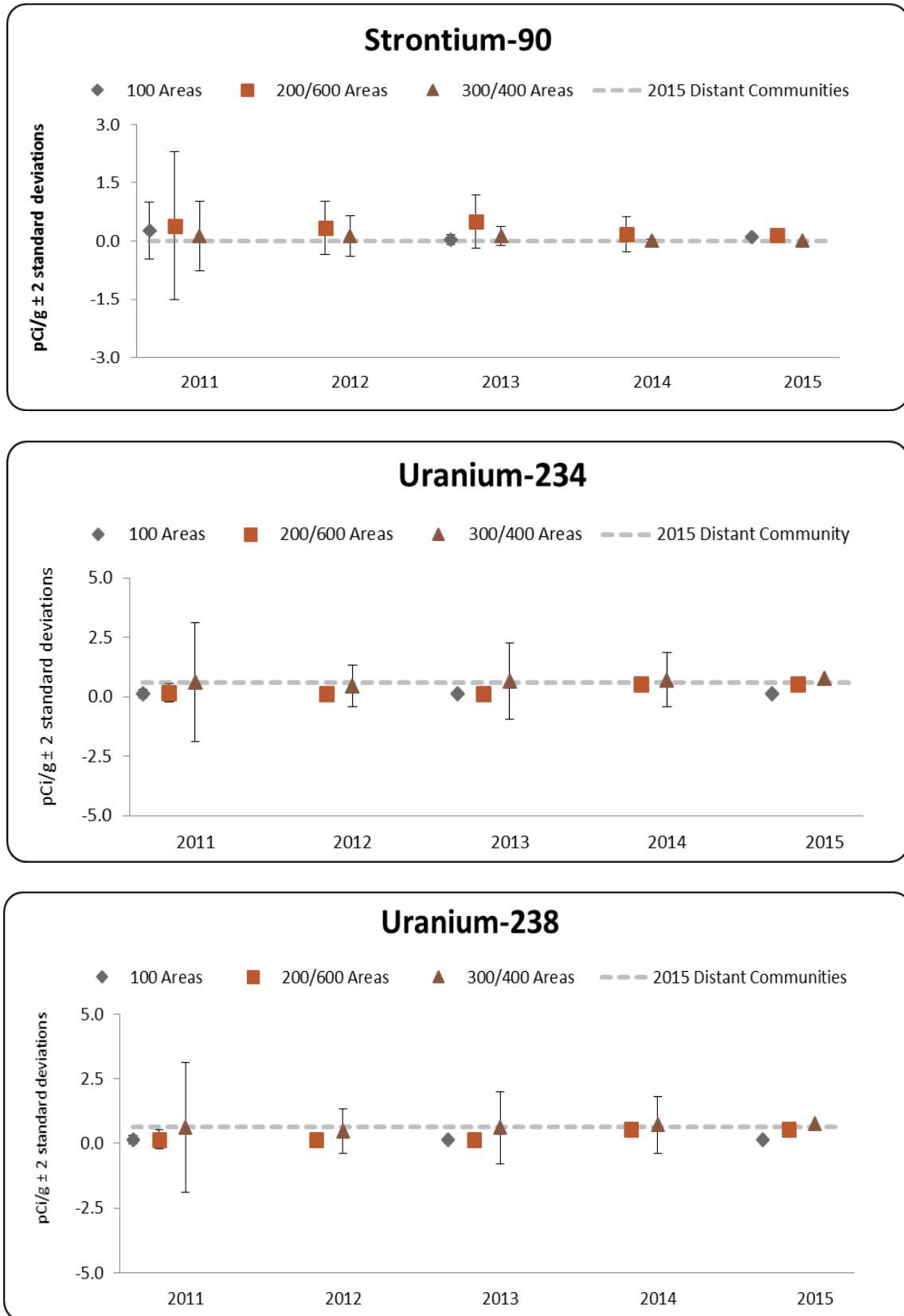


Figure 9.1. Hanford Site Soil Samples Average Concentrations of Selected Radionuclides, 2011–2015
As a result of figure scale, some uncertainties (error bars) are concealed by the point symbol

Table 9.3 provides a summary of selected analytical results for near-facility soil samples collected and analyzed. The average and maximum results were reported for the major operational areas, along with comparative data for the preceding 5 years. Complete lists of radionuclide concentrations for all soil samples collected during 2015 as well as sampling location maps, are available upon request.

Results for soil samples collected in 2015 at locations in the 100, 200-East, 200-West, 300, and 600 areas were comparable to previous years. Soil samples collected in the 300 Area showed concentrations of uranium-234 and uranium-238 that were comparable to historical data, but remained higher than those measured in the 200 Area. The higher uranium levels in the 300 Area were expected because of uranium releases to the environment during past fuel-fabrication operations. Plutonium-239/-240 was detected in a number of soil samples in the 200, 300, and 600 areas. Strontium-90 was detected in the 200 and 600 areas and were within historical concentration ranges. Cesium-137 was detected consistently at levels comparable to historical levels over the past 5 years.

To comply with WDOH Notice of Construction requirements, special soil deposition sampling was collected during 2015 around the 200 Effluent Treatment Facility and Trench 94 of the 218-E-12B waste site in the 200-East Area. Sample results from both sites showed cesium-137 concentrations comparable to values from other sample areas. Table 9.4 provides a summary of selected analytical results for samples from these sites.

A soil sample is collected annually at ERDF from a predominantly downwind sampling location. The 2015 soil sample showed slightly elevated concentrations of uranium, however, detections were comparable to levels observed in previous years at other near-facility sampling locations on the Hanford Site.

Soil monitoring provides information on long-term contamination trends and baseline environmental radionuclide activities at undisturbed locations both on and off the Hanford Site ([DOE/RL-91-50](#)). Soil samples collected on and around the Hanford Site for more than 50 years have been added to a large database documenting on- and off-site levels of manmade radionuclides in soil at specific locations. This database contains baseline data against which analysis results from unplanned contaminant releases from the Hanford Site can be compared. Soil at site-wide (on-site away from facilities and operations) and off-site locations was last routinely monitored for radiation in 2004 (Section 8.9.2 in [PNNL-15222](#)).

Table 9.3. Concentrations of Selected Radionuclides in Hanford Site Soil Samples*

Isotope	Hanford Area	2015		Average [†] (pCi/gm)	Maximum [‡] (pCi/gm)	2010 to 2014		Average [†] (pCi/gm)	Maximum [‡] (pCi/gm)
		Number of Samples	Number of Detects			Number of Samples	Number of Detects		
Cobalt-60	100	8	0	N/A	N/A	41	4	6.5E-03 ± 4.0E-02	9.8E-02 ± 1.9E-02
	200-East	15	0	1.1E-04 ± 2.4E-02	2.4E-02 ± 3.2E-02§	53	0	-5.6E-04 ± 1.4E-02	2.9E-02 ± 2.8E-02§
	200-West	25	0	-3.1E-03 ± 3.4E-02	2.7E-02 ± 3.4E-02§	85	0	-7.1E-04 ± 1.1E-02	1.5E-02 ± 1.4E-02§
	300	8	0	2.8E-03 ± 6.8E-03	8.1E-03 ± 1.6E-02§	56	0	3.8E-04 ± 1.2E-02	1.7E-02 ± 1.9E-02§
	400	1	0	-2.8E-03**	-2.8E-03 ± 7.9E-03§	5	0	4.6E-03 ± 2.1E-02	2.3E-02 ± 1.9E-02§
Cesium-137	100	8	0	N/A	N/A	41	40	2.0E-01 ± 3.7E-01	7.9E-01 ± 1.4E-01
	200-East	15	15	3.4E+00 ± 1.0E+01	1.4E+01 ± 1.1E+00	53	53	2.6E+00 ± 8.5E+00	2.0E+01 ± 2.7E+00
	200-West	25	24	1.1E+00 ± 1.6E+00	3.0E+00 ± 3.0E-01	85	83	1.2E+00 ± 2.5E+00	6.5E+00 ± 8.6E-01
	300	8	4	4.0E-02 ± 5.5E-02	9.1E-02 ± 2.1E-02	56	39	5.3E-02 ± 1.3E-01	4.1E-01 ± 6.9E-02
	400	1	1	2.8E-02**	2.8E-02 ± 1.3E-02	5	5	5.6E-02 ± 7.3E-02	1.3E-01 ± 2.1E-02
Plutonium-238	100	8	0	N/A	N/A	41	1	1.9E-03 ± 3.3E-02	4.8E-02 ± 2.9E-02
	200-East	15	12	9.4E-04 ± 9.1E-04	1.9E-03 ± 5.7E-04	53	2	3.1E-04 ± 2.7E-02	5.1E-02 ± 4.1E-02§
	200-West	25	19	9.0E-03 ± 5.5E-02	1.4E-01 ± 2.3E-02	85	9	4.0E-03 ± 3.4E-02	8.0E-02 ± 4.7E-02
	300	8	1	5.3E-05 ± 7.1E-04	7.1E-04 ± 4.6E-04	56	2	1.2E-03 ± 2.2E-02	3.2E-02 ± 4.2E-02§
	400	1	0	1.4E-04**	1.4E-04 ± 2.9E-04	5	0	-6.9E-03 ± 4.3E-02	8.0E-03 ± 2.8E-03§ ¹⁾
Plutonium-239/-240	100	8	0	N/A	N/A	41	13	1.2E-02 ± 1.6E-02	2.9E-02 ± 2.3E-02§
	200-East	15	15	1.6E-02 ± 2.7E-02	4.0E-02 ± 3.8E-03	53	29	8.1E-02 ± 9.5E-01	3.5E+00 ± 7.7E-01
	200-West	25	24	7.1E-02 ± 3.0E-01	7.8E-01 ± 9.8E-02	85	71	1.4E-01 ± 6.6E-01	2.1E+00 ± 5.4E-01
	300	8	7	3.8E-03 ± 1.0E-02	1.4E-02 ± 1.8E-03	56	12	9.5E-03 ± 3.3E-02	9.9E-02 ± 3.1E-02
	400	1	1	1.6E-03**	1.6E-03 ± 5.8E-04§	5	1	7.3E-03 ± 2.1E-02	2.8E-02 ± 1.6E-02
Strontium-90	100	8	0	N/A	N/A	41	1	-4.1E-01 ± 1.0E+00	7.3E-01 ± 5.5E-01
	200-East	15	9	1.2E-01 ± 2.5E-01	5.1E-01 ± 1.1E-01	53	22	4.5E-01 ± 4.7E+00	1.7E+01 ± 2.2E+00
	200-West	25	22	1.7E-01 ± 2.6E-01	5.4E-01 ± 1.1E-01	84	32	2.1E-01 ± 2.9E+00	1.1E+01 ± 1.4E+00
	300	8	0	5.5E-03 ± 3.7E-02	3.1E-02 ± 3.0E-02§	56	1	-1.5E-01 ± 1.0E+00	8.9E-01 ± 5.3E-01§
	400	1	0	-4.4E-03**	-4.4E-03 ± 2.4E-02§	5	0	-2.6E-01 ± 1.3E+00	6.5E-01 ± 4.6E-01§
Uranium-234	100	8	0	N/A	N/A	41	41	1.5E-01 ± 1.2E-01	3.4E-01 ± 1.1E-01
	200-East	15	15	5.9E-01 ± 1.9E-01	8.3E-01 ± 1.6E-01	53	52	2.1E-01 ± 3.6E-01	1.1E+00 ± 1.9E-01
	200-West	25	25	5.1E-01 ± 2.0E-01	6.5E-01 ± 1.3E-01	85	80	2.0E-01 ± 2.8E-01	7.5E-01 ± 1.2E-01

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Table 9.3. Concentrations of Selected Radionuclides in Hanford Site Soil Samples*

Isotope	Hanford Area	2015		2010 to 2014					
		Number of Samples	Number of Detects	Average [†] (pCi/gm)	Maximum [‡] (pCi/gm)	Number of Samples	Number of Detects	Average [†] (pCi/gm)	Maximum [‡] (pCi/gm)
Uranium -235	300	8	8	8.3E-01 ± 1.2E+00	2.3E+00 ± 3.7E-01	56	56	6.8E-01 ± 1.4E+00	2.8E+00 ± 7.6E-01
	400	1	1	4.1E-01**	4.1E-01 ± 7.4E-02	5	5	3.0E-01 ± 4.9E-01	7.4E-01 ± 2.1E-01
	600	18	18	5.4E-01 ± 1.8E-01	7.5E-01 ± 1.1E-01	52	51	2.0E-01 ± 2.9E-01	6.4E-01 ± 1.8E-01
	100	8	0	N/A	N/A	41	20	1.2E-02 ± 1.5E-02	3.4E-02 ± 1.9E-02
	200-East	15	14	7.5E-02 ± 5.2E-02	1.1E-01 ± 5.1E-02	53	33	1.6E-02 ± 2.4E-02	4.8E-02 ± 3.6E-02
	200-West	25	22	5.1E-02 ± 3.4E-02	9.7E-02 ± 4.1E-02	78	43	1.6E-02 ± 2.5E-02	7.3E-02 ± 4.2E-02
	300	8	8	6.8E-02 ± 9.6E-02	1.9E-01 ± 7.5E-02	56	46	4.5E-02 ± 9.2E-02	1.9E-01 ± 5.7E-02
	400	1	1	3.4E-02**	3.4E-02 ± 2.5E-02	5	4	2.4E-02 ± 3.6E-02	5.8E-02 ± 2.7E-02
Uranium -238	600	18	16	5.9E-02 ± 4.3E-02	9.9E-02 ± 4.3E-02	42	21	1.6E-02 ± 2.4E-02	6.1E-02 ± 2.7E-02
	100	8	0	N/A	N/A	41	41	1.5E-01 ± 1.2E-01	4.2E-01 ± 1.2E-01
	200-East	15	15	5.8E-01 ± 1.8E-01	8.2E-01 ± 1.5E-01	53	52	2.0E-01 ± 3.6E-01	1.1E+00 ± 1.9E-01
	200-West	25	25	5.0E-01 ± 1.9E-01	6.3E-01 ± 1.2E-01	85	80	2.0E-01 ± 2.7E-01	6.6E-01 ± 1.0E-01
	300	8	8	8.2E-01 ± 1.1E+00	2.2E+00 ± 3.5E-01	56	55	6.7E-01 ± 1.4E+00	2.8E+00 ± 7.6E-01
	400	1	0	4.2E-01**	4.2E-01 ± 7.2E-02§	5	5	3.4E-01 ± 6.2E-01	9.3E-01 ± 2.5E-01
	600	18	18	5.7E-01 ± 1.3E-01	8.0E-01 ± 1.2E-01	52	51	2.0E-01 ± 2.7E-01	6.5E-01 ± 1.0E-01

*pCi/g dry weight
[†]Average ± two standard deviations
[‡]Maximum ± analytical uncertainty
[§]Maximum value reported is a non-detect
**Standard deviation cannot be calculated for one sample

Table 9.4. Radionuclide Concentrations in Other Contractor Project Soil Samples*

Project/ Facility	Location [†]	Date	Cobalt-60	Strontium-90	Cesium-137	Uranium-234	Uranium-238	Plutonium-239/-240
Trench 94	D458	8/18/2015	-2.40E-04±2.40E-03	1.000E-01±3.50E-02	1.80E-01±2.30E-02	5.40E-01±1.20E-01	4.70E-01±1.10E-01	2.10E-03±5.90E-04
	D460	8/18/2015	-1.20E-02±2.20E-02	2.90E-02±2.70E-02	2.30E-01±3.50E-02	4.00E-01±1.10E-01	5.50E-01±1.30E-01	2.90E-03±5.90E-04
	D461	8/18/2015	-1.90E-03±9.30E-03	5.30E-01±1.10E-01	2.50E+00±2.20E-01	5.00E-01±1.20E-01	5.40E-01±1.20E-01	6.30E-03±9.30E-04
Effluent Treatment Facility	D457	11/12/2015	-8.80E-03±1.70E-02	1.50E+00±2.80E-01	9.40E+00±7.70E-01	5.70E-01±9.60E-02	6.20E-01±1.00E-01	1.90E-03±6.30E-04
	D458	11/12/2015	-1.40E-03±1.20E-02	4.70E-02±3.20E-02	2.00E-01±2.30E-02	4.70E-01±8.10E-02	4.80E-01±8.10E-02	1.50E-03±9.20E-04
	D459	11/12/2015	2.70E-03±9.50E-03	8.30E-02±3.80E-02	5.40E-01±4.80E-02	4.90E-01±8.90E-02	4.90E-01±8.70E-02	1.80E-03±8.40E-04
ERDF 100D	D146	6/8/2015	8.40E-03±1.50E-02	1.20E-01±1.90E-01	1.5E-02±1.40E-02	8.6E-02±7.50E-02	1.1E-01±8.70E-02	-4.3E-03±3.60E-02
	D147	7/20/2015	-3.00E.02±2.20E-02	1.80E-01±1.60E-01	2.60E-01±5.00E-02	9.00E-02±6.90E-02	2.20E-01±1.10E-01	-1.40E-03±1.40E-02
	D171	7/20/2015	-2.00E-04±2.00E-03	8.10E-02±1.50E-01	4.30E-01±6.80E-02	3.30E-02±7.30E-02	1.20E-01±1.10E-01	3.10E-02±4.70E-02
	D172	7/20/2015	5.30E-03±1.50E-02	-9.40E-02±1.40E-01	1.20E-01±3.00E-02	1.10E-01±7.50E-02	1.00E-01±7.10E-02	-3.30E-03±2.80E-02
	D173	7/20/2015	6.30E-03±1.30E-02	3.00E-02±1.60E-01	1.50E-02±1.40E-02	4.60E-02±4.80E-02	5.40E-02	-2.80E-03±2.80E-02
100H	D152	10/12/2015	N/A	2.30E-01±1.70E-01	N/A	1.10E-01±9.40E-02	1.80E-01±1.20E-01	1.10E-01±1.70E-01
	D176	10/12/2015	-1.60E-03±1.30E-02	6.40E-02±1.50E-01	1.40E-01±3.20E-02	1.70E-01±1.10E-01	2.00E-01±1.20E-01	-3.90E-03±3.90E-02
	D177	10/12/2015	-4.90E-03±1.30E-02	1.30E-01±1.60E-01	1.40E-01±3.20E-02	2.50E-01±1.40E-01	1.90E-01±1.20E-01	-4.50E-03±4.50E-02
	D178	10/12/2015	-3.70E-03±1.60E-02	1.30E-01±1.60E-01	1.30E-01±3.30E-02	1.70E-01±9.90E-02	7.50E-02±7.00E-02	3.10E-02±6.80E-02
Accessible soil concentration [‡]			7.1	2,800	30	630	370	190

*pCi/g dry weight: 1 pCi = 0.037 Bq. Dry weight ± total analytical uncertainty.

[†]Sampling location code.[‡]Hanford soils that are not behind security fences.

9.3 Soil Sampling at Hanford Off-site Locations

Soil samples were collected at 18 locations around the Hanford Site during 2015. Off-site samples were collected around the perimeter of the Hanford Site, George, McNary Dam, Othello, Sunnyside, Toppenish, Walla Walla, Wanapum, and Washtucna, WA.

All samples were analyzed for gamma-emitting radionuclides; strontium-90; uranium-234, -235, and -238; and plutonium-238 and -239/-240. Selected samples were also analyzed for americium-241. The 2015 radiological analytical results were compared to results from 1998, 2001, 2004, and 2008 (Table 9.5).

Table 9.5. Concentrations of Selected Radionuclides in Hanford Site Soil Samples Collected Off Site*

Isotope	2015		2015		1998, 2001, 2004, and 2008			
	Number of Samples	Detects	Average† (pCi/gm)	Maximum‡ (pCi/gm)	Number of Samples	Detects	Average† (pCi/gm)	Maximum‡ (pCi/gm)
Cobalt-60	18	0	4.8E-03 ± 4.1E-02	6.1E-02 ± 7.0E-02§	0	0	N/A	N/A
Cesium-137	18	18	1.3E-01 ± 2.5E-01	4.4E-01 ± 1.0E-01	25	11	1.5E-01 ± 3.5E-01	4.8E-01 ± 5.3E-02
Plutonium-238	18	7	4.3E-04 ± 8.1E-04	1.6E-03 ± 4.7E-04	25	11	2.7E-04 ± 2.0E-03	7.0E-04 ± 2.4E-03
Plutonium-239/-240	18	18	4.9E-03 ± 1.2E-02	2.3E-02 ± 2.4E-03	25	20	4.8E-03 ± 9.0E-03	1.6E-02 ± 2.2E-03
Strontium-90	18	1	3.0E-04 ± 4.9E-02	5.3E-02 ± 3.3E-02	25	7	4.1E-02 ± 8.1E-02	1.4E-01 ± 4.6E-02
Uranium-234	18	18	6.1E-01 ± 2.6E-01	1.1E+00 ± 1.8E-01	0	0	N/A	N/A
Uranium-235	18	15	6.6E-02 ± 4.4E-02	1.1E-01 ± 4.7E-02	0	0	N/A	N/A
Uranium-238	18	18	6.3E-01 ± 3.2E-01	1.3E+00 ± 2.0E-01	25	23	5.7E-01 ± 1.5E-01	7.1E-01 ± 1.2E-01
Americium-241	0	0	N/A	N/A	4	3	4.1E-03 ± 7.6E-04	7.9E-03 ± 8.1E-03

*pCi/g dry weight, 1 pCi=0.037 Bq; †Average ± 2 standard deviations; ‡Maximum ± analytical uncertainty; §Maximum value reported is non-detect

In 2015, observed mean radionuclide activities in soil samples for all isotopes off site were generally similar to their respective averages from 1998, 2001, 2004, and 2008 (Table 9.5). Plutonium-239/-240 concentrations appeared to be higher in 2015 than in previous years. The maximum detectable concentrations for cesium-137 and uranium-238 were also higher than maximum concentrations observed in 1998, 2001, 2004, and 2008, and the remaining radionuclides tested were similar to the maximum concentrations observed during those same years. The Hanford Site-wide average soil concentrations in 2015 were higher than at off-site locations for the radionuclides measured, consistent with historical data and reflecting the higher site-wide soil concentrations associated with years of nuclear materials production.

9.4 Radiological Contamination Investigations

Investigations for radioactive contamination in soil were conducted in and near operational areas to monitor the presence or movement of radioactive materials around areas of known or suspected contamination or to verify radiological conditions at specific project sites. All samples collected during investigations were field surveyed for alpha- and beta-gamma radiation. Generally, the predominant radionuclides in samples from the 100 Area and 200 Areas were strontium-90, cesium-137, and plutonium-239/-240. Uranium-234, uranium 235, and uranium 238 were routinely found in 300 Area samples.

There were 20 instances of radiological contamination in soil discovered during 2015 site investigations. Of the 20, eight were cleaned up and disposed of on site in licensed burial grounds, and the other 12 were posted as contamination areas. None of the soil samples was submitted for radioisotopic analysis. The number of soil investigation contamination incidents in 2015 were generally within historical values. Table 9.6 summarizes the number and general locations of soil contamination incidents investigated during 2015, and provides the number of contamination incidents investigated from 2000 through 2015.

Table 9.6. Soil Contamination Incidents Investigated

Location	2015 Incidents	Year	Incidents
100 Area	1	2000	25
200-East Area		2001	20
Tank farms	1	2002	22
Burial grounds	1	2003	30
Cribs, ponds, and ditches	0	2004	19
Fence lines	0	2005	20
Roads and railroads	0	2006	25
Unplanned release sites	0	2007	17
Underground pipelines	1	2008	16
LERF/ETF	0	2009	28
Miscellaneous	8	2010	22
200-West Area		2011	10
Tank farms	2	2012	10
Burial grounds	1	2013	21
Cribs, ponds, and ditches	0	2014	22
Fence lines	0	2015	20
Roads and railroads	0		
Unplanned release sites	1		
Underground pipelines	0		
Miscellaneous	1		
Cross-site transfer line	0		
200-BC cribs and trenches	0		
200-North Area	0		
300 Area	0		
400 Area	0		
600 Area	3		
Total	20		